BEHAVIOR CHANGE CAMPAIGNS TO REDUCE DEMAND FOR WILDLIFE

IMPLEMENTING AND MONITORING

Ada Sánchez-Mercado, María Daniela Pineda, Lisandro Moran, Alejandro Díaz, Génesis Ramírez, Karilexis Ramírez, Albert Narváez, Arlene Cardozo-Urdaneta.

PROVITA

Iniciativa VOLANDO JUNTOS

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PRO VITA

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JUNTOS

ACKNOWLEDGMENTS

In memory of Gabriel León (1999 - 2023), who was a dreamy Ecoguardian and who now flies in the skies of Macanao with the Parrots that he loved so much.

Lisandro Moran

CON TENT

THE FLYING TOGETHER INITIATIVE

Provita is a Venezuelan non-profit organization with more than 30 years of experience developing innovative socio-environmental solutions to preserve nature.

With the **Flying Together Initiative**, (in spanish, Iniciativa Volando Juntos) Provita wants to promote alternative behaviors to the demand for fauna, which generate sustainable living habits in the communities that coexist with these species.

The main strategy of the Flying Together Initiative is to combine concepts and tools from social sciences and ecology to design, implement and evaluate behavior change campaigns focused on reducing the demand for wildlife. Our case studies include two species of Venezuelan birds, threatened by illegal trafficking, the Red Siskin (*Spinus cucullatus*) and the Yellow-shouldered Amazon (*Amazona barbadensis*).

WHAT DO WE BELIEVE IN?

1. We believe in change

We believe in the potential of each person to generate behavior change and that every individual change counts. We believe that these changes can be positive for both wildlife and the communities and audiences adopting the change.

2. We believe in evidence-based actions

We promote the use of standards and protocols based on the best and most updated scientific information. We want the design, implementation and evaluation of behavior change campaigns to be a process:

- Clear,
- Reproducible and
- Supported by evidence.

3. We believe in collaborative learning

We want to share with others organizations, civil society and decision makers from Latin America and the world what we have learned. We believe these efforts can be replicated in other threatened species.

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ABOUT THE TOOLS

Through a series of tools, organized in three modules, we wish to share both the technical knowledge and the experience gained after the implementation of our campaigns.

Our tools are summaries of the state of the art in behavior change campaigns and are based on the recommendations and good practices of leading institutions in the area.

Our tools are multimedia resources (documents, forms, analysis tools) intended to provide professionals and researchers:

MODULE 1

Concepts and strategies to integrate baseline information with planning strategies to design campaigns based on the best and most up-to-date scientific information.

MODULE 2

Practical advice on how to use your resources to implement behavior change campaigns effectively and efficiently. Strategies to evaluate the impact of campaigns both in terms of species conservation and in society.

The tools are not intended to make definitive statements about what works or does not work. Rather, they provide high-quality information about what is likely to be beneficial based on existing evidence.

In general, the chapters of this document are made up of 3 sections:

¿? Basic concepts

🔍 Case studies

📄 Practical recommendations

The objective of this fourth tool is to provide guidance for the implementation and basis for monitoring a behavior change campaign, with emphasis on key implementation aspects, such as development of relevant indicators, identification of implementation partners, and prioritization and design of the activities.

The tools are living documents that are regularly updated as new studies are published in Venezuela and internationally. Send your suggestions, ideas and comments to: **informacion@provitaonline.org**

The Flying Together Initiative technical team will be more than happy to provide additional support to implement the strategies described here. You can write to us at: **informacion@provitaonline.org** arrange a meeting to discuss collaboration opportunities.

CASE STUDY:

GREEN SKY · CIELO VERDE

Campaign to reduce demand for the Yellow-shouldered Amazon *(Amazona barbadensis)*

Is listed as "Endangered" in Venezuela (Rodríguez et al. 2015) and Near Threatened internationally (BirdLife International 2023).

LC VU NT EN CR EX

This species is included in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), so its trade is only permitted under exceptional circumstances (CITES 2023).

The Yellow-shouldered Amazon has been used as a pet since pre-Columbian times (Drews 2001). Currently, in the Macanao Peninsula, Margarita Island, Venezuela, where one of the largest populations of the species is located, 3 out of 10 people have parrots in their homes (Sánchez-Mercado et al. 2020a, 2022).

In Macanao, the demand for parrots is motivated by the need for company, a poorly understood empathy for the conservation of the animal and by a widespread social norm that tolerates and justifies possession (Sánchez-Mercado et al. 2022).

Women are important actors in the illegal parrot trade chain. The absence of fathers, sons and husbands during long fishing trips (a primary economic activity dominated by men), creates a perception of loneliness in wives, mothers and daughters. Parrots are used to manage these emotions: They are perceived "as part of the family" and given as gifts to alleviate loneliness. Within the communities of Macanao, the level of knowledge and awareness of parrot conservation problems is high, but people with higher educational levels express greater intentions to keep parrots as pets, suggesting that knowledge about the threats of parrot is used to reinforce mistaken empathy (Sánchez-Mercado et al 2022).

Bruno García

For the Yellow-shouldered Amazon, the behavior change campaign is titled "**Green Sky**", with the slogan describing the overall objective of the campaign, "A new way of relating to the Parrot." **Green Sky** encourages, in the communities of Macanao, participation in outdoor activities as an alternative to supplement the benefits that people perceive by having parrots (company and entertainment), without the need to keep them captive.

We think that, if we promote social norms and positive attitudes towards not keeping wild birds as pets, as well as spaces and opportunities where people can enjoy their favorite birds, we could generate the change we want: in the medium term, reduce the demand for parrots, and in the long term, their illegal trafficking.

Throughout this tool, The case study of the Yellow-shouldered Amazon be identified with the name of the behavior change campaign: **Green Sky.**

CASE STUDY:

NESTING FUTURE — ANIDANDO FUTURO

Campaign to reduce the demand for the Red Siskin *(Spinus cucullatus)*

The Red Siskin is listed as "Critically Endangered" in Venezuela (Rodríguez et al. 2015) and Endangered internationally (Birdlife International 2023b).

LC   VU   NT   **EN**   **CR**   EX

Being included in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), its trade is only permitted under exceptional circumstances (CITES 2023).

Wild red siskins have been used in the practice of aviculture the 1950s, either to breed them in captivity (obtain the ancestral phenotype), to generate hybrids (red canaries) or mutations (Rivero Mendoza 1983; Moreno-Sánchez & Abellán-Baños 2005; Martínez-Espinosa & Abellán 2016).

Currently, the wild Red Siskin trade operates in a trafficking network that moves an average of 70 birds/year, which represents an important percentage of the scarce remaining population of the species. This network involves at least 15 types of actors, operating in national and international markets. Among these actors, breeders from Venezuela, Brazil, Spain and Portugal (Iberian node) and the United States play an important role as they are the main consumers (Sánchez-Mercado et al. 2019, 2020b).

The demand for Red Siskin in aviculture is motivated in part by the belief that including wild birds allows genetic diversity to be maintained and favorable reproductive behaviors in captive birds (Cardozo-Urdaneta et al., unpublished data).

This belief is reinforced by the fact that Red Siskin expert breeders form an isolated community and lack tools and channels to share their experience with less experienced breeders. This, combined with language barriers, helps perpetuate unsustainable breeding practices among Venezuelan and international breeders.

Fernando Llano

For the Red Siskin case study, the behavior change campaign is titled "**Nesting Future**" with the slogan that describes the general objective of the campaign, "Promoting sustainable breeding practices." **Nesting Future**, promotes among Red Siskin breeders in Venezuela, Brazil, Spain and Portugal (Iberian node), social norms and positive attitudes towards the adoption of sustainable breeding practices, which exclude the use of wild Red Siskin in aviculture. The campaign generates discussion spaces (workshops, forums, meetings) where breeders can acquire and disseminate these practices among their peers. In this way, breeders will continue to enjoy their favorite bird, while effectively contributing to reducing illegal trafficking of the Red Siskin.

Throughout this tool, the Red Siskin case study will be identified with the name of the behavior change campaign: **Nesting Future.**

01

WHY IS IT IMPORTANT TO MONITOR THE CAMPAIGN?

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In the **tool 1** we talked about how to conduct baseline studies to understand the focal problem, the unsustainable demand for wildlife. After understanding the problem and devising a solution, we must now understand several aspects of the proposed solution:

1 What **attitudes** does our audience have about the proposed solution?

2 What **behavioral**, logistical, and contextual barriers prevent its adoption?

3 How prevalent is the proposed behavior currently? Have there been previous experiences to promote it?

4 Are there differences in how these opportunities and barriers are perceived by different groups of our audience?

That is, we must now understand the solution. This does not mean that we should forget about the problem, but rather add an additional layer of complexity to our study. We must continue to monitor demand, extraction and traffic indicators (the problem), while implementing the behavior change campaign (the solution).

There are four aspects that we must evaluate in a behavior change campaign (Bujold et al. 2020):
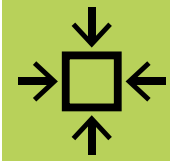
Internal validity
If the interventions show a clear and causal impact on behavior.

Ecological validity
If the interventions have an impact on the focal conservation problem and represent the natural context.

Temporal sustainability
If the effect of the interventions lasts over time.

Geographic generability
If the interventions can be scaled to other regions, in different geographical contexts.
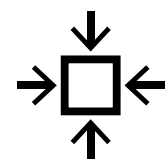
Internal validity

describes the extent to which we can attribute the observed changes in behavior to be results of the intervention. This causal attribution requires monitoring the behavioral state of the target community, not only before and after the intervention, but also establishing control communities. Control communities are those whose behavioral, demographic, geographic and social context is similar to the target community, but in which behavioral interventions are not implemented. This evaluation approach, is known as BACI (Before-After Control-Intervention) (Steinmetz et al. 2016; Chaves et al. 2018; Moorhouse et al. 2022).

Establishing controls allow us to evaluate:

- Discern whether the results obtained can be correctly attributed to our intervention or if they are simply due to changes in other higher order factors.

- Reduce the risk of overestimating the real impact of our intervention.

- Make adjustments and implementation recommendations.

Ecological validity

Describes the extent to which the behavior monitored in our study actually reflects real behavior. Under this criteria, behavioral interventions to reduce illegal wildlife trafficking can be classified into the following categories:

- Those that evaluate real behavior in the field (e.g. extraction or hunting rate, sales of fauna in open markets) (Nijman et al. 2017).

- Those that evaluate in the field the intention to adopt the proposed behavior (e.g. interviews and questionnaires with people in the community) (Hrubes et al. 2001; Sorice & Conner 2010; Sánchez-Mercado et al. 2022).

- Laboratory or online experiments, which evaluate demand intentions in a particular audience (Hinsley et al. 2022).

Obviously, interventions that evaluate real behavior in the field better capture the motivations of the actors, as well as their current socio-ecological context.

Evaluating the intention to adopt a behavior in a real context is the

second best option when it is not possible to evaluate the actual behavior. (Ajzen 2011; Miller 2017).

Laboratory experiments are useful as a low-cost initial exploratory method, but it is not advisable to base interventions using only evidence from them, because criticism indicates that the results are biased towards supporting the researcher's hypotheses (demand bias). Experimental subjects infer the response that researchers expect, and behave in accordance with those expectations, differently than they would in real demand contexts (Mummolo & Peterson 2019; Ried et al. 2022).

"It is advisable to combine measurements of real behavior in the field, with indirect measures of intentions, either in real or experimental contexts (Bujold et al. 2020)."

Temporary sustainability

Refers to the persistent effect of the intervention. This sustainability can be measured either during or after the implementation of the intervention.If you assess sustainability during implementation, you can determine whether the effectiveness of the intervention decreases over time. Whereas if you assess it after the intervention, you can determine to what extent behavior change is stable, even without the support of the intervention.

In most cases, for budgetary and organizational reasons, temporal sustainability is measured before and immediately after the campaign, but it is important to ensure that monitoring of the intervention continues for the time it takes for the behavioral change to occur, which may take beyond the year or two that a project typically lasts. Although this generates additional costs, the resulting data will be essential for decision-making when considering whether the campaign can be scaled.

Geographic generability

Refers to the degree to which a campaign, designed for a specific location, can be expanded and applied in other geographies. Typically, behavior change campaigns are context-specific and the level of scalability will always be restricted to geographic areas close to the locality of origin. For example, campaigns developed on audiences made up of people living in Western, Educated, Industrialized, Rich and Democratic countries are rarely generalizable (Henrich et al. 2010).

1.1 DEFINING CONTROLS AND TREATMENTS

By using control sites, and not just before-after comparisons, we will be able to evaluate the effect of changes in environmental, social and economic conditions that occur during the campaign implementation period. This is particularly relevant if the campaign is implemented for long periods (>1 year) and in fluctuating economic and social contexts (Veríssimo et al. 2018).

For example, an improvement in the social and economic conditions of a locality can mean that hunters who consumed and sold Tapir meat now have more income to buy alternative protein sources. If in our campaign, focused on reducing Tapir hunting, we only make a before-after comparison, we could reach the erroneous conclusion that there was a positive change as a result of our intervention. However, if we have control and treatment groups, we could see that the "change" has occurred even in the places where our campaign did not reach

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and that therefore the reduction in demand is in response to external factors, and not a product of our campaign.

Ideally, we should use an **experimental design** to be able to establish causality between the campaign and behavior change. In experimental studies, participants are randomly assigned to a treatment group (exposed to the intervention) or a control group (not exposed to the intervention). This random assignment helps control the effect of external variables that may have an effect on the result, thus increasing internal validity. That is, we can confidently attribute changes in behavior to the intervention.

However, when working with communities, it is difficult to implement experimental designs because sometimes it is not feasible or ethical to establish who participates in an activity. Generally, the call to participate in campaign activities is carried out by word of mouth, or through community communication networks (radio, grandparents' clubs, school groups) and these means of communication, far from being random, are highly dependent on the socialization network. Therefore, it is more common to use quasi-experimental designs to evaluate behavior change campaigns.

In the **quasi-experimental** design, participants are not randomly assigned to control and treatment groups, and instead, the groups are often pre-existing or based on non-random criteria. By having less control over the effect of factors external to the intervention, internal validity is lower, and this makes it more difficult to definitively establish causality.

How do we define the control and treatment groups? There are several criteria that you must take into account when defining your control and treatment groups in a quasi-experimental design:

A. Initial equivalence

It is essential that the control and treatment groups are comparable at the beginning of the study. This implies that there should be no significant differences between them in terms of variables that may affect the result such as **demographic characteristics** (gender, age, community size), **behavioral characteristics** (eg level of demand, demand preferences, structure of the network of traffic), **social** (eg educational level of the population, poverty, etc.) **and geographical** (eg proximity to sources of extraction). You must also take into account logistical aspects such as operational capacity in the locations, presence of partners, etc.

B. Sample size

Make sure the sample size in each group is large enough to detect if there are significant differences. A small sample size may limit your study's ability to identify effects. The objective is to have enough data to ensure detecting changes in the selected indicators (e.g. knowledge, attitudes, perceived social norms, intentions, etc.), but not so much that it is an excessive waste of time and money. To estimate the appropriate sample size you can use a statistical power analysis.(Cohen 1988).

C. Control external factors

Identify and control any variable that may influence the result, either by including them as co-variables in the statistical analysis (for which you must measure it during your intervention), or through group matching. There are many external factors to consider, but generally, social and economic variables (e.g. level of poverty, education, unemployment, income level), the legal context (new or strengthening laws, rules, regulations, sanctions) and factors Environmental factors (e.g. droughts, floods, seasonal migratory processes, reproductive seasons of focal fauna) are factors that influence changes in fauna demand.

D. Representativeness

The control and treatment groups should realistically reflect the population or context you want to study. That is, they must be representative of your audience.

E. Viability

Considers the feasibility of selecting and maintaining control and treatment groups, especially in long-term studies or in contexts where access to study locations is difficult or restricted. For example, the presence of a headquarters of your organization or alternatively, having local partners in the treatment communities, facilitates the logistics to implement the activities.

1.2 TRAFFIC INDICATORS

> **There are two ways to monitor traffic, directly or indirectly.**

Direct indicators monitoring, refers to observations of extraction, sale or possession where the researcher can see the animal and identify it. You can obtain this evidence in person or online. **Indirect trafficking indicators** refer to when the evidence comes from a second source, this includes self-reported possession and intention to sue.

A.1 Direct face-to-face indicators

To measure direct indicators in person you can apply:

Technique	Activity	Description	Example
Pet stores	Sale	Single visit to randomly identified pet stores within a locality of interest to record the number of species offered for sale.	Goh & O'Riordan (2007)
Road sales	Sale	Travel of pre-established routes with a defined sampling effort (e.g. # km/time) to record the prevalence of sales of a focal species (e.g. number of stalls offering the species/total sales stalls) or the number of individuals offered.	Romero-Vidal et al. (2020)
Monitoring open markets	Sale	Visits to open markets with an established sampling effort (e.g. # people/time) to record the prevalence of sales of a focal species (e.g. number of stores offering the species/total stores) or the number of individuals offered.	Pires (2014)
House-to-house visits	Tenure	Single visit to randomly identified houses within a locality of interest to record the possession or absence of a focal species and the number of individuals kept in captivity.	Sánchez-Mercado et al. (2022)

¿?

Technique	Activity	Description	Example
Illegal hunting monitoring	Extraction	Direct observation of the extraction of animals in nests, or in hunters' traps, or direct observation of the dead animal with a wound from a hunting weapon.	Briceño-Linares et al. (2011)

A.2 Direct online indicators

Over the last few years, numerous social networks and online trading platforms have emerged as an alternative to classic physical markets. (Siriwat & Nijman 2020). Monitoring these online markets has proven to be a powerful tool to quantify illicit transactions in wildlife trafficking (Sung & Fong 2018; Nijman et al. 2019; Xu et al. 2020). For example, in Thailand, a quick assessment on Facebook of just 30 minutes a day for a total of 23 days reported the sale of 1,521 specimens, of at least 200 species of threatened fauna (Atoussi et al. 2022).

Social media monitoring has innovated the way data is collected, organized, and analyzed first-hand and, in many cases, in real time for multiple purposes (Stringham et al. 2021a, 2021b).

Some tips when you are going to monitor illegal online traffic (Stringham et al. 2021b):

Define the objective and scope of your monitoring

The first thing is to decide which species, taxa or derived products are of interest to you. You must also define the location of interest (e.g. country, region, town) and along with this, the search language. The time period for data collection (eg a one-time search versus continuous monitoring over months or years). Finally, you should consider what type of website is appropriate (e.g. social networks, online marketplaces, news, specific online stores).

Create an alternate user

Avoid using your personal account to access social media groups or subscribe to online commerce pages. The systematization of the information in the publications must be carried out anonymously, only the data available in each publication is collected. We recommend that you DO NOT INTERACT in the publications or with the people who make the publication.

Be systematic in selecting the accounts and pages to monitor

You can use keywords to systematically select the accounts and pages to monitor. Keywords that should include three types of search terms: 1) the object of study (the name of the species, both in scientific terms and common names or adjectives); 2) the associated activity (e.g. breeders, bushmeat) and 3) the actor (breeders, hunter). Make different combinations of the three types of search terms in the languages relevant to your audience. Once each account or page is identified, assign a unique code to each one and determine the frequency and extent of your sampling (sampling effort).

Be systematic in recording the information extracted

The record can be in a spreadsheet where each record is placed in a separate row. However, the first thing you must define is that you call a record. For example, a record can be a publication made at a specific date and time and can contain information on different species offered. Alternatively, a record may be an instance of a species of a combination.gender specific on(e.g. male, female, indeterminate) and age (e.g. adult, juvenile) that can share the same publication information with another specimen of the same species, but of a different sex, such as, for example, when a marriage is offered in the same publication. of red siskins, then we have 2 records.

Why is it important to monitor the campaign?

B. Indirect indicators

To measure indirect indicators you can:

Technique	Activity	Description	Example
Direct questionnaires	Tenure	Group of specific questions on quantities and frequency of use/possession of fauna with closed response options (defined response categories).	McEvoy et al. (2019) Chiok et al. (2022)
	Intention		Godin et al. (2005) Marchini & Macdonald (2012)
Random Response Techniques	Tenure	It is a specialized questionnaire technique that allows you to obtain honest and confidential answers to sensitive questions.	Conteh et al. (2015) Ibbett et al. (2021)

1.3 INDICATORS OF ALTERNATIVE BEHAVIOR

Why is it important to monitor the campaign?

Do you remember the behavioral model that you used to understand the demand that we described in **tool 1**? Here you can use the same model of the Theory of Planned Behavior to describe and understand alternative pre-campaign behavior.

The Theory of Planned Behavior (in spanish TCP) (Ajzen 1991) proposes that the intention to behave in a certain way is a reliable indicator of actual behavior. TCP proposes that this intention, in turn, is influenced by our beliefs. These beliefs originate from different sources, whether from own experience, formal education, media, interaction with family

or friends, etc. Individual differences (demographic characteristics, personality, etc.) can influence not only the experiences people have and the type of information they are exposed to, but also how this information is interpreted (Fishbein & Ajzen 2010).

There are three types of beliefs relevant to explaining behavior:

1

The first is the belief in the positive and negative consequences associated with a certain behavior. These behavioral expectations or beliefs, in turn, determine a person's attitudes.

2

The second belief is about people's **perceived norms**, whether they are beliefs about whether or not other people approve of the behavior (what others think; inductive norms) or about what is socially accepted behavior (what everyone does; norms). descriptive).

3

Finally, people also have beliefs about **personal or environmental factors** that help or prevent them from behaving in a specific way. Taken together, the perception that people have about their capabilities and abilities to behave in a certain way constitute perceived control (Fishbein & Ajzen 2010).

Why is it important to monitor the campaign?

How to formulate TCP statements? Do you remember the exercise we did in the **tool 2** to evaluate the alternative behaviors to propose in the behavior change campaign?

Taking your audience's perceptions of the benefits, barriers and opportunities to adopting the alternative behavior (i.e. the solution you propose in your campaign) is a good starting point.

Try to group these perceptions and beliefs into general motivations that will function as your hypotheses.

For example, for our case study of Nesting Future, we identified that greater recognition ('recognition') by peers and the willingness to increase the collaboration network between breeders ('collaboration'), were the motivations that could encourage the intention to adopt responsible practices for the supply of Red Siskin for breeding within the community of breeders that we work with. But, on the other hand, in young or inexperienced breeders, the sense of insecurity due to lack of knowledge or skill in breeding ('self-doubt'), could prevent the adoption of alternative behavior in novice breeders.

Based on these three motivations, we formulated statements to assess attitudes, social norms, and perceived control.

TCP component	Motivation	Example of statement
Attitudes	Recognition	I would like to use breeding practices that exclude red Siskin to increase my prestige as a breeder.

TCP component	Motivation	Example of statement
Attitudes	Collaboration	Breeders who avoid using wild Red Siskin constitute a large and recognized group within aviculture.
	Self-doubt	It seems difficult to me to learn how to breed Red Siskin using only ancestral specimens.
Social norms	Recognition	Following the recommendations of prestigious breeders about not using Red Siskin in breeding is important to me.
	Collaboration	The largest and most productive breeding societies are formed by breeders who adopt sustainable breeding practices such as avoiding the use of wild Red Siskin.
	Self-doubt	My breeder colleagues and friends expect me to maintain high husbandry standards, including sustainable practices such as not using wild Red Siskin.
Control perceived	Recognition	I am confident that I can be successful as a breeder without needing to adopt breeding practices that reduce the use of wild Red Siskin.
	Collaboration	Breeding societies allow us to discuss and resolve doubts and problems about the breeding of Red Siskin without using wild specimens.
	Self-doubt	Breeders who know how to breed using only Ancestral Red Siskins form their own group and do not allow other breeders to enter.

Participants responded to these statements using a Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (5), with a neutral option of 'I'm not sure' (3).

😣 Strongly disagree   🙁 Disagree   😐 Neutral   🙂 Agree   😄 Strongly agree

1.4 MONITORING OF THE SOCIALIZATION NETWORK

⌜?⌟ What is a socialization network? Why is it important to measure it?

The adoption of anti-trafficking behaviors is complex because it requires coordination between the people who adopt it (Centola et al. 2018). This implies the interaction among participants and the flow of information (social network), which should also be monitored to assess at what point the socialization network impedes or accelerates behavioral change (de Lange et al. 2019, 2021). The adoption of demand reduction behavior may be influenced by the prevalence of adoption intention in the community. For example, in the communities of Macanao in Venezuela, people who did not have Yellow-headed Amazon as pets showed a greater intention to participate in activities related to the conservation of this species (Sánchez-Mercado et al. 2021).

The, socialization, the tendency to adopt behaviors, attitudes, or norms from people with similar personal attributes (e.g., relatedness, friendship, age, gender), also can contribute to people's adoption intention (de Lange et al. 2019 , 2021; Dobson et al. 2019). For example, if there are strong intergenerational ties in a community a lot of communication between old and young people), the adoption of new ideas could be restricted, since older members, less likely to take risks in innovative behavior, could impose a more conservative vision to young people.

Why is it important to monitor the campaign?

⌜?⌟ How to measure the socialization network?

The first step to measure the socialization network is to have an idea of the factors that drive or conglomerate the network. That is, you need a hypothesis.

As in the case of the previous section, you can generate your hypotheses from the previous exercises carried out in the **tool 2** to segment the audience and define alternative behavior. This will also help you define the limits of the socialization network. This includes specifying who is considered part of the network and who is not, whether based on demographic (age groups), behavioral (different types of hunters), and geographic (inhabitants of a locality) criteria.

The second step is thinking about how you are going to collect information from the network.

The choice of data collection methods will depend largely on the nature of the community studied and your abilities to compile and manage the information. To do this, you can apply several methods.

Method	Description
Questionnaires	You can ask people to identify people with whom they have social interactions. You can ask questions like "Who are your close friends?" or "Who do you communicate with frequently?".
Observation	Observing social interactions directly can provide valuable data. This method is often used in small, close-knit communities.

Method	Description
File data	In some cases, you can use existing records, such as organizational membership lists, to identify people's connections within the network.
Social networks	Analyzing interactions on social media platforms can reveal digital socialization networks.

The third step is to use network analysis techniques to visualize and analyze the connections within the socialization network.

Certainly network diagrams are very attractive for visualizing the relationships between nodes (people, countries, typology of actors, etc.).
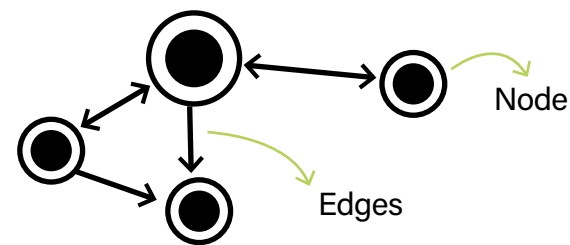
But the most important thing is to calculate the indices that describe the structure of the network. There are several, the most important are:

A. Centrality

Quantifies the number of direct connections or links that a node has in a network. Nodes with high degree centrality are often considered "hubs" within the network. In a socialization network, where the nodes are people, nodes with high centrality are individuals who have many friends (i.e., are directly connected to many others).
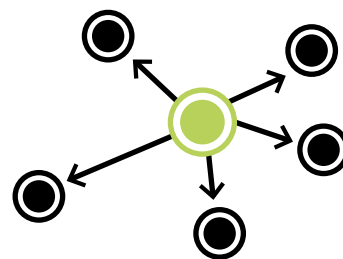
B. Intermediation

Measures the extent to which a node is on the shortest paths between other nodes in the network. It quantifies the node's ability to act as a bridge or intermediary between different parts of the network. Nodes with high betweenness are not necessarily the most popular, but they are strategically positioned to connect different groups of friends (i.e., they are on the shortest paths between others).
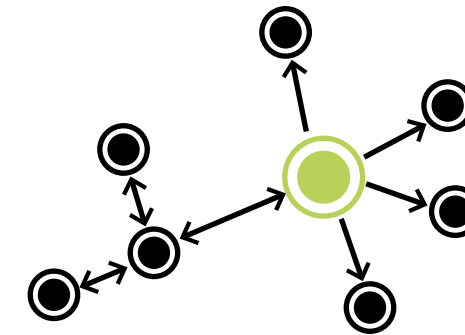
C. Grouping

Refers to the tendency of nodes in a network to form densely interconnected groups or clusters, where nodes within the same group are strongly connected to each other. Densely connected groups often represent communities or subcommunities of nodes that share similar interests, purposes, or characteristics.

Why is it important to monitor the campaign?
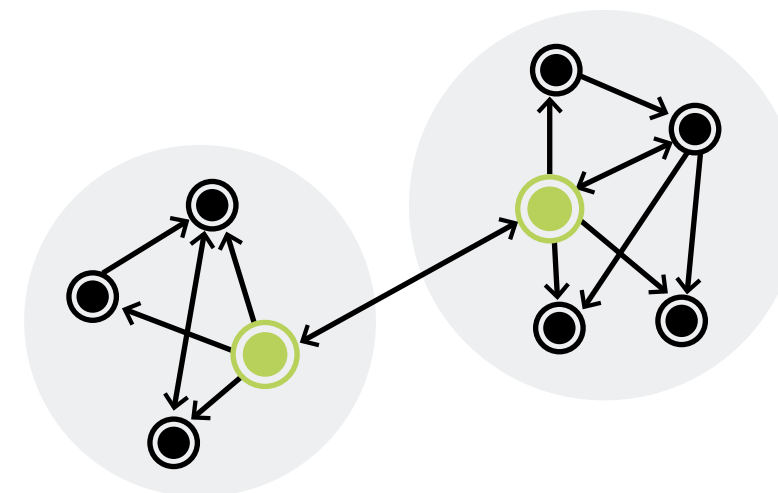
D. Cohesion

Refers to the degree to which the nodes in a network are united or cohesive with each other. It indicates how strongly connected nodes are overall, regardless of the formation of specific clusters. Cohesion is an indicator of the strength of the union throughout the network. A highly cohesive network has nodes that are strongly connected overall, meaning that information or influence can circulate efficiently throughout the network.

GREEN SKY | CIELO VERDE
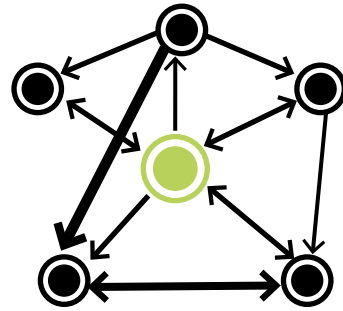
Pre-campaign indicators for Green Sky

Step 1

Defining controls and treatments

For Green Sky we applied a quasi-experimental design to measure the campaign:
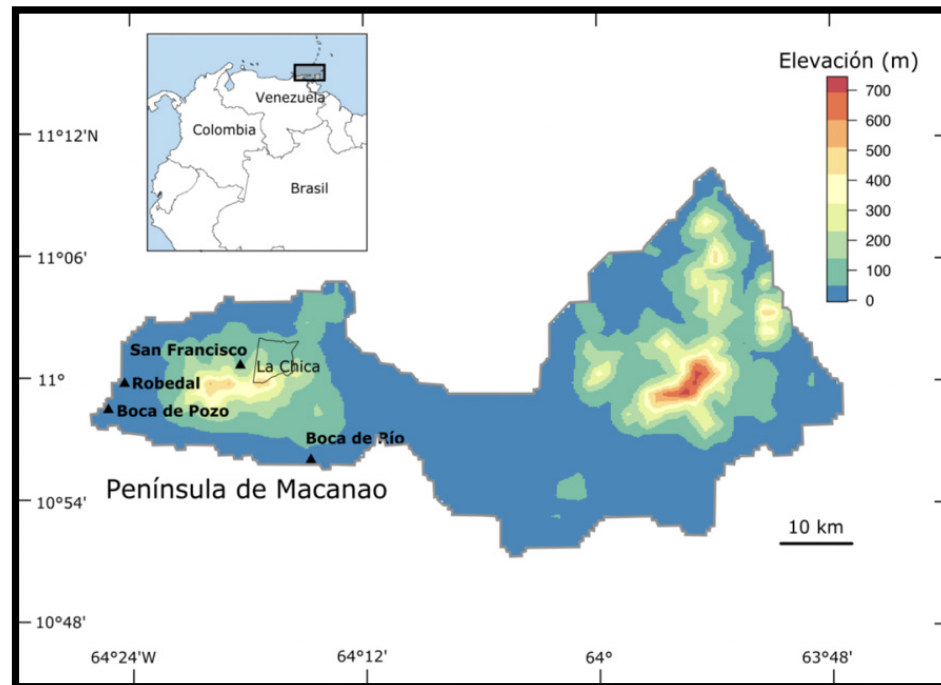
Green Sky study area, Macanao Peninsula Municipality, Nueva Esparta, Venezuela. The triangles indicate the communities where the campaign was implemented (treatment - Robledal and Boca de Pozo) and in which we only measured the traffic and behavior indicators (control - San Francisco and Boca de Río). The black polygon indicates the location of the La Chica sand pit, where Provita has implemented a surveillance and monitoring program for the nests of the Yellow-shouldered Amazon.

The four selected communities are relatively small (less than 10,000 inhabitants), easily accessible by road all year round and where conservation activities have been carried out for more than 30 years within the framework of the Brown-billed Parakeet Conservation Program led by Provita.

Boca de Pozo

Robledal

We grouped the control – treatment pairs based on the demographic and economic information we handled, but also on logistical considerations. The unemployment and poverty rate is higher in the two smaller communities Robledal and San Francisco, while Boca de Pozo and Boca de Río have greater commercial and social activity, with educational centers, a museum and a cultural center. Boca de Pozo and Robledal are neighboring towns, which facilitates logistics when implementing the activities and that is why we selected them as treatment, with Boca de Pozo being the control for Boca de Río, having a similar size and socioeconomic dynamics, while San Francisco, a small and rural community like the Robledal control.

CASE STUDY:

CASE STUDY:

Population	Cluster	Number of inhabitants	Commercial development	Partners	Parrot nests
Boca de Pozo	Treatment 1	9.944	Half	Local library; local schools; Social clubs	Yes
Boca del Río	Control 1	9.559	Half	Marine Museum; Eastern University	No
San Francisco	Control 2	3.534	Low	Local school	Yes
Robledal	Treatment 2	4.324	Low	Local library; local schools; social clubs	Yes

Robledal Library

Robledal Culture House

Marine Museum

Traffic indicators

During the reproductive season of the Yellow-shouldered Amazon, we evaluated the rate of nest poaching in two nesting sites in Macanao, the Chacaracual Community Conservation Area (ACCC) and the La Vieja ravine. Unlike La Chica, where Provita has implemented a 24/7 nest surveillance and monitoring program during the reproductive season, the ACCC and La Vieja nests are not monitored and previous reports indicate that the poaching rate reaches 100% (Briceño-Linares et al, 2011).

First, we carried out an inventory of tree cavities, following the information provided by locals and the vocalizations of the parrots. We classify the identified tree cavities into "potential" and "unsuitable" according to their potential to be a nest for the parrot. We review "potential" cavities bi-weekly for status. We used three status categories: "active" if we found evidence of parrot eggs, presence of adults, or feathers; "inactive" if without any of these evidences; "used in the past" if there was evidence of activity that occurred in another season. We also define the following categories of use: 1) "Adults" when adults were preparing the nest, eggs or young; 2) "Eggs" when eggs were found; 3) "Broods" when chicks were found; 4) "Looted"; 5) "Predated"; and 6) "Occupied by another species." We considered a nest to have been poached if we found evidence of bicycle tracks, footprints, marks, broken nest base, etc.

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In total we detected 48 cavities in both locations, 77% of them with the potential to be a nest. Of these potential nests, 19% were active, either with eggs or young. The prevalence of looting, considering potential active cavities, was only 3%. This result is consistent with the low level of self-reported ownership of parrots obtained through the questionnaires **(see step 3).**

Each column represents the variables analyzed, type of cavity, status and use. The vertical size of the blocks is proportional to the frequency in each category in variables. The combinations of categories between variables are represented by flows and their width is proportional to the frequency of these combinations.

Step 3

Behavioral indicators

To measure the impact of the campaign we used a questionnaire which we implemented in treatment (Robledal and Boca de Pozo) and control (San Francisco and Boca de Río) locations. The questionnaire was composed of the following sections:
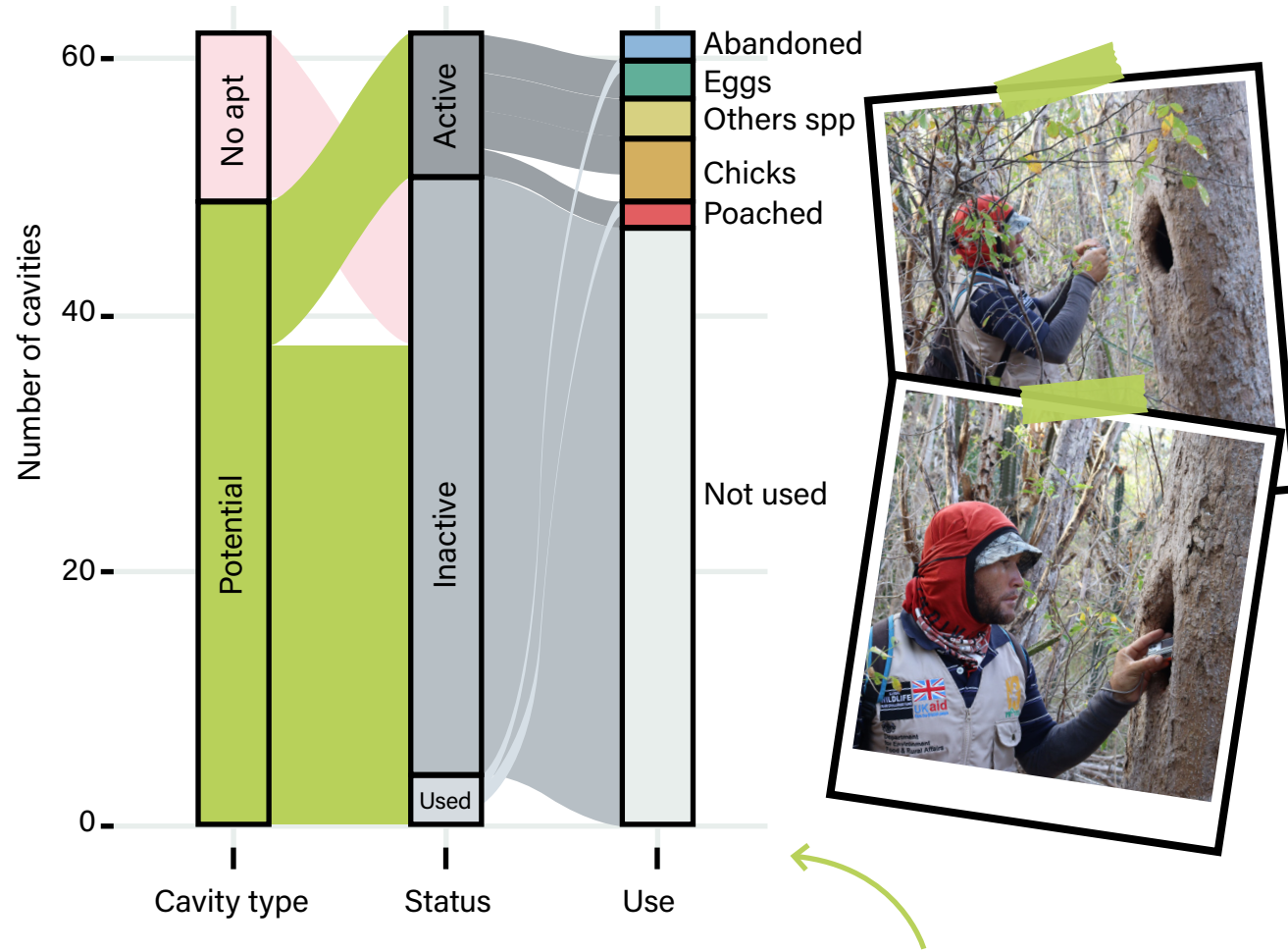
- **The socio-economic context of the participant:** Questions to define the social, demographic and economic profile of the respondent.

- **The context of parrot ownership:** Questions focused on evaluating whether the respondent has or has had parrots as pets and how it was acquired.

- **The participant's communication network:** In this section the respondent was asked to name a maximum of 4 people from whom they seek advice or opinion when thinking about acquiring a parrot. For each of these people, the participant then had to describe their relationship with them (eg friend, co-worker), how long they have known each other (e.g. 1 year, 1-2 years, 3-10 years, more than 10 years), how often they meet (e.g. once a year, twice a year, once a month), gender (e.g. male, female, non-binary) age group (e.g. young people, adults, seniors). We emphasize since their responses were anonymous, it was not necessary to provide personal information about the referred contacts, just describe your relationship with them.

- **Opinions and ratings:** In this section, statements were posed to evaluate the intention, attitudes, social norms and perceived control of the participant to adopt the alternative behavior proposed in the campaign. In this section, the respondent indicated on a 5-point scale how much they agreed (5) or disagreed (1) or how true (5) or false (1) the statements presented seemed to them.

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To calculate the sample size taking into account the predictive power, we use as a reference the number of houses in each locality, according to the local census carried out in 2021. We use the Question pro calculator (**https://www.questionpro.com/es/calculadora-de-muestra.html**), assuming a confidence level of 95% and a margin of error of 10%.

Population	Sample size (number of houses)	Sampling time (hours/ interviewed)	Implementation time (different scenarios)		
			days/4 inter-viewers	days/3 inter-viewers	days/2 inter-viewers
Boca de Pozo	93	31	2	3	4
Robledal	87	29	2	3	4
San Francisco	88	29	2	2	4
Boca de Río	91	30	2	2	4
Total	**359**	**119**	**7**	**10**	**16**

To calculate the total implementation time of the questionnaires we assume that:

One person per house is interviewed.

The time it takes for each interviewee to answer the questionnaire is 20 minutes.

The time between one interviewee and another (time to get from one house to another and present the questionnaire) is 5 minutes.

Each inter-viewer will invest 4 hours per day in admi-nistering the questionnaires.

We estimate that it would take between 7 to 16 days to reach the desired sample size. However, considering the social dynamics within communities, the response rate may be higher on weekends because people are at home and calmer. So these estimated 7 days (assuming that the survey team is four people) will be spaced over 4 weeks (2 days per week).

¿?

CASE STUDY:

GREEN SKY · CIELO VERDE

Step 4

Socialization network

To create the socialization network of the focal communities, we first create a typology of actors based on individual characteristics that are assumed not to change during the study time. In our case, the social actors are groups of individuals of different ages (young people, adults, older people) and gender (male, female, non-binary), which generates 12 types of actors. Next, we used the R package "Igraph" (Csardi & Nepusz 2006) to create an adjacency matrix that describes the flows of relationships (edges) between actors (nodes) and calculate the Centrality and Betweenness indices of each node.
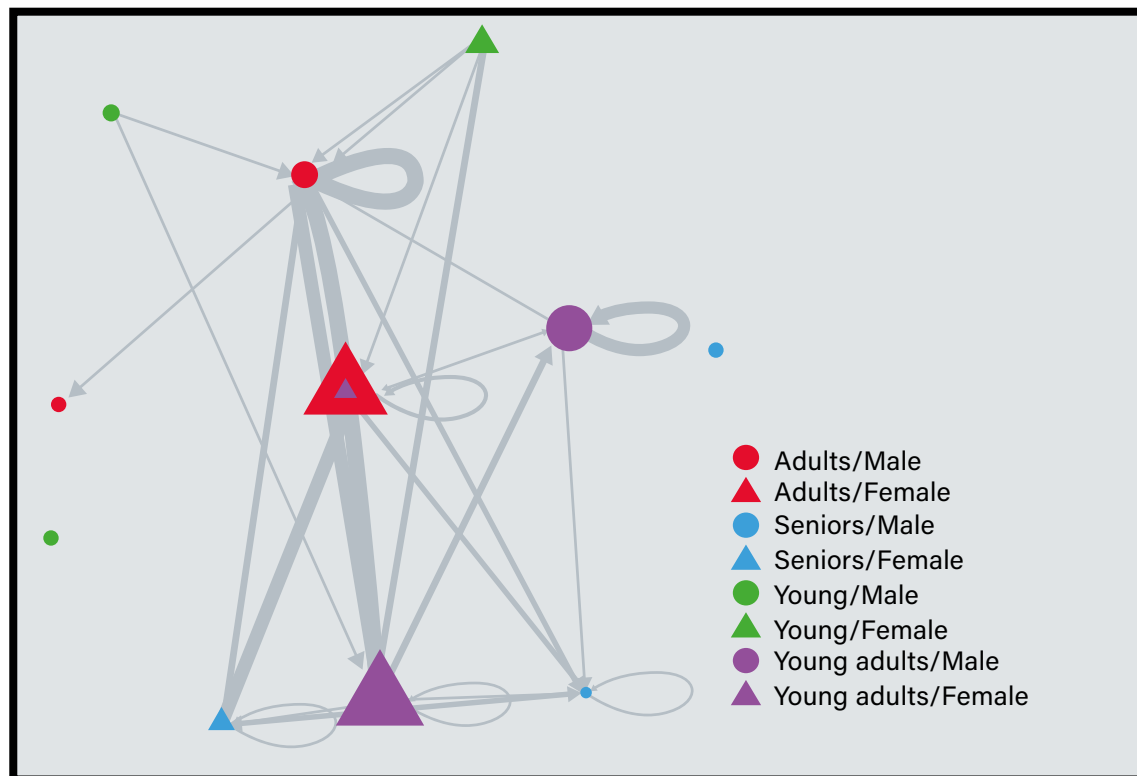
Adult women (ages 31 to 50) and young adults (ages 21 to 30) have more control over the network (more information passes through them and they decide whether to share it or not). Which suggests that involving these actors in the campaign, first as participants and then as messengers, makes it easier for the messages to reach the community. Since many of the women in these age groups are mothers, we design family-friendly activities, where parents with young children can participate without distractions.

Older adults (over 51) are well connected, particularly with adults, but are not active in sharing information. This suggests that older adults, although they are not key to spreading the campaign messages, do play an important role in social dynamics, as their opinions are valued and taken into account when deciding whether to have a parrot or not. Relying on older adults as messengers can be effective in this context, because they are people who easily connect with the audience, generate trust, and are perceived as positive moral roles.

Young people are relatively isolated, with little connection between themselves and with other actors. Although young people represent less than 20% of the audience, this group showed the highest demand intention, suggesting that "winning" this group can have a relevant impact on reducing traffic. Engaging this age group will require designing fun and exciting activities to overcome the perception that parrot-related activities are boring. One way to achieve this is to focus on providing direct experiences (e.g., bird encounters, interpretive trails) that allow youth to participate in conservation experiences while sharing with people their own age.

Legend:
- Adults/Male
- Adults/Female
- Seniors/Male
- Seniors/Female
- Young/Male
- Young/Female
- Young adults/Male
- Young adults/Female

In this graph, the size of the nodes is proportional to the level of Betweenness, while the thickness of the edges is proportional to the frequency in which a certain type of actor interacts with another type.

IN SUMMARY

- To evaluate the effectiveness of your behavior change campaign you must demonstrate that the interventions have an impact on behavior (**internal validity**), on traffic (**ecological validity**), that the effect of the interventions lasts over time (**temporal sustainability**) and how scalable they are to other locations (**geographic generability**).

- To demonstrate causality between your intervention and the observed change, it is best to adopt monitoring of behavioral, traffic and socialization indicators not only before and after the intervention, but also to establish controls and treatment in communities.

- Your monitoring should include how prevalent the adoption of the solution is within the community (**behavioral indicators**), but without forgetting to monitor the problem (**traffic indicators**). Monitoring the socialization network will allow you to fine-tune your campaign strategies (**messengers, activities, etc**.), but also understand how social dynamics affect the adoption of alternative behavior.

02
ANALYSIS OF PRE-CAMPAIGN DATA

During the implementation of a behavior change campaign, a lot of information is generated. Generally, the data generated during the campaign shares the following characteristics:

1 Quantitative data related to people, groups of people, organizations and society.

2 Traffic data (eg hunting, pet sales, possession, etc.).

3 Data that can be stored in a tabular format (for example, Microsoft Excel files, CSV files, etc.).

The source of this data is varied, it can be your own data, but you can also use information compiled by others, such as statistics kept by government entities, population censuses from other projects, poverty indices, etc. This diversity of sources generates different types of data, which entail different organization and analysis challenges.

2.1 DATA ORGANIZATION

Data organization (Data Curation in English) is the process of creating, organizing and maintaining data sets, so that they can be accessed and used by other users who require the information. Properly organizing data allows you to:

- Improve the long-term value of data by making it available for future research.

- Increase the visibility of available data, allowing different users inside and outside your organization to easily find and access the data they need.

- Increase precision and guarantee their timeliness, which to its in turn, increases confidence in decisions based on them.

Organizing your data involves several tasks:

1. **Document their origin.**
2. **Generate the metadata.**
3. **Clean the data.**
4. **Maintain and manage data.**

Let's look at each step in detail:
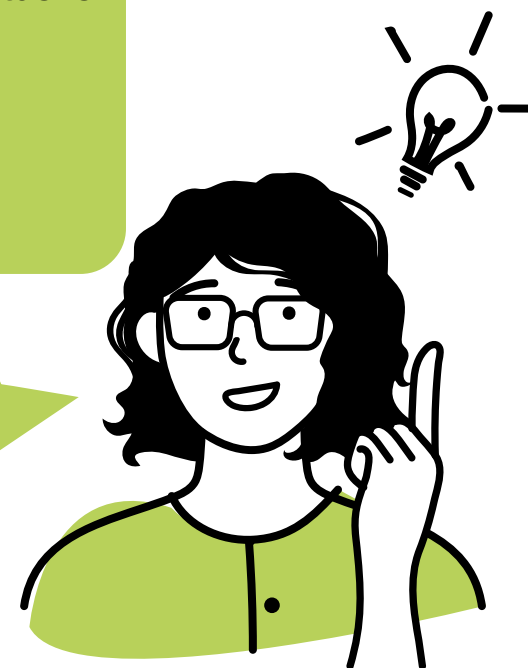
Document the origin of the data

This involves recording who generated the data, how it was obtained, or how and when it was accessed. In practice, this comes down to having the data set reference. As in the case of scientific publications, having correctly formatted references allows you to credit the authorship of the data, but also maintain traceability for your future self and other users. Some examples of how to cite data:

	Database UNEP-WCMC and IUCN ([insert year of downloaded version]) Protected Planet: The World Database on Protected Areas (WDPA), [insert month/year of downloaded version], Cambridge, UK: UNEP-WCMC and IUCN. Available in: **www.protectedplanet.net.**
	Data set Telenius A, Jonsson C (2017). Molluscs of the Gothenburg Natural History Museum (GNM). GBIF-Sweden. Presence registration **https://doi.org/10.15468/dl.f14yjv** accessed via GBIF.org on 2020-03-02.2.
	Observations González, P. Observation of sale of animals on the road. Road between the towns of El Manglillo and Boca de Pozo, Península de Macanao, Margarita Island, Nueva Esparta, Venezuela, May 1, 2019.
	Interviews González, P. In-depth interview conducted with subject DC234. October 19, 2018.

	Surveys
	González, P. Survey on perceptions of students at the Mi Vaquita school about group contributions. Boca de Pozo, Macanao Peninsula, Margarita Island, Nueva Esparta, Venezuela, May 1, 2019

② Generate the metadata

Metadata is the set of details that provides information about the data itself. Metadata allows other users to quickly understand and interpret the data so that they can re-analyze it from a different perspective or using a different conceptual framework, or integrate multiple data sets. To ensure that data is understood and interpreted correctly, it is essential that metadata is described in consistent language and with clear semantics. That is, there must be consistent and clear control of vocabulary and meaning.

Different people use different variable names for the same concept and different symbols to represent the same value, or different units of measurement. For example:

Gender and sex refer to the same concept, and the values can be coded as "male/female", "0/1", "1/0", "M/F" or "m/f".	An example of a metadata that identifies the variable and provides semantics for the possible values would be: We define gender as a categorical variable that describes the gender of the interviewee. We define four categories: "F" female; "M" male, "NB" non-binary, "NR" I prefer not to answer.
Age categories can cover different age ranges. If you use the categories "Child", "Young", "Adult", "Elderly", another person who is going to use your data will not know if "child" refers to people aged 0 – 17 years or if it encompasses a more closed scale of ages between 7 – 13 years.	A metadata that minimizes ambiguity in categorical variables that cover a range of values would be: We define age as a categorical variable that describes the age range of the interviewee. We define the following levels or age groups: "Children" people between 7 – 16 years of age; "Young people" people between 17 – 25 years old; "Adults" people between 26 – 55 years old; "Seniors" people 56 years of age or older. Our study does not include people under 7 years of age.
The scales used to measure perceptions or beliefs can vary between studies, with some measuring responses on a 5-level Likert scale and another with a 7-level scale.	In this case, it is important to record the question or statement used, as well as the response levels and coding. Statement: "I would like to have a pet parrot this year." Responses were coded on a 5-level Likert scale according to: Not at all likely (1); Unlikely (2); I'm not sure (3); Probable (4); Very likely (5).

③ Clean the data

At this stage, the goal is to correct inconsistencies, anomalies, and errors, such as invalid entries, missing values, duplicate records, and variations in spelling. It is usually the most time-consuming step. Some recommendations:

- To reduce inconsistency in data entry you can use predetermined categories. In most analysis packages, inconsistent categories are taken as valid categories and if you record "Female", "female", "feminine" instead of a single category, you will have 3.

- Avoid leaving blank boxes within the data sheet. It is difficult to distinguish whether a blank box means that the data was not recorded for a given variable and record, or simply that the person transcribing forgot to record the information.

- Assign simple and informative codes for variables. For example, if your variable is called "Attitudes towards tradition" a short and informative code could be "act_trd" instead of "actitudes_tradicion".

- Avoid using accents and special characters (including the "ñ") in the data sheet.

4 Maintain and manage data

A data management plan describes how to manage your data during and after a project, including how it will be entered, shared and preserved. The first thing is to decide where to host your data.

Will you use a data sheet or develop a database on a specific platform?

Both in a data sheet (e.g. Microsoft Excel and Google Sheets) and in a database table, information is stored in a structured way in rows and columns. Therefore, it is quite easy to import a data sheet into a database table. However, the information that is in a data sheet is not related to other data sheets, and they do not have sophisticated tools

for reporting. In this sense, data sheets are appropriate for organizing small, simple data sets, while databases are more suitable for handling larger data sets with complex relationships.

Will you keep your data on a computer or host it in a remote cloud repository?

Using remote repositories will allow you to access information from different places and devices, in addition to the great advantage that you do not have the risk of losing data if your local computer is damaged.

When you do data entry and analysis as a team

how do you ensure that everyone is working on the most up-to-date and complete version of the data sheet?

That is, you must have a version control record. Some recommendations when using remote data repositories:

- Use open licenses (CC0 and CC-BY, or their equivalents). However, if your data is sensitive (for example, risk of identification of participants, information on harvesting locations for highly endangered species, etc.), it is best to share the data under Data Use Agreements (DUA).

- Provides unique identifiers and stable(e.g. DOI) for each data set.

- You can explore Data Cite's Repository Finderand FAIRsharing registry to search for the appropriate repository for your data.

Analysis of pre-campaign data

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2.2 HOW TO ANALYZE DATA

A large portion of the data generated during the pre-campaign is Likert-type data.

Likert statements are used to measure respondents' perceptions toward a particular question or statement. Typically, responses are coded on an **ordinal scale** as follows:

☹	1 = Strongly disagree	1 = Completely false
☹	2 = Disagree	2 = False
😐	3 = Neutral	3 = I'm not sure (a)
☺	4 = Agree	4 = True
😀	5 = Strongly agree	5 = Totally true

The responses to Likert statements are **ordinal data**, that is, we can only say that one score is higher than another, but we cannot determine the distance between the points. What does this mean for the analysis? With Likert scale data, we cannot use the mean as a measure of central tendency, as it does not have a clear meaning. For example, what is the average between 'Strongly Agree' and 'Disagree'? (Mangiafico 2016).

In this case, the most appropriate measure is the mode, which represents the most frequent responses, or the median. In any case, the best way to represent the results is to show the distribution of the responses.

There are several ways you can represent these results.

Analysis of pre-campaign data

Using a bar graph:
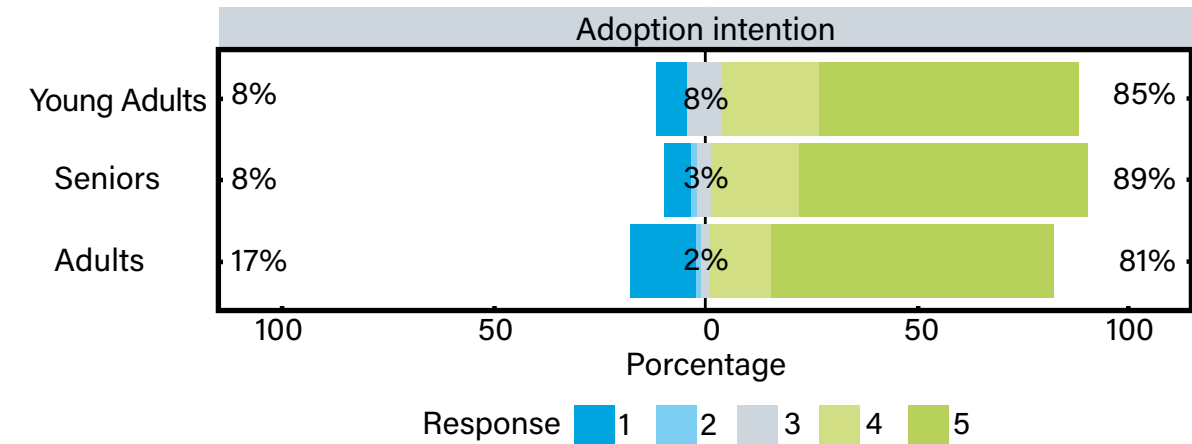
Or in a table, represent the percentage that agrees, disagrees, etc.:

TCP component	Statement	Sample size	Likert (response percentage)				
			1	2	3	4	5
Intention	I would adopt breeding practices that do not require the use of wild Red Siskin year.	175	11.1	5.6	2.8	18.1	62.5
Attitude	I would like to use breeding practices that exclude wild Red Siskin to increase my prestige as a breeder.	165	0	2.8	6.9	22.2	68.1
Rule	For me, it is important to be part of large, productive breeding societies that avoid the use of wild Red Siskin in breeding practice.	90	0	11.1	20.8	31.9	68.1

Representing constructs

A construct, in the context of psychology and social research, refers to an abstract variable or theoretical concept that cannot be directly measured, but is used to explain or represent observable

phenomena. Constructs are concepts that researchers use to describe characteristics, attributes, or properties of the people, objects, or events under study (Boateng et al. 2018).

An example of a construct is attitudes. Attitudes refer to evaluations, opinions, beliefs or affective predispositions towards objects, people, ideas or situations. Although attitudes cannot be measured directly, they are abstract concepts that influence people's behavior. The same goes for the other components of the Theory of Planned Behavior, social norms and perceived control are constructs.

When we work with several hypotheses about the motivations for a behavior, we usually create several statements to represent the same construct. Or sometimes it happens, on the contrary, we have several statements that a priori we believe measure the same thing, but the response patterns indicate that they measure different things.

Verifying that we are correctly grouping the statements that measure the same construct is an essential step if you want to do more in-depth analyses, such as evaluating hypotheses:

Are attitudes towards the adoption of alternative behavior greater in young people than in adults?

Or are they different in the treatment and control communities?

Or if you want to evaluate the relationship between constructs:

Are adoption intentions greater in people with a perception of social regulations?

Returning to the example of Nesting Future, to create the construct "perceived social norm", we use several statements that measure different motivations (e.g. recognition, collaboration, self-doubt) to adopt or not adopt sustainable breeding practices in the breeding of the Red Siskin. A priori, we assume that these motivations work independently and we represent them as follows:
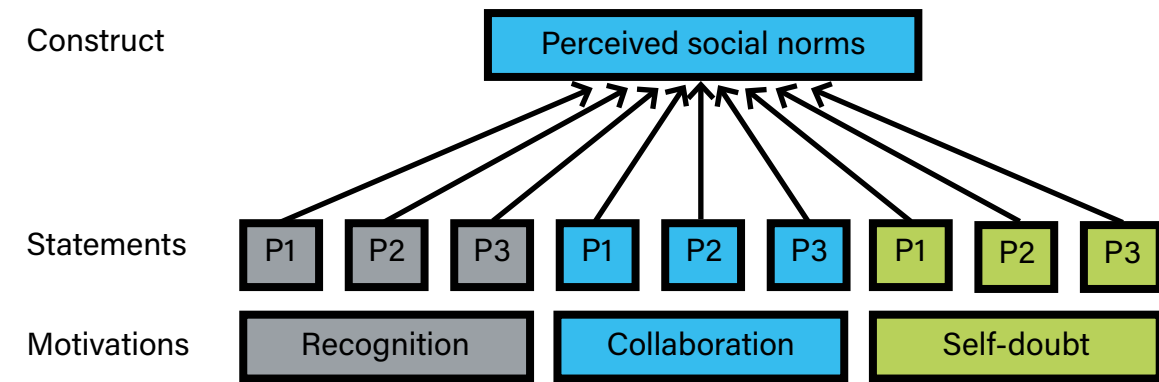
However, some motivations may be related. For example, a novice breeder, with a great sense of insecurity (self-doubt), may have few connections with other breeders or with breeding societies (collaboration) and, therefore, believe they have less prestige (recognition). So, instead of these motivations being independent, it is possible to infer causal relationships, which we can represent as follows:
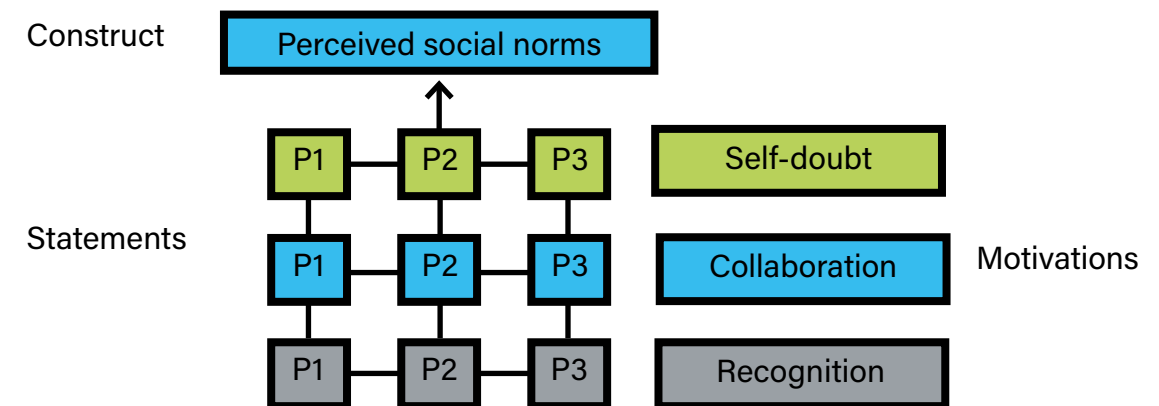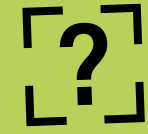
? How do we know if the relationship between motivations is independent or linked?

One way is to perform a factor analysis, which allows you to systematically compare a grouping of statements made a priori and generate an alternative grouping based on correlations and the variance of the responses (Cohen 1988).

The results of a factor analysis can be displayed so that statements that reflect the same construct are grouped together.

In this example, 16 statements were made (E1, E2,… E16) to evaluate three constructs: intelligence, attitudes and level of extroversion.
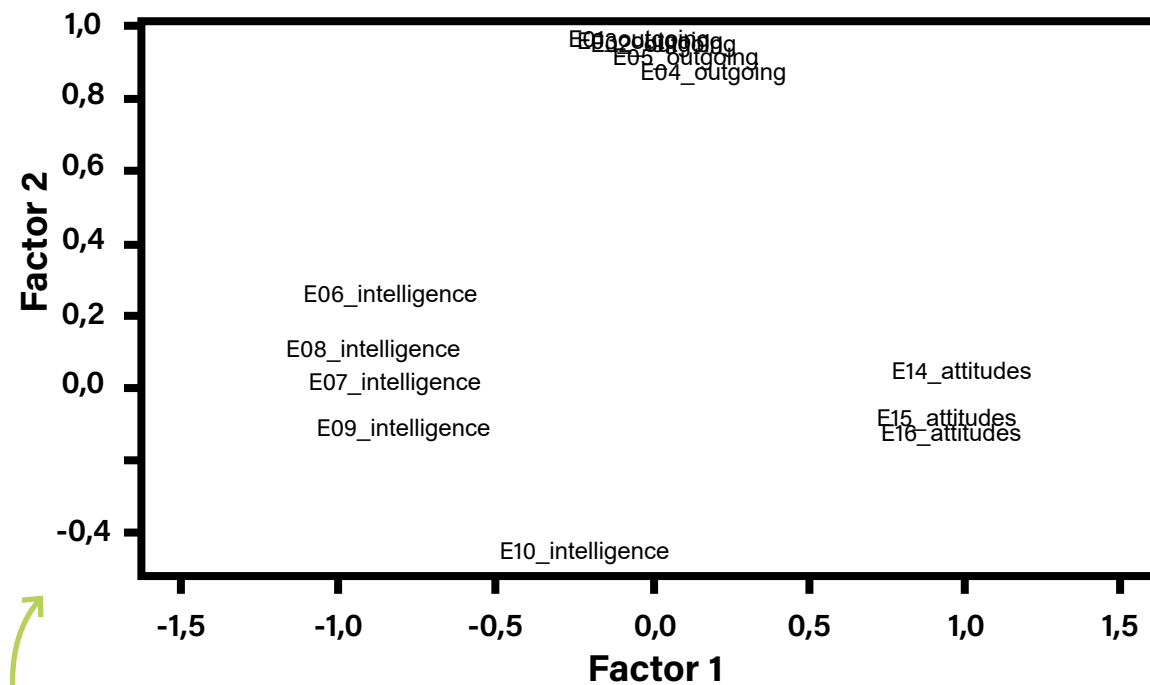
This graph shows that the statements form groups, indicating that the statements do a fairly good job of reflecting the constructs they were designed to reflect. The only problematic statement is number 10 (E10_intelligence), which was intended to evaluate the intelligence of the respondents, but apparently does not correlate strongly with the other statements on this same topic. In such cases, it makes sense to remove that statement (in this case Q10) from the survey as it does not seem to reflect what we wanted.

Analysis of pre-campaign data

Evaluating the internal consistency of the constructs

As we mentioned earlier, several statements are usually used to address the same construct. The responses to these related statements must be internally consistent, that is, the responses must be significantly and positively correlated. (Boateng et al. 2018).

There are several indices to measure the internal consistency of the statements that make up a construct:

A. Cronbach's alpha

Measures how strongly the answers to a set of questions correlate(Piedmont 2014). Cronbach's alpha ranges from 1 to 0. If the values are(Piedmont 2014):

> 0.9 indicates an excellent level of consistency (questions address the same concept)
0.9 - 0.8 a level **well**.
0.8 - 0.7 a level **acceptable**.
0.7 - 0.6 a level **reasonable**.
0.6 - 0.5 is a level **poor** the questions are not internally consistent and do not address the same concept. < 0.5 suggests an unacceptable level.

Although Cronbach's alpha is one of the most widely used reliability measures, probably because it is conceptually simple and can be easily calculated, it has several limitations.(Sijtsma 2009):

- Underestimates the reliability of a test.

- Overestimates the saturation of the first factor.

- Cronbach's alpha assumes that the scale statements are repeated measurements, an assumption that is often violated.

B. Guttman's Lambda 6 (G6)

Is an alternative reliability measure that takes into account the amount of variance per statement, and therefore works best when dealing with irregular data(Guttman 1945). Unlike Cronbach's alpha, G6 is primarily used to evaluate the reliability of individual test statements. This means that it provides information about how well the individual questions reflect the concept of interest.

C. Omega (ω).

Hierarchical ω provides more appropriate estimates of overall factor saturation, and total ω thas been shown to estimate reliability more reliably than Cronbach's alpha or G6 (Revelle & Zinbarg 2009).

There are several tools that you can use to estimate these indicators:

Platform	Indicator	Package/Function	Helpful Links
R	Cronbach, G6, ω	psych	https://n9.cl/i438i https://n9.cl/u5xh6
DataLab	Cronbach	Cronbach	https://n9.cl/ct36c
Statology	Cronbach	Cronbach	https://n9.cl/cvlgm
Excel	Cronbach	CRONALPHA()	https://n9.cl/g6c42

Basic Analysis for Likert Scale Data

Once you are clear about what your variables or constructs are, you can now do deeper analyzes of how your dependent variable (e.g. demand intention) relates to other contextual variables (e.g. age, gender, treatment/control, etc.) or with other constructs (e.g. attitudes, perceived control, etc.).

If you want to test hypotheses, you must first think carefully about the questions you are trying to answer.

[?] Do you want to evaluate if demand intentions are different between young people and older adults?

[?] Or between countries or locations? Or see if there are differences in the treatment and control groups?

Once you have identified your hypotheses, you will have a dependent variable, which is the one you measure (eg intention), and your independent variables, which are the ones that define your groups (eg age, country, gender, group, etc.).

Variance analysis techniques include:

- Mann-Whitney test

- Kruskal-Wallis test

Another alternative is to combine the data into, for example, two nominal categories, 'Agree/True' and 'Disagree/False', and then perform a Chi-square test.

If you want to evaluate relationships between your dependent variable that is on a Likert scale (e.g. intentions) and independent variables that were also measured on a Likert scale (e.g. attitudes, control norms), you can perform one of the following analyses:

- Ordered logistic regression

- Multinomial logistic regression

Alternatively, you can combine the levels of the dependent variable at two levels, and perform a binomial logistic regression.

You should not use linear regression if your data is on an ordinal scale, since it requires a continuous dependent variable.

CASE STUDY:

Pre-campaign data analysis for Nesting Future

NESTING FUTURE · ANIDANDO FUTURO

Step 1

Organizing the data

For Nesting Future, we use an online questionnaire implemented on the SurveyMonkey platform, to collect information on behavioral and traffic indicators, prior to the implementation of the campaign.

To facilitate the interaction with the team in charge of integrating the questionnaires in Spanish and Portuguese, and facilitate the integration of the SurveyMonkey output file (.csv), with the platform we use to analyze the data (R core group), we decided to work with a data sheet.

The online form compiled the responses into a table that could then be exported into a comma-separated file.

But it had no information about what each column meant (no metadata) and some columns were not identified.

The column names were long, with spaces and accents.

The file generated by the platform we used added columns with non-relevant information that made reading the file heavy and confusing.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	respondent_id	collector_id	date_created	date_modified	ip_address	email_addre	first_name	last_name	custom_1	Antes de iniciar l	Gênero	Otro	Edad	Grado de instrucción.	País de residencia.	Otro (especifique)	Ciudad de	Estatus laboral.
2										Response	Response		Response	Response	Response		Open-End	Response Otro
3	13453752353	415515384	2022-04-24 07:22:03	2022-04-24 07:27:06	186.167...198					Aceito	Masculino		51–60	Universidade	Brasil		Manaos	Empregado (a)
4	13446694064	415515384	2022-04-15 22:32:03	2022-04-15 22:48:12	186.250...248					Aceito	Masculino		21–30	Secundário completo	Brasil		Praia de Co	Empregado (a)
5	13454371947	414689816	2022-04-25 07:01:49	2022-04-25 07:08:12	186.167...9.72					Acepto	Masculino		41–50	Universitaria	Venezuela		Anaco	Empleado (a)
6	13453837436	414689816	2022-04-24 11:02:27	2022-04-24 11:08:42	186.167...48.10					Acepto	Masculino		21–30	Técnica	Venezuela		Maturin	Empleado (a)
7	13453835148	414689816	2022-04-24 10:58:02	2022-04-24 11:01:15	186.167.242.69					Acepto	Masculino		31–40	Técnica	Venezuela		Yaritagua	Trabajo casual
8	13453787300	414689816	2022-04-24 09:01:45	2022-04-24 09:05:44	186.16...242.69					Acepto	Masculino		21–30	Secundaria completa	Venezuela		Caracas	Trabajo casual
9	13453754264	414689816	2022-04-24 07:28:03	2022-04-24 07:31:46	186...242.217					Acepto	Masculino		>61	Universitaria	Venezuela		Caracas	Jubilado (a)
10	13449855262	414689816	2022-04-19 22:21:09	2022-04-19 22:22:51	200.93.47.187					Acepto	Femenino		31–40	Universitaria	Venezuela		Caracas	Empleado (a)
11	13448573768	414689816								Acepto	Femenino		21–30	Universitaria	Venezuela		maracaibo	Desempleado (a)
12	13448261007	414689816								Acepto	Femenino		41–50	Universitaria	Venezuela		Maturin	Desempleado (a)
13	13448161151	414689816								Acepto	Masculino		41–50	Secundaria completa	Brasil		Casa	Trabajo casual
14	13440185245	414689816								Acepto	Masculino		31–40	Técnica	Venezuela		Caracas	Empleado (a)
15	13438492916	414689816								Acepto	Masculino		51–60	Universitaria	Venezuela		Marín	Empleado (a)
16	13437851155	414689816								Acepto	Masculino		31–40	Universitaria	Venezuela		Duaca	Empleado (a)
17	13437121400	414689816	2022-04-07 06:52:57	2022-04-07 06:57:24	186.185.178.102					Acepto	Masculino		51–60	Universitaria	Venezuela		Carora	Empleado (a)
18	13437115799	414689816	2022-04-07 06:46:07	2022-04-07 06:50:42	186.167.243.52					Acepto	Masculino		41–50	Técnica	Venezuela		Maracay	Trabajo casual
19	13433839562	414689816	2022-04-04 23:00:26	2022-04-05 00:58:06	186.143.197.174					Acepto	Femenino		51–60	Secundaria completa	Venezuela	Argentina	Buenos Air	Jubilado (a)
20	13429636085	414689816	2022-04-01 02:58:56	2022-04-01 03:13:24	88.20.95.185					Acepto	Masculino		>61	Secundaria completa	España		Palma de N	Jubilado (a)
21	13428243464	414689816	2022-03-31 08:48:44	2022-03-31 08:53:00	188.84.133.11					Acepto	Masculino		41–50	Primaria completa	España		Málaga	Jubilado (a)
22	13426291567	414689816	2022-03-30 06:15:54	2022-03-30 06:22:41	186.167.244.70					Acepto	Masculino		51–60	Técnica	Venezuela		San Diego	Empleado (a)
23	13425195643	414689816	2022-03-29 13:49:57	2022-03-29 14:03:12	95.63.71.99					Acepto	Masculino		>61	Secundaria completa	España		Sant Joan c	Jubilado (a)
24	13424806300	414689816	2022-03-29 10:36:56	2022-03-29 10:42:38	186.185.230.189					Acepto	Masculino		31–40	Técnica	Venezuela		Tamaca	Empleado (a)

CASE STUDY:

NESTING ANIDANDO
FUTURE FUTURO

We leave only the relevant information and generate the metadata for each field describing the code used, the type of information recorded (numeric, factor, character), the description of the question and answer options given and an example of how it looks on the sheet of data:

Code	Type	Description	Example
respondent_id	numeric	Unique numerical alpha code that describes the identity of each participant anonymously. The code consists of the prefix SPA/POR to describe the original language of the questionnaire and a unique consecutive number	SPA0001 SPA0002 POR0001 POR0002
date_created	date	Date and time the responses were sent. Date in dd/mm/yy format. Time in 24h format	11/3/2022 21:37
gender	character	Gender of the interviewee. 3 categories are defined: "Male", "Female", "Non-binary"	Male
age	character	Age range of the interviewee. The following categories are defined: "18-20", "21-30", "31-40", "41-50"; "51-60", ">61"	31-40
country	character	Country of residence of the interviewee. The following categories are defined: "Venezuela", "Spain", "Portugal", "Brazil", "Other"	Venezuela

Code	Type	Description	Example
experience	character	What do you consider to be your level of experience in breeding red siskins? The following response categories are defined: "Amateur", "In training", "Expert"	Expert
int_tenencia2	character	Likert scale statement: "I would like to get a wild Red siskin for my aviary this year." The following response categories were defined: "1. Not at all probable", "2. Unlikely", "3. I'm not sure", "4. Probable", "5. Very likely"	1. Not at all likely
int_adopt2	character	Statement on a Likert scale: "I would adopt breeding practices that do not require the use of siskins." The following response categories were defined: "1. Not at all probable", "2. Unlikely", "3. I'm not sure", "4. Probable", "5. Very likely"	5. Very likely

¿?

CASE STUDY:

To generate a consistent and clean file we had to perform several tasks. Between them:

- Unify the languages in the answers since some were in Portuguese and others in Spanish.
- Sort the categorical variables. Some categorical variables must be ordered to reflect a gradient, for example, age group (18–20 < 21-30 etc.);level of experience in breeding (Novice < In training < Expert).
- Fill in the empty fields with logical answers. For example, people who answered "Never" to the question if they have red siskins, did not answer the question "How many Red Siskin do you currently have?" We must fill those empty fields with "0".
- Reclassify the character-type scales in the statements that measure motivations and intentions and the questions about frequency (e.g. "How often do you see that person?") so that they reflect the ordinal Likert scale of 1 to 5.

Once we had the data clean and documented, we backed up the data sheet (.csv) to GoogleDrive and to a GitHub repository created for the project.

Step 2

Exploring the data

We conducted the main exploratory analyzes to evaluate whether there were differences in adoption intention between countries and age groups. We use the following statement to evaluate intentions to acquire wild Red Siskin:

'This year I would like to have a wild Red Siskin in my aviary.'

Participants responded on a Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (5), with a neutral response 'I'm not sure' (3).

I would like to have a wild-caught Red Siskin in my aviary this year

Venezuela	92%	0%	8%
Portugal	95%	5%	0%
España	92%	3%	6%
Brasil	85%	4%	12%

I would like to have a wild-caught Red Siskin in my aviary this year

Young adults	73%	0%	27%
Seniors	86%	3%	11%
Adults	93%	3%	4%

Response: 1 2 3 4 5
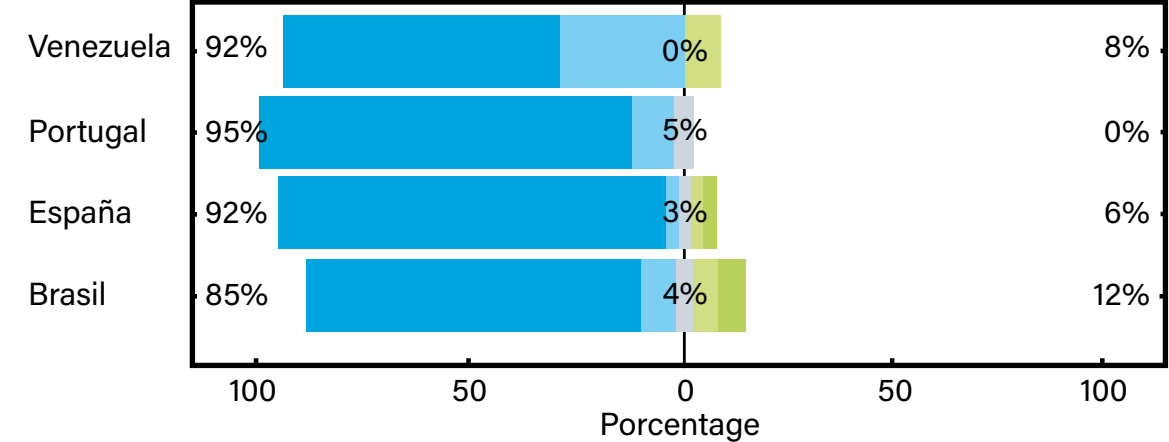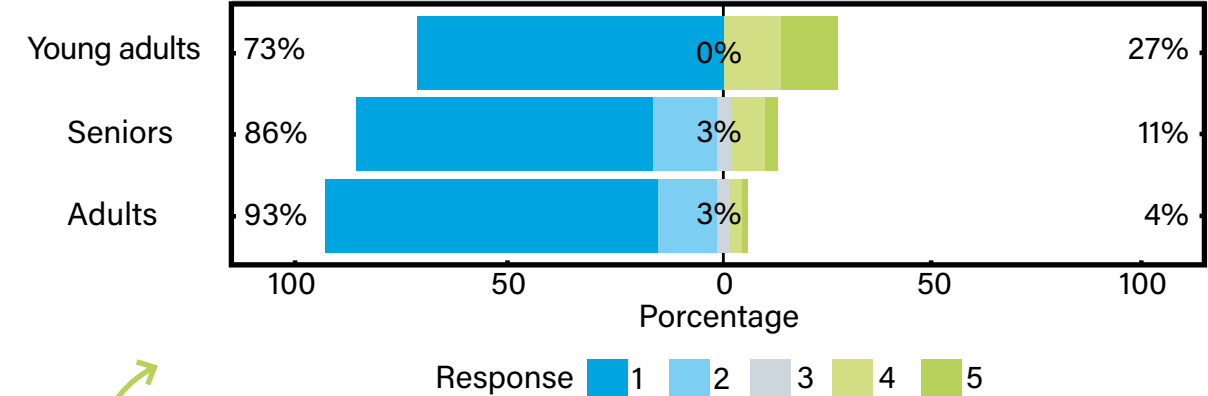
Breeders' intentions to demand wild-caught red siskins disaggregated by: (a) country and (b) age groups. Young adults group people between 18 – 30 years old; Adults ages 31 – 50; Older people, people >51 years old.

Overall, the intention to purchase wild Red Siskin among those interviewed was low, with 63 - 89% indicating that they were 'very unlikely' to demand wild Red Siskin.

The intention to acquire wild Red Siskin was higher in Venezuelan (8%) and Brazilian (12%) breeders, suggesting that South American breeders could share similar social and economic contexts that drive demand intentions.

We found significant differences between age groups (= 26.765, p < 0.01), with young adults (18 - 25 years) showing more demand intention than adults (31 - 40 years) or older people (> 61).x^2

CASE STUDY:

NESTING **FUTURE** ANIDANDO **FUTURO**

Step 3

Generating constructs

1

We selected the four principal components (PC) with an eigenvalue >1, which explained 63% of the variance

4

To generate the constructs we did another PCA only with the statements with a loading >0.4

3

Statements loading < 0.4 on any scale and those with cross-loadings (that did not appear to load uniquely on an individual component) were eliminated

2

The values indicate the load of each statement within each CP

	CP1	CP4	CP2	CP3
Eigenvalue	6.23	1.63	1.19	1.04
Varianza explicada acumulada	0.19	0.39	0.53	0.63
act_reconocimiento	0.24	0.15	0.53	0.17
act_colaboracion1	0.01	0.82	-0.05	0.13
act_colaboracion2	0.35	0.57	0.2	0.06
act_autoduda1	-0.02	-0.06	-0.82	-0.03
act_autoduda2	0.47	-0.22	-0.49	0.31
norm_reconocimiento1	0.1	0.74	0.19	0.22
norm_reconocimiento2	0.15	0.25	0.37	0.47
norm_colaboracion1	0.24	0.58	0.49	0.02
norm_colaboracion2	0.53	0.52	0.34	0.14
norm_autoduda1	0.44	0.5	0.4	-0.09
norm_autoduda2	0.54	0.2	0.41	0.35
moral1	0.75	0.37	0.17	0.13
moral2	0.62	0.54	0.2	0.18
control_reconocimiento	0.83	0.04	-0.02	-0.03
control_colaboracion	0.45	0.25	0.29	0.57
control_autoduda	-0.04	0.08	-0.09	0.84

Once the constructs were generated, we verified the correlation and internal consistency between the scales using Cronbach's alpha.

Construct	Description	Statement code	Burden	Explained variance (%)	Cronbach's alpha
Moral	Standards towards sustainable breeding practices and their importance in the context of Red Siskin Conservation	att_autoduda2	0.36	52	0.66
		norm_autoduda2	0.77		
		moral1	0.85		
		control_reconocimiento	0.79		
Attitudes	Attitude and norms towards collaboration between breeders, recognition of prestigious breeders and adoption of sustainable breeding practices	act_colaboracion1	0.73	58	0.65
		act_colaboracion2	0.72		
		norm_reconocimiento1	0.81		
		norm_colaboracion1	0.78		
Social prestige	Perception of the prestige of sustainable practices in breeding	act_reconocimiento	0.65	55	0.57
		norm_colaboracion1	0.79		
		norm_autoduda2	0.79		
Social conformity	Compliance with the breeder's recommendations	control_autoduda	0.83	70	0.72
		control_colaboracion	0.83		

IN SUMMARY

- Keeping your data documented, systematic and organized will allow you to increase its visibility and usefulness, for you and other users.

- A large portion of the data generated during the pre-campaign is Likert-type ordinal data. To describe this data you cannot use the mean as a measure of central tendency, since it does not have a clear meaning; For example, what is the average between 'Strongly Agree' and 'Disagree'?

- Generally, we use several statements to represent the same construct (e.g intentions, attitudes, perceived norms, etc.). Verifying that we are correctly grouping the statements that measure the same construct is an essential step if you want to evaluate hypotheses or explore relationships between variables.

- Once your construct has been generated, you must verify its internal consistency, for which you can use different indices: Cronbach's alpha, G6 and Omega.

- Basic analyzes include hypothesis testing (eg, do adoption intentions vary between young and older adults?) and relationships between variables (e.g, are adoption intentions higher in people who have positive attitudes toward alternative behavior?).

03

IDENTIFYING AND PRIORITIZING ACTIVITIES

¿?

3.1 SELECTING STRATEGIES

As a first instance, the intervention strategies and core activities must be coupled with the Theory of Change based on behavior that you developed previously (see **tool 2**).

Impact

Reduction of illegal wildlife trafficking

Demand reduction

Results

Intention

Knowledge

Attitudes

Social norm

Perceived control

S1 Supposed 1

S2 Supposed 2

S3 Supposed 3

Sn Supposed n

Products

Strategic indicators

Communication indicators

Implementation indicators

Actions

Core activities

Communication activities

Strategies

Material incentives

Rules and regulations

Provide information

Selection architecture

Emotional appeal

Social influence

Your intervention strategies can combine different types of levers of behavior change. (Bujold et al. 2020; Williamson et al. 2020; Rare 2023):

Material incentives
Changing perceptions of cost, time and effort required to adopt the alternative behavior.

Rules and regulations
Enacting rules that restrict or promote specific behavior.

Provide information
Providing information about what the alternative behavior is, its benefits and how to adopt it.

Decision architecture
Changing the context in which decisions are made.

Appealing to emotions
Using emotional messages to influence change.

Social influence
Taking advantage of the behavior, beliefs and expectations of others.

Identifying and prioritizing activities

What combination of levers is most appropriate?

This will depend, to a large extent, on the technical and logistical capabilities of your organization and the support that your partners can provide you to implement these strategies in the field. For example,

If your team has someone with narrative skills, empathy, and a passion for connecting with people,

then **Appealing to Emotions** is a good option to implement in your campaign.

If you have strong ties in the communities you are intervening in and you have a relationship of respect, trust and collaboration with local leaders,

then using **Social Influence** can be an effective strategy in your campaign.

If the legal framework is clear and robust in the country/locality where you work and you also have the collaboration of law enforcement agencies,

then promoting **Rules and Regulations** can help you reinforce the desired behavior and increase barriers to it. behavior you want to change.

If you have a network of enthusiastic local partners, covering different sectors such as private companies, education and government entities, then you can rely on them to generate different **material incentives**

and change the **architecture of decisions**, from facilitating transportation, providing headquarters and catering service for events, sponsoring awards, facilitating their communication platforms to spread the message, etc.

Let's look in detail at each strategy to drive behavioral changes:

Material incentives

The cost in terms of not only monetary terms, but also the time and effort required, is an important criterion for making the decision to adopt or not adopt a behavior. Alternatively, the short-term, personal benefit of adopting a behavior is an incentive that favors adoption. When using this strategy, keep in mind (Rare 2023):

Make easy:	■ Make the desired behavior more convenient and accessible to perform (e.g. remove barriers, provide substitutes).
	■ Make the unwanted behavior more difficult to perform (e.g. create barriers).
Give rewards or punishments:	■ Make the desired behavior more convenient and accessible to perform (e.g. remove barriers, provide substitutes).
	■ Make the unwanted behavior more difficult to perform (e.g. create barriers).

Rules and regulations

Our lives are governed by informal and formal systems, which maintain order and indicate what is right and what is wrong. However, depending on the context, people respond differently to norms, so it is important that before using this strategy, you know how your audience perceives and understands different norms. Another important point to keep in mind

when using this strategy is that bans can be very difficult to monitor or enforce. There are basically two approaches you can apply (Rare 2023):

Force behavior:	▪ Enacts laws and regulations that require or encourage behavior wanted.
Prohibit the behavior:	▪ Enact prohibitions that limit (e.g. hunting quotas) or prohibit certain behaviors (e.g. fines).

Provide information

This strategy is based on the principle that information provides a base of knowledge, which helps us identify and learn about new behavior. That is, we can make informed decisions. Some principles to apply this strategy(Rare 2023):

Provide clear instructions:	▪ Offers training on alternative behavior (e.g. how to identify if an animal comes from sustainable captive breeding, how to detect if the material used to make clothing, accessories, is from a sustainable source).
	▪ Provide support materials that give instructions on how to perform the alternative behavior (e.g. decalogue of the responsible breeder, guide to animals and plants that you should not buy in markets).
Create awareness and understanding:	▪ Hold forums, meetings or informative materials that describe alternative behavior, its importance and benefits.
	▪ Provides information about alternative behavior in a clear, concrete and adapted to your audience.

Decision architecture

This strategy uses the principle that the way we prompt, structure, or frame the available options has a strong influence on behavior. This is not about eliminating options or manipulating people, but about suppor-

ting the goals that people already have, as much as possible. Not only is manipulating options unethical, but people are very sensitive to manipulation and may respond negatively if they feel that someone is trying to control their actions.

Some principles to use this strategy (Rare 2023):

Direct attention:	▪ Make fallback behavior the default option.
	▪ Increases attention to the alternative behavior, making it stand out.
Simplify messages and decisions:	▪ Simplify complex decisions to focus on key information or actions.
	▪ Provide shortcuts for behaviors with many steps or options.
Remember the message in a timely and frequent manner:	▪ Focus on moments of transition and habit formation.
	▪ Provides reminders and encouragement about alternative behavior.
Facilitates goal setting and planning:	▪ Provides support to develop a plan to achieve the alternative behavior.
	▪ Use commitments to bind or limit future decisions.

Appealing to emotions
Using emotional messages to influence change.

This strategy is based on the notion that many of our decisions are driven by how an action makes us feel or is related to personal interests and concerns. Some examples of how you can use emotions depending on the context(Rare 2023):

Pride:	▪ Use it to motivate people to show others what they have done when they have engaged in reputation-enhancing behaviors.

Hope:	▪ Use it to motivate people to start a behavior when they can achieve a desired outcome while facing a threat.
Fear:	▪ Use it to motivate people to avoid risks when they experience uncertainty or an immediate threat.
Anger:	▪ Use it to motivate people to confront others when they experience or witness something that goes against their values.
Interest:	▪ Use it to motivate people to search for information when something is new and complex.
Shame:	▪ Use it to motivate people to avoid a socially undesirable action when others may discover it.

Social influence

Taking advantage of the behavior, beliefs and expectations of others.

This strategy is based on the fact that humans are social beings, therefore, our decisions depend largely on the people around us. This includes our willingness to cooperate, follow rules, and change as a result of social pressure or following the example of those we like and admire. In the **tool 3** We give you several recommendations to apply social influence, but here it is good to remember that (Rare 2023):

Make participation observable:	▪ Publicly disclose who has participated in the alternative behavior.
	▪ It provides a way for people to show that they are carrying out alternative behavior.
Make it the perceived norm:	▪ Share that there are currently people who are carrying out the alternative behavior.
	▪ Highlights the possibility of social sanctions for carrying out the unwanted behavior.
	▪ Create conversations around beliefs and expectations about alternative behavior.

Make it the perceived norm:	▪ Use credible and trusted messengers to carry out the alternative behavior.
	▪ Promotessuccessful case with alternative behavior.
Eliminate excuses for not engaging in the behavior:	▪ Encourage public commitments or promises to encourage alternative behavior.
	▪ Provide visible indicators that show support for alternative behavior (e.g., badges, badges, hats, awards).

3.2 PRINCIPLES FOR DESIGNING ACTIVITIES FOR THE CAMPAIGN

Once you have selected the battery of strategies that you will use to drive change, the next step is to define the specific activities that you will implement. The activities in a behavior change campaign can be grouped into:

A. Core activities

Are the activities that will allow you to interact directly with the audience and can be in person or virtual, and include training activities to create capacities (workshops, talks), recreational activities to promote interpersonal communication (playful games) and experiential activities that allow participants experience firsthand what it would be like to adopt the alternative behavior.

B. Communication activities

Will help you foster new social norms, inform campaign objectives, inform about the benefits of adopting the alternative behavior, and

increase the resonance of the alternative behavior within the audience. These activities include social media posts, traditional media tours (radio, press, television), banners and murals, leaflet distribution, talks, forums, etc.

In the **tool 3** We discuss in detail the strategies for designing and implementing communication activities, so here we will focus on the design, prioritization and implementation of the core activities.

When you are designing your core activities keep in mind:

1

Avoid Imposing the activities on your audience
The activity identification process must be as inclusive as possible. And It is advisable to involve not only representatives of the different groups within your audience, but also your local partners. Involving your audience in the design of the activities will make them more culturally and socially appropriate, facilitating their acceptance by the community. Ideally, campaign activities should be amalgamated with activities that the community already does. On the other hand, involving your local partners from the beginning will facilitate implementation, since you will be able to take advantage of the resources and capabilities they have. To involve your audience and your partners in identifying the most appropriate core activities, you can do focus groups, semi-structured interviews, brainstorming dynamics, and questionnaires.

2

Design inclusive activities
That allow the participation of any age group, people with disabilities and foster a respectful environment for the cultural, religious and social diversity of your audience. Introduces a minimum participation quota for minority groups, both for the implementers of the activities (guides, speakers and facilitators), and for the participants.

3

Generate a code of conduct
And promote its adoption during activities so that all participants, regardless of their context, feel safe and comfortable..

4

Take into account the social dynamics of your audience when defining when to carry out activities
If you plan your activities during working hours, holidays/commemorations or that coincide with important social events for the community (e.g. market day), participation will be low, even if you did a good job of publicizing the event and there is people's interest.

5

Design activities aligned with the interests and style of your audience
If your audience consists of simple, happy people, design recreational activities, taught in simple, colloquial language, may interest them more than complex and extensive training activities (e.g. workshops, courses, etc.), which may be more appropriate if your audience consists of professionals, business people, etc.

6

Prepare each activity

Generate a file for each activity, defining specific objectives, precise instructions, required material, defined execution times, roles of each facilitator, help you not only will it define a fluid dynamic for each activity, but it will also facilitate collaboration with your local partners, when implementing them, because it will be easier for you to communicate what you need, if you are clear about the objective and scope. An example of a fact sheet:

|	
Name of the activity	▪ **Choose a name:** That is informative, short and aligned with the language and communication style of your audience.
Description of the activity	▪ **General objective:** What do you want to achieve with this activity? Why is this activity ideal to achieve this goal?
	▪ **Scope:** Indicate who it is for and the number of participants you can manage in each session. If it is an activity that will be repeated several times during the campaign, what is the total expected reach?
	▪ **Announcement:** Describe how you will make the call to participate.
	▪ **Duration:** Define maximum duration, dates and schedule if it is an activity that you are going to repeat during the implementation of the campaign.
	▪ **Local partners:** Apart from your organization, what other partner is key for the activity to be carried out? Describe what the role of your partners will be (e.g. logistics support, technical support, granting permits, etc.).
	▪ **Facilitators:** How many facilitators are required, the role of the facilitators, etc.
	▪ **Recommendations:** Anything that you think is important to take into account to implement this activity effectively? For example, avoid doing it during very hot hours.
What do you need to do this activity?	▪ Here you should make a list of the resources you need, including materials (flip chart, markers, etc.), equipment (computer, projector, etc.), and teaching materials.
Estimated cost	▪ Estimate the costs to do this activity. Consider the costs of personnel, materials, equipment and services required. Although costs may vary over time, it is helpful to be clear about the resources needed. Estimating the cost will also help you evaluate how efficient each activity is in terms of cost versus number of participants, which is important when prioritizing which one to implement (see next section) and when you want to scale the campaign.
Component of the theory of change addressed	▪ **Contribution:** Qualitative scale that describes the level of contribution of this activity to each behavioral component of ToC (Low/Medium/High).
	▪ **Strategy:** Briefly and specifically describe how this activity will achieve the objectives set for each behavioral component of ToC (knowledge, attitudes, social norms, perceived control).
Monitoring strategy	▪ **Indicators:** Here you must describe the indicator that you will use to evaluate the progress of the activity and how effective it was. You must also describe which instrument you are going to use to quantify these indicators. For example, if your indicator is the number of participants disaggregated by gender and age, then your instrument should be a list of participants that indicates the age range and gender of each participant.

3.3 PRIORITIZING ACTIVITIES

If you are lucky enough to have a team, partners and an enthusiastic and creative audience, you will surely come away with a very long list of core activities that you could do. Obviously you will not have the logistical capabilities to do them all, so you must prioritize.

One way to prioritize core activities is on the basis that they meet the following criteria:

1 Centered in its interest in selected groups with in the audience.

2 That can develop within the treatment communities.

3 That is aligned with (does not contravene) the alternative behavior.

4 Make it easy to implement with the current resources, technical and logistical capabilities available.

Once you pre-select activities that meet these criteria, you still need to ensure that you can implement them effectively by selecting those that have a positive cost/impact ratio.
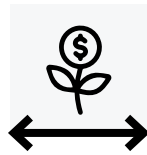
Costs refer either to the monetary value associated with the implementation (if you have a cost estimate for each activity, it will be very useful), or alternatively, you can assign qualitative categories of costs (high, medium, low) based on the list of required resources (personnel, equipment, materials and logistics).

You can measure the impact based on the reach (number of participants), or the degree of satisfaction of the participants (see next section on how to measure satisfaction).

With these two criteria, you can group your activities in the following diagram:

HIGH IMPACT

HIGH COST		LOW COST
INCLUDE THEM LATER		INCLUDE THEM IN YOUR CAMPAIGN NOW
DON'T INCLUDE THEM		INCLUDE THEM IF YOU HAVE TIME

LOW IMPACT
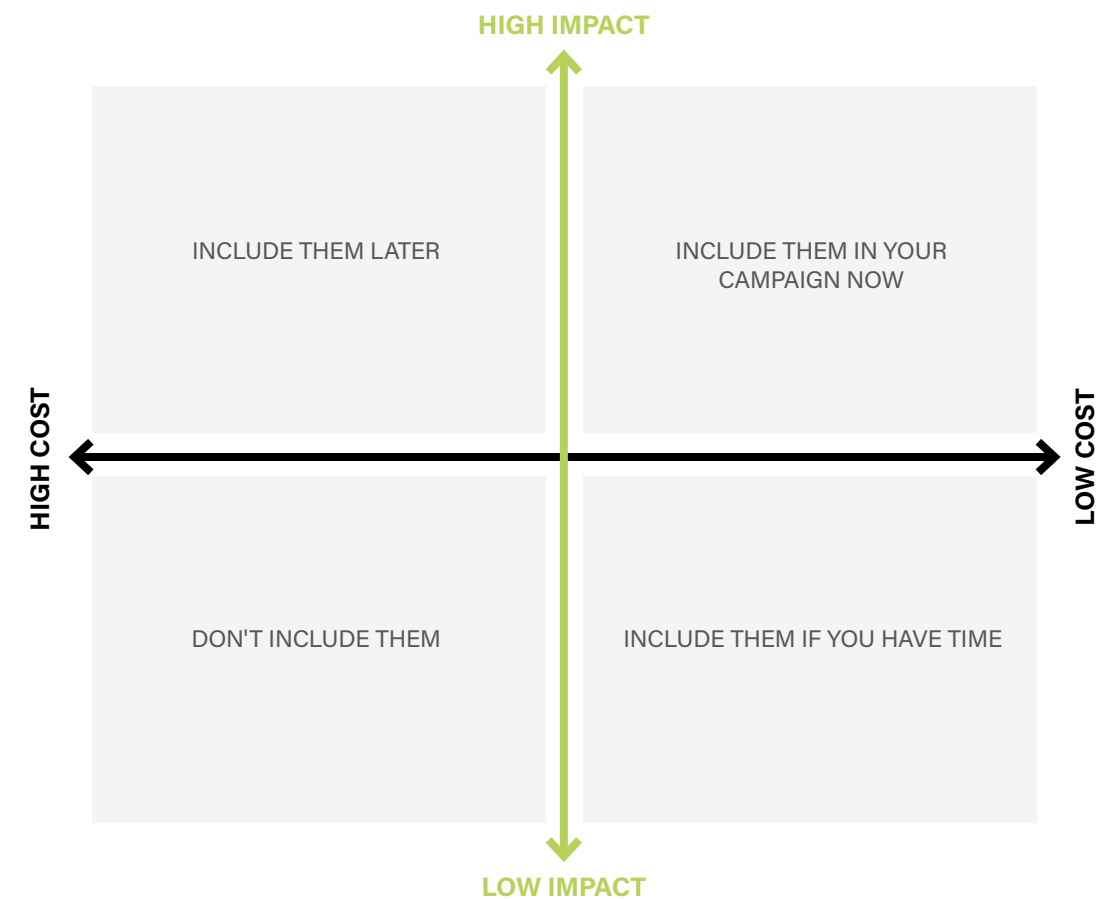
3.4 IMPLEMENTING THE ACTIVITIES

To implement activities you need to measure three types of indicators to monitor how your activities are progressing:

Implementation indicators, which measure progress in the implementation of core activities. Some examples may be the number of participants (disaggregated by gender and age group), number of activities implemented, frequency of activities implemented, levels of satisfaction and empowerment of participants.

Strategic indicators, which measure the number of interested parties that support you in the implementation of the activities, how they are integrated, and how your interaction is with them and among them. Examples of these indicators could be the total number of members, member gain rate, number of members broken down by sector (private, academic, community, etc.).

Communication indicators, which follow the management of communication, outreach and interaction activities. Examples of these indicators are publication frequency, community size, average number of 'likes' per publication.
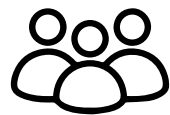
In this chapter we will talk in detail about **implementation and strategic indicators**. We already addressed communication indicators in detail in the **tool 3**.

Implementation indicators

These indicators mainly measure three aspects of implementation:

Time
When and how often is an activity done?

Scope
Who participates? How many participate?

Effectiveness
Did people like the activity? To what extent did the activity contribute to meeting your campaign objectives?

Let's look at each aspect of the implementation indicators in detail:

Time.
When and how often is an activity done?

Keeping a schedule that describes not only when you plan to carry out each activity, but also the steps before and after, this will help you plan efforts both within your team and with partners. Make it clear who is responsible for each step and when it must be completed (deadline). In addition to dates, it's easier to have a column that tells you the status (completed, in progress, to start, etc.). Here is an example of a detailed schedule for the Green Sky bird watching activity:

Stage	Actions	Deadline	Responsible	Status
Before	Meeting with volunteers and partners to define where to develop the activity	09/02/2023	MDP/AN	Filled
	Prepare budget to request internal funds	06/02/2023	MDP/AN	Filled
	Design invitations	16/02/2023	KR	Filled
	Spread invitations through the campaign's social networks	21/02/2023-25/02/2023	KR	In progress
	Hire services (transport, refreshments)	13/02/2023	MDP/AN	In progress
	Purchase of materials	22/02/2023	AN	To start
	Transfer of material to the location (binoculars, tablets, worksheets, materials)	23/02/2023	AN	To start
During	Activity execution	23/02/2023	AN	To start
Later	Collection and backup of photos and videos	27/02/2023	AN	To start

Stage	Actions	Deadline	Responsible	Status
Later	Post photos of activity on social networks	27/02/2023	KR	To start
	Participation record backup, satisfaction surveys	28/02/2023	MDP	To start
	Close internal administrative process	28/02/2023	AN	To start

Scope.
Who participates? How many participate?

The more detailed you can make your participant registration, the better. The minimum information is the gender and age group of the participants. This will allow you to break down the number of participants by gender and age and evaluate the level of inclusivity of your activities.

It is also very useful if you can include a question that measures whether the person comes from a treatment or control group. For example, if you assigned groups based on towns, you can ask where the person lives. This will help you evaluate the spillover effect of your call, if all the participants are from the treatment groups, or if there are people from the control groups or from non-focal locations. The spillover effect is not necessarily bad, because it can reflect the internal communication dynamics of the audience. However, if the spillover effect is due to the fact that you are using wide-reaching dissemination channels, you may want to abandon those channels and use others more focused on your audience and treatment groups.

When working with sensitive topics, in some cases to encourage participation, you must guarantee anonymity, so keeping a record of the names of the participants will not be possible. This limits the ability to obtain some interesting statistics, such as, for example, the proportion of new participants (people who attend for the first time), or participant loyalty (people who have participated in different activities or in repeated sessions of the same activity).

In any case, remember that, when sharing this data, the identity of the people must not be visible, so you must replace the real names with codes in your data sheet.

Effectiveness.
Did people like the activity? To what extent did the activity contribute to meeting your campaign objectives?

The effectiveness of each core activity can be measured in different ways. One of the most common ways is through satisfaction surveys. Satisfaction surveys help you:

- Understand your audience, what and do you like it?, what and they do not like it?

- Discover changes you can implement to improve the quality of the activity, ensure participant loyalty, and ultimately increase adoption of the alternative behavior.

- Identify potential problems in the implementation of activities or conflicts not previously identified.vidades o conflictos no identificados previamente.

Some questions you can ask to measure satisfaction are:

- In general, how did you like the activity?
- Do you think you learned new things?
- In your opinion, how was the organization of the activity?
- Would you like to participate in other campaign activities?
- Would you recommend family and friends participate in campaign activities?
- What aspects do you think we should improve in the next opportunity?
- How did you find the interaction with the facilitators?
- Do you think the activity was inclusive, suitable for all ages and contexts of the audience?
- Which of the activities of the [campaign name] campaign did you like the most?
- Which of the activities of the [campaign name] campaign did you like least?
- What other activities do you would like we include?

Some questions you can ask to measure empowerment and leadership are:

- After participating in [campaign name], I feel more confident speaking about issues related to demand reduction for [focal species].
- After participating in [campaign name], I feel more able to make informed decisions about reducing demand for [focal species].
- After participating in [campaign name], I feel more committed to participating in actions to reduce the demand for [focal species].
- The [campaign name] campaign has given me the opportunity for [short-term personal benefit from alternative behavior].
- Have you participated in the organization of any of the [campaign name] activities?
- Have you promoted or spread the activities among your friends and family?
- Have you encouraged other people to discourage keeping [focal species]?

In a behavior change campaign, in addition to satisfaction, it is important to also measure how perceptions of empowerment and leadership change throughout the campaign. Increasing your audience's self-organization capabilities to adopt and promote alternative behavior is important to support your exit strategy.

> That change does not depend on your organization promoting it, but rather on the community being the one who promotes it.

Increasing leadership and empowerment in the communities where you work will also pave the way to expand these efforts in other communities.

Strategic indicators

Stakeholders are individuals, groups, or organizations that may affect, be affected, or perceive themselves to be affected by a campaign decision, activity, or outcome.

> For the success of the campaign, it is essential to identify stakeholders from the beginning and analyze their interest levels, their individual expectations, as well as their importance and influence.

This initial assessment should be reviewed, updated regularly and, if possible, validated with your implementation partners.

Different stakeholders will have different roles. One of the first steps is to identify each person's role.

Some possible roles are:

Financier/ Sponsor	It is the person(s) or organization(s) that promotes the campaign and provides the human and financial resources to cover the expenses of the product, service or results.
Project Manager	The person appointed by the organization to lead the team and is responsible for achieving the project objectives, measuring execution and identifying deviations from what was planned, to recommend preventive or corrective actions.
Technical leader	It is the person who exercises leadership of the campaign in their specialty or area of expertise, and supervises a team of executors to develop the project products in accordance with the requirements and specifications.
Executor	This is the person who executes the campaign actions in their specialty, providing the estimates of time and resources necessary to generate the required products.
Audience	Person or group of people who will be direct beneficiaries of the product or service provided by the campaign.
Implementation Partner	It is the person(s) or organization(s) that support(s) the implementation of the activities, whether by providing time, logistics, etc.
Adviser	It is the person(s) or organization(s) that provides technical knowledge in their area of expertise.

The second thing you need is to do a stakeholder analysis in order to:

- Prioritize them according to their power and interest.
- Understandwhat is your role, what information they expect to receive from the campaign and what opinion they have in relation to it.
- Define the approach to manage your support.
- Define a communication plan onesto manage them.

The power/interest matrix serves to represent the stakeholders based on the power of influence they exercise over others and the interest they have in relation to the achievement or success of the campaign.

INTEREST

POWER		HIGH	LOW
	HIGH	Manage them closely	Keep them satisfied
	LOW	Keep them informed	Monitor them

Interested parties must be grouped according to the following categories or groups:

Manage them closely. The people who should be placed in this category are those who have to be top of Influence and top interest in the success of the project. These are the people who need to be engaged and satisfied the most. It is advisable to keep them well informed.

Keep them satisfied. The people who should be placed in this category are those who have the power to influence and interest. It's a good idea to keep these people informed and satisfied, but not to the point that they get bored of your message.

Keep them informed. People who should be placed in this category are those who have great power of influence and great interest. This group of people should be kept informed and consult with them if there are problems that may be arising.

Monitor them. People who should be placed in this category are those who have great power of influence and a great interest in the success of the project. These people should be monitored and you can share some communication with them, but not with high frequency.

CASE STUDY:

GREEN SKY | CIELO VERDE

Implemented activities for the Green Sky campaign
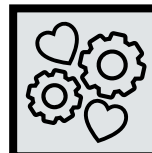
Step 1

Identify strategies

Green Sky suggests that the necessary behavioral change in the communities of Macanao is for people to use the Yellow-shouldered Amazon in a sustainable way, to continue enjoying the company of the parrots without keeping them captive. Achieving this will require much more than increasing knowledge about the conservation issue or promoting pro-environmental values or attitudes.

The adoption of the proposed alternative behavior requires overcoming identified psychological (apathy) and social (social norms that normalize the demand for fauna) barriers.

The shift levers used in Green Sky are:

Information and material incentives:
Our videos and social media posts provide information about the objectives, dates and locations of the core activities, emphasizing their fun nature and the availability of transportation to overcome barriers to participation. We emphasize that the activities are suitable for the whole family, and we inform that there will be recreational activities suitable for children and seniors, so that everyone can take a little piece of Green Sky home.

Acompáñanos a observar aves en el conuco de Rafaela este sábado 25 de febrero

Punto de encuentro: Paseo "Madre de los pescadores" Robledal

Hora: 7:00 a.m

Atrévete a ser un ECOGUARDIAN por un día

Robledal Jueves 20/04 Boca de Pozo Viernes 21/04

Acompáñanos a construir nidos para las cotorras, para pronto ver sus pichones pintando de verde el cielo de Macanao.

Appealing to emotions:
In our messages we use drone shots of landscapes and photos of people enjoying the outdoors. We combine these images with vocalizations of parrots, songs of other birds present in the town and wind in the background, to evoke the sensation of flight, freedom and joy. Our messages and scripts use the PEEL strategy, and are narrated by local voices, whether locally recognized artists or community members. Our communication style is personalized, empathetic and inspiring. We use local idioms when possible.

Juntos se duplican las alegrías y se dividen las angustias

Social influence:
Local comedians serve as tastemakers who promote participation and a fun perception. We use testimonials from community members to highlight their experience and shared problems.

Ahora es parte de los macanagüeros...

Salir a disfrutar de las Cotorras al aire libre...

"Tener Cotorras es una tradición" Caminar al aire libre, contemplar las aves que llegan al patio, disfrutar de las algarabía de las cotorras en libertad, son las nuevas tradiciones del macanagüero.

CASE STUDY:

GREEN SKY — CIELO VERDE

Step 2

Prioritizing and designing activities

To design the activities, we took into account two important contextual factors in the communities of Macanao: Generalized poverty and the prevalence of adult women, mostly single mothers.

We organized a workshop, with the participation of cultural, educational, conservation and government sectors in Macanao. We brainstormed to identify core and communication activities. This exercise resulted in 13 activities, which we reduced to five after prioritizing them based on current resources and available technical capabilities.

The selected activities were:

1

Playing with the parrot

A series of recreational and educational games (lottery, gymkhana, cineforum) designed to increase integration with the community, while informing about the objectives of the campaign and the benefits of adopting alternative behavior.
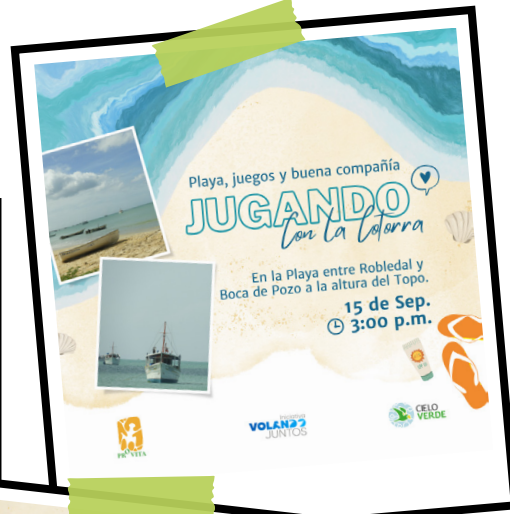
2

Birding in Macanao

Bird watching sessions in their natural environment. This activity had two components.

- A theoretical/practical workshop aimed at Ecoguardians, staff of the National Parks Institute and members of the communities, focused on training in bird watching guidance (group management, basic identification criteria), ethics and norms, and trails and routes within Macanao.

- Guided bird watching tour for people from the treatment communities. During the bird watching tours the facillitatorsThey emphasize the enjoyment of the colors and sounds of the birds, rather than their identification, and emphasize that it is not necessary to have technical knowledge or specialized equipment, just curiosity.

CASE STUDY:

GREEN SKY CIELO VERDE

3 **Sowing a Green Sky for Macanao**

Restoration activity of the dry forest of the Chacaracual Community Conservation Area. During the activity, participants take a short tour to see the nests used by the parrot. The facilitator makes the emotional connection by explaining that, just as people name their parrots, Ecoguardians name their nests. Then, invite the participants to plant at least one tree and ask them to imagine that the tree they are planting is a parrot. What name would they give it? Participants use tags to place the chosen name on their "parrot-tree."

4 **Ecoguardian for a day**

Integration activity that allows participants to be involved in the different actions carried out by Provita during the parrot reproductive season. From creating artificial nests, repairing nests damaged by looters, participating in the annual census, ringing parrot chicks, participants experience the work involved in having free and healthy parrots flying in Macanao. The facilitators are the Ecoguardianes themselves, who in addition to guiding how to do each activity, tell about their experiences, challenges and joys experienced during their work.

CASE STUDY:

GREEN SKY · CIELO VERDE

6 Window to the forest

Path of inquiry, where participants actively interact with the group and the facilitator, exchanging information and reflecting on what was observed. The trail consists of a 2 km route within the Chacaracual Community Conservation Area, with 10 stops that address the following cycles of inquiry:

Welcome and introduction to the trail. The characteristics of the trail, the length of the route, the number of stops, the difficulty and will give recommendations to take into account during the tour.

Forest sounds connect with nature. Explore the sensation that sound produces in our brain, its importance and how to enjoy the sounds that nature offers us.
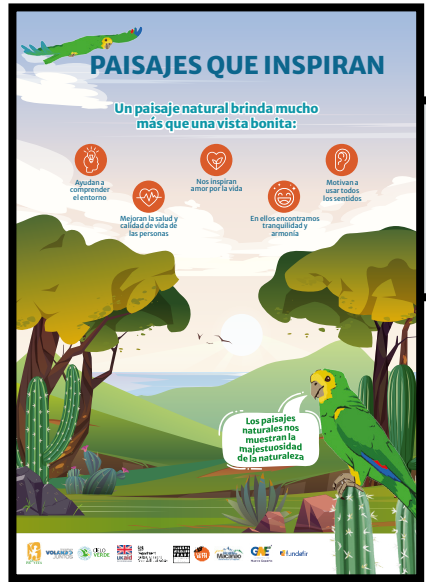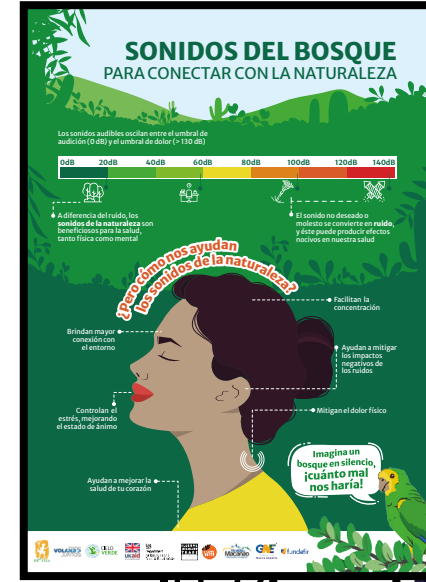
Landscapes that inspire. Explore the importance of landscape and all the sensations that can be produced by observing natural landscapes attentively and consciously.

Birds, formula for happiness. The personal benefits of observing and listening to birds in nature are described. The facilitator invites participants to imagine what the forests would be like without birds, what sounds and colors of birds they remember.

Reflection on the trail and farewell. The facilitator invites participants to share your experience along the journey and reflect on what changes they could incorporate in their daily lives after this experience.

CASE STUDY:

GREEN SKY CIELO VERDE

Step 3

Implementing

A
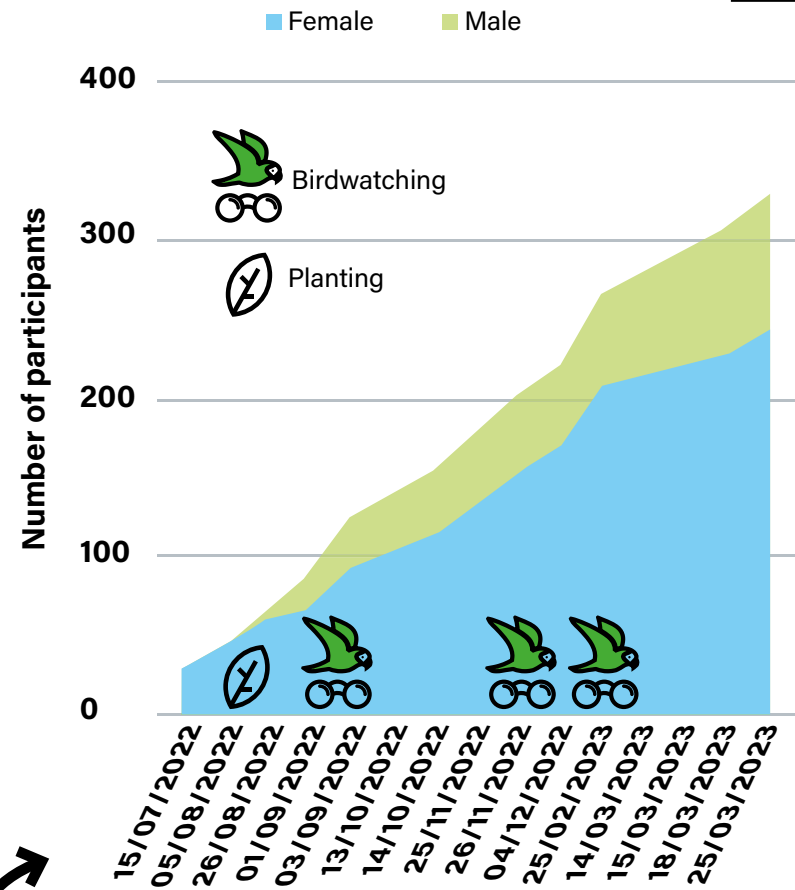
By March 2023, the total number of participants in Green Sky reached 437 people

Female   Male

Birdwatching

Planting

Number of participants

400

300

200

100

0

15/07/2022
05/08/2022
26/08/2022
01/09/2022
03/09/2022
13/10/2022
14/10/2022
25/11/2022
26/11/2022
04/12/2022
25/02/2023
14/03/2023
15/03/2023
18/03/2023
25/03/2023

In 10 months, we went from 28 to 329 people

B

Youth 13%

Senior 13%

Kids 21%

Adult 52%

Of the total participants, 92 were children

Although children are not part of our audience, their participation allowed family integration

29%

71%

In 10 months we went from 100% women to a better representation of men (29%) in the activities

C

Other 4%

San Francisco 6%

Robledal 40%

Boca de Pozo 45%

The spillover effect has been minimal, although people from other communities participate in our activities (4%). the majority are residents of the communities under treatment, Boca de Pozo and Robledal

CASE STUDY:

GREEN SKY **CIELO VERDE**

Some of our implementation partners and advisors were:

Government sector

- Macanao Peninsula Council.
- Environment Office of the Macanao Peninsula Council.
- Nueva Esparta Tourism Corporation.
- National Parks Institute.

- Logistical support for the
- implementation of activities.

Education sector

- Antonio José de Sucre Primary School.
- Lighthouse Light Preschool.
- Francisco Antonio García Primary School.
- Public libraries of Boca de Pozo and Robledal.

- They provided headquarters for core activities and helped us identify and prioritize them.

Private businesses

- MacanaoTrekking.
- Hacienda Macanao.
- Venezuelan-American Center of Margarita Island.

- Hiking advice. Headquarters to carry out activities.
- Dissemination of calls for activities.

Religious institutions

- Catholic Church of Boca del Río

- It encouraged participation and disseminated campaign messages.

Community organizations

- Asomayor in Robledal.
- Autumn Ladies at Boca de Pozo.

- They promoted participation and disseminated campaign messages.

Academia & national NGOs

- Simon Bolivar University.
- Verde la Tierra.

- Ethics Committee.
- Useful recommendations to improve our questionnaires and analysis approaches.

Rural Finance Foundation

- They verified that the tone, language and complexity of our questionnaires were in line with the social and cultural context, and identified local women to be part of the interview team.

Academy & international NGOs

- IUCN-NL.
- Smithsonian Institution - National Zoo, Conservation Biology Institute.
- TRAFFIC.
- EAZA.

- They helped us improve and strengthen our regional collaboration network in Latin America.
- Design recommendations.

¿?

CASE STUDY:

GREEN SKY · CIELO VERDE

We enhance local empowerment by involving volunteers and local partners in the design and implementation of activities. As a result, people are not simply participants, but became co-organizers:

Todos al conuco de Roberto a pasar un rato agradable mientras observamos aves
Sábado 12 de Agosto

Actively suggesting local places to watch birds. Like Mr. Roberto, who offered his plot for bird watching.

Identifying new community organizations that could collaborate on implementation (for example, public libraries and senior clubs, such as the Autumn Grandmothers Club who participated in bird watching and hiking.

¿Que los abuelos no hacen senderismo? ¡Yo te aviso chiruli!

and volunteering to prepare snacks and additional food for activities.

Elvira Marcano
Let me tell you that on the way back home, in the silence, I was able to appreciate more birds, and feel the peace and tranquility of nature.
3:17 PM

Cruz Mary
Yesterday, I visited a spectacular site with a group of young people in Robledal. It was an unforgettable experience! This year, we have set a goal to explore more natural places in our own town and nearby towns with the Autumn Hiking group and the youths.
2:25 PM

Are motivated to plan their own outings and explore the natural spaces near their communities

Aleidy Marcano
It feels so beautiful when children get excited by seeing and hearing the birds' song, not in captivity, but in their natural habitat.
6:25 PM

Julio Valerio
Grateful to observe and listen to the pleasant song of these birds that coexist with us, and yet we do not fully appreciate their splendor, and they should be in full freedom.
5:22 PM

Maglida Narvaez
I prefer to see them fly... it's wonderful to see them fly, it's marvelous.
9:36 PM

They prefer to see parrots fly rather than keeping them in captivity

Our success in this effort is largely attributed to our ability to coordinate and integrate with existing recreation initiatives in the community rather than impose new agendas.

Our activities are now integrated into senior club activity programmes, school holiday plans and local government reforestation programmes. This approach has allowed us to incorporate the local perspective in our diagnosis and solutions, simplify the logistics for implementation and reduce costs and risks.

CASE STUDY:

GREEN SKY CIELO VERDE

Beyond the results of the surveys, empowerment in the communities is evident when initiatives, such as **Macanao under the Stars**, are born from the idea promoted by Green Sky.

MACANAO BAJO LAS ESTRELLAS

Cada día son más los macanagüeros que se unen para construir un Cielo Verde para Macanao.

VOLANDO JUNTOS

IN SUMMARY

- Ideally, your intervention strategy combines different types of levers of change (laws and regulations, information, material incentives, emotional appeals, social influence and decision architecture).

- Once you are clear about which levers of change to use, the next step is to define **the central** and **communication** activities to implement.

- **Core activities**, whether educational, recreational or experiential, allow you to interact directly with the audience.

- Communication activities allow you to increase the resonance of alternative behavior within the audience and inform about the objectives and activities of the campaign.

- When you are designing your core activities, avoid imposing the activities on your audience, keep inclusivity in mind, create safe and comfortable spaces for everyone, keep in mind the social dynamics when defining when to carry out the activities, make sure that the activities are aligned with the interests and preferences of your audience and prepare each activity in detail.

- Prioritize your core activities based on the cost/impact relationship and ensure that you can effectively implement them with the current resources, technical and logistical capabilities available.

- Monitor the implementation of your activities with implementation indicators (measure progress in activities), strategic indicators (measure the number of partners that support you), and communication indicators (measure the management of communication, outreach and interaction activities).

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