

APPENDIX 6: Strategy Rating

Method

After we had assembled the strategies that were most important and relevant, and developed theory of change results chains, we undertook a criteria-based comparison in order to further differentiate between strategies.

Each strategy was scored on a four-point scale for several criteria. Scores were averaged across team members involved in the rating, then averages combined to generate ratings of overall impact and feasibility.

Impact Criteria

To assess impact, we asked the question "If implemented, will the strategy lead to desired changes in the situation at the project site, that is, meaningfully reducing a threat or the effects of a threat?" considering probability and duration of impact.

Probability of impact, using qualitative descriptions,

4. "this will make all the difference!"
3. "yes, this will make a difference"
2. "maybe this will help"
1. "this won't help"

Estimated **duration** of change:

4. 100-plus years
3. 21 to 100 years
2. 6 to 20 years
1. 1 to 5 years

Note that duration in this case relates to change in threat conditions (e.g., reduced predation) not duration of effect on the target status (e.g., alterations in the population curve).

Feasibility Criteria

Overall feasibility was based on the ratings for four criteria.

Financial feasibility had raters considering the cost (of the full strategy, not just a single activity).

- 4: ≤\$50,000
3. ≤\$100,000
2. ≤\$1,000,000
1. Millions of dollars

Technical feasibility, referring to existing know-how within the field of conservation biology.

4. Has been done here or elsewhere, seems ready to go
3. This has been done elsewhere, but many site-specific details have to be worked out
2. There are few precedents for this strategy
1. Possible only in theory, very difficult, or experimental

Organizational capacity of the planning team or collaborators was considered.

4. Capable and in place
3. Good and building
2. Prospects exist
1. Partners not established

Ethical/social feasibility, considering the range of stakeholders, and challenges or barriers to implementation.

- 4: "Likely to be acceptable to all stakeholders"
3. "May be some issues"
2. "A lot of issues"
1. "Strategy won't be accepted"

Table A6-1 shows the overall feasibility and impact scores for each strategy.

ID	Enabling Strategies	Impact Score	Concerns	Feasibility Score	Concerns
1	Build In-country capacity	not rated as considered essential	systemic lack of opportunities	not rated as considered essential	conservation careers not competitive
2	Locate & characterize nesting sites throughout Caribbean	4	(no concerns)	3	expense and expanse of searches
3	Explore Restoration Methods	3	information needs	3	information needs
Strategies to Address Threats					
4	Reduce predator pressure	3	control not lasting	3	expense
5	Reduce flight hazards (collisions and groundings)				
5a	Voluntary solutions with tower industries	3	resistance	4	
5b	Regulatory solutions with government to tower issues	3	government turnover	4	
5c	Awareness campaign to decrease light pollution	3	won't change behavior	3	pollution too spread out
6	Undertake strategies of community development in Boukan Chat				
6a	Sustainable agriculture and reforestation programs	3	too slow	3	overwhelming challenges
6b	Environmental awareness and education programs	3	won't change behavior	3	overwhelming challenges
6c	Economic empowerment - VSLA facilitation	2	no direct effect	3	lacking expertise
6d	Economic empowerment - livelihood training	2	unintended consequences	3	lacking expertise
6e	Engage with government to clarify and strengthen oversight of forested areas	2	government not responsive	3	government not functional
6f	Stove Program	2	petrel gain low	3	may not be accepted
7	Scoping study of socio-economic drivers of the threats at La Visite	Not rated. This is an enabling strategy created when we recognized that information was insufficient to focus interventions or select among community development strategies			
8	Engage with DR government to plan and strengthen park management for the benefit of petrels				
8a	Direct Engagement	3	fire risk not manageable	3	govt connections
8b	Public Advocacy	2	fire risk not manageable	3	too political
8c	Habitat Restoration	3	petrel gain low	3	fire/hurricanes threaten success
9	Advocate for reduction of threats at sea				
9a	Better incorporation of pelagic seabirds in fishery management plans	2	petrel gain low	3	fisheries resistance, international
9b	Stronger regulation of and mitigation from marine energy	3	slow change	3	powerful sector to challenge
9c	Better compliance of marine energy industries to regulations	3	petrel gain low	3	powerful sector to challenge
9d	Stronger regulation of contaminant releases	2	risk too diffuse	2	no capacity to regulate
9e	Stronger regulations of plastic usage regionally	2	too slow, damage done	3	Enforcement

Strategy Limitations/Risks

Table A6-1 presents brief notes about the concerns raised during ratings. Team members have varying levels of familiarity with the strategies and different experiences with similar strategies in other parts of the world. The rating exercise was helpful in allowing us to raise questions and air concerns within the group. The rating exercise also allowed us to express varying levels of optimism about the cause-and-effect assumptions in the theory of change models. Where there are significant information gaps, we may lack confidence in the situational analyses underpinning our strategies. Even when confident in our understanding of the situation, we may feel strategies are not realistic given the difficulty of achieving some results and the influences of other factors. Indeed, we may be concerned that strategies carry the risk of unintended consequences that may harm, rather than help the target.

Concerns about limitations and risks are detailed below by strategy.

Strategy #1: Build In-Country Capacity: Community outreach provides a necessary introduction to petrels and conservation principles to villagers; however, increased awareness, interest and concern may not change behaviors driven by overwhelming socioeconomic needs. Proposed additions to secondary or undergraduate programs may be difficult to implement since curriculums in Haiti and the Dominican Republic are more generally geared towards agriculture science and forestry than ecology or conservation. Even when made available, students may not choose to enter an ecology/conservation curriculum because of the limited prospects and salaries offered in these branches.

Strategy #2: Locate and Characterize Nest Sites: Nest searches have been ongoing on Hispaniola since the 2010s and some searches have recently occurred in Dominica and Guadeloupe. Despite the relatively limited size of the areas to cover, these efforts are thwarted by the roughness of the terrain that needs to be searched and the attendant logistical challenges. In Cuba and Jamaica, there are very large geographical expanses that need to be searched, as we lack evidence to refine searches. Other urgent, actionable conservation projects often take priority over searches for “lost” species; organizations only have so much staff and resources to deploy. Loss of species “champions” due to turnover in personnel can stall initiatives.

Strategy #3: Explore Restoration Methods: Although restoration strategies have limits of their own (which should be investigated and identified), even to begin exploring restoration methods requires knowledge of Black-capped Petrel biology and natural history. Most of this information is still unknown and will need to be gathered before accurate recommendations on restoration can be made.

Strategy #4: Reduce Predator Pressure: Introduced predators are widespread at confirmed, probable and suspected petrel nest sites and cannot be entirely eradicated. Therefore, control efforts must be established and ongoing, and at a level of effectiveness that improves the population viability of slow-reproducing Black-capped Petrel. Such “permanent control” – as well as the construction of exclosures -- requires substantial financial input not available within most of the Caribbean countries hosting Black-capped Petrels.

Strategy #5: Reduce Collisions and Groundings: Until regulations are in place, we expect resistance from some tower owners to make changes, particularly if these changes incur expenses. Turnover of government personnel after changes in administration will slow down efforts to find regulatory solutions. Awareness campaign to decrease light pollution may have little effect on behaviors, which are driven by

societal needs (e.g. prevent burglary) and convictions (e.g. light represents progress; lack of light represents poverty); that is, concerns over safety and economics might override concerns over wildlife. Light pollution may also be too spread out, particularly in Haiti's capital Port-au-Prince, which is on a radar documented flight corridor and may be on a fledging corridor from the La Visite nesting area. Finally, major electrification projects may annihilate all efforts to reduce anthropogenic light.

Strategy #6: Undertake Strategies of Community Development in Boukan Chat: As is often the case with the implementation of sustainable agriculture programs, impacts on yields and habitat may take several years to take effect, which may reduce faith in agro-ecological practices. Environmental awareness and reforestation programs may not necessarily change behaviors, which are driven by socio-economic needs. Economic empowerment may have unintended consequences such as increasing immigration and demand for land in the area, and will not have direct effects on habitat conservation. Recent governments have not been functional enough to oversee forested areas; it is assumed that future government may equally fail to clarify and strengthen oversight of forested areas, thus resulting in the ineffective *status quo* that has been the norm for the last decades. A stove improvement program, if implemented, may only have small impact on petrel habitat, and may not be accepted by villagers. Overall, despite increasing goodwill from Boukan Chat community members, strategies of community development will face overwhelming challenges resulting from the state of poverty in which the community is found.

Strategy #7: Scoping study of socio-economic drivers of threats at La Visite: Limitations were not rated for this strategy: we created this strategy as a "pre-requisite" when we recognized that information was insufficient to focus interventions, or select among community development strategies for La Visite.

Strategy #8: Engage with Dominican Republic government to plan and strengthen oversight of parks: In the pine forests characteristic of Dominican parks where petrels nest, fires are mostly due to natural causes and fire risk may not be manageable. Moreover, engaging with the government requires connections which may be severed after each change in administration. Using public advocacy to encourage the government to manage threats to petrels may become too political and damage relationships. Finally, habitat restoration will only have limited impact on petrel habitat, and success may be threatened by hurricanes and fires.

Strategy #9: Address marine threats through advocacy: The spatiotemporal scale of the threats affecting petrels at sea limits our ability to meaningfully influence them. Fisheries: The industry may express resistance to changes in their management of stocks given economic concerns. Also, some fisheries in the Caribbean Sea are from foreign fleets outside the range of Black-capped Petrel (e.g. Japanese squid fishery in the Guajira upwelling zone of Colombia, Global Fishing Watch 2020) and not responsive to petrel advocacy. Finally, even fisheries management that fully considers the needs of seabirds won't prevent the overarching ecosystem disturbances expected from climate change. Marine Energy: Strategies to address threats related marine energy will face a powerful industrial sector that is generally inert to environmentally-driven changes. The need for energy independence may lead Caribbean nations to favor offshore windfarms over wildlife conservation. If any regulations can be implemented, changes will occur slowly thus limiting gains for petrel populations. Pollution: Our capacity to act towards the reduction of pollution from heavy metals, chemicals or plastics is greatly limited by the facts that these pollutants are too diffuse, originate in many different countries, or challenge unwilling industrial sectors. Regulations (and the enforcement of those existing or possible regulations) are also greatly limited by the geographic scope and prevalence of these threats in society; great volumes of pollutants have already entered the environment and changes may occur too slowly to have effects on

petrel populations.

Clearly the implementation of the conservation strategies recommended for Black-capped Petrels do not assure that we will have success in reaching our goals and vision. What is assured is the necessity to prepare for strategies to evolve as assumptions are tested, and new information becomes available and/or conditions change. We must recognize that the conservation of the petrel is a “long game” required decades of dedication, persistence, and that we must maintain perpetual vigilance against looming threats. We can take heart that the species without intervention has managed to hold on in unlikely places despite great challenges. The Black-capped Petrel is a species like no other in the Caribbean, and since it serves as a symbol and reflection of human quality of life, hope should spring eternal.

Integrating the Threat Level

For strategies of threat reduction (that is, interventions directed at threats or at one of the factors contributing to that threat), we developed an additional rating that integrated the level of the threat. Specifically, we identified the highest rated threat to which a given strategy applies and applied scores as follows: 4 to Very High threats, 3 to High threats, 2 to Medium Threats, and 1 to Low threats. We then multiplied the average of the overall impact and feasibility scores for each strategy times the threat rating. This allowed highlighting strategies that were not only feasible and impactful but also that could reduce the most significant threats to petrel populations.

Table A6-2 presents the threat-based strategy ratings. Note those strategies rated 12: These are considered paramount for the current conservation plan, along with enabling strategies.

Table A6-2 Threat-based Strategy Ratings

ID	Strategies to Address Threats	Combined Impact/ Feasibility Score	Highest Threat addressed	Threat level	Threat rating	Threat-based Strategy Rating
4	Reduce predator pressure	3	Predation	Very High*	4	12
5	Reduce flight hazards (collisions and groundings)					
5a	Voluntary solutions with tower industries	3	Towers	High	3	9
5b	Regulatory solutions with government to tower issues	3	Towers	High	3	9
5c	Awareness campaign to decrease light pollution	3	Light pollution	Medium	2	6
6	Undertake strategies of community development in Boukan Chat					
6a	Sustainable agriculture and reforestation programs	3	Ag. Expansion	Very High**	4	12
6b	Environmental awareness and education programs	3	Ag. Expansion	Very High**	4	12
6c	Economic empowerment - VSLA facilitation	2	Ag. Expansion	Very High**	4	8
6d	Economic empowerment - livelihood training	2	Ag. Expansion	Very High**	4	8
6e	Engage with government to clarify and strengthen oversight of forested areas	2	Ag. Expansion	Very High**	4	8
6f	Stove Program	2	Wood harvest	Medium	2	4
7	Scoping study of socio-economic drivers of the threats at La Visite	not-rated				
8	Engage with DR government to plan and strengthen park management for the benefit of petrels					
8a	Direct Engagement	3	Predation	High	3	9
8b	Public Advocacy	2	Predation	High	3	6
8c	Habitat Restoration	3	Invasive ferns	Medium	2	6
9	Advocate for reduction of threats at Sea					
9a	Better incorporation of pelagic seabirds in fishery management plans	2	Red. Prey Avail.	Medium-High	2.5	5
9b	Stronger regulation of and mitigation from marine energy	3	Oil spills	Medium	2	6
9c	Better compliance of marine energy industries to regulations	3	Oil spills	Medium	2	6
9d	Stronger regulation of contaminant releases	2	Contaminants	Medium	2	4
9e	Stronger regulations of plastic usage regionally	2	Plastics	Medium	2	4

* Predation rated "high" at every site, so a roll-up across sites produces a range-wide "very high" threat rating.

** In the absence of current interventions