



Business Plan for the Conservation of the Seabirds

A 10-Year Plan to Secure

Caribbean Seabirds

American Bird Conservancy and Partners

National Fish and Wildlife Foundation

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WHAT IS A BUSINESS PLAN?

A business plan serves two broad, primary functions. First, it provides specific information to those (e.g., prospective investors) not familiar with the proposed or existing business, including its goals and the management strategy and financial and other resources necessary to attain those goals. For outside individuals, it is imperative that the business plan offer a clear rationale for why the goals represent a good investment and why the strategy for achieving those goals is the best one possible. Second, a business plan provides internal guidance to those who are active in the operation of the business, allowing all individuals to understand where the business is headed and the means by which it will get there. The plan helps keep the business from drifting away from its goals and key actions through careful articulation of a strategy.

In the context of the National Fish and Wildlife Foundation's conservation efforts, business plans represent the strategies necessary to meet the goals of Keystone and other initiatives. At its core, each business plan emphasizes the type(s) and magnitude of the impacts (benefits) that will be realized through the initiative, the monetary costs involved, and the potential obstacles (risks) to achieving those gains. Readers of the business plan must be able to see the strength of the relationship between the activities identified within the strategy and the anticipated outcomes. Investors also must be able to see their investment as being integral to achievement of those outcomes.

This seabird business plan outlines a series of strategic approach for the recovery of Caribbean seabirds, with a focus on species that nest on oceanic islands and coastal rock cliffs and other habitats, but that spends the majority of their life cycle at sea.

EXECUTIVE SUMMARY

The isolated and often nomadic lives of seabirds have made them a difficult group of birds around which to conduct scientific study and build conservation plans. What scientists do know, however, is that these colonial and highly social species are highly susceptible to anthropogenic threats. The result has been massive declines of numerous species during the 19th and 20th centuries. This business plan focuses on the recovery of Caribbean seabird populations through wellplaced conservation actions that could have a profound, positive effect on population viability.

In general, Caribbean seabird colonies are often restricted to only a few islands and are highly vulnerable to predation by introduced rats, cats, and monkeys and habitat loss from invasive goats. Caribbean seabird populations have declined by 90% from historic numbers. We propose to build on the limited, but promising, progress in the Caribbean by removing damaging invasive vertebrates from four select islands that will have a disproportionate, positive impact on several very high priority seabirds, specifically Black-caped Petrel, Audubon's Shearwater, Red-billed Tropicbird, White-tailed Tropicbird, and Bridled Tern.

The main threat is introduction of non-native predators onto breeding islands, but commercial fisheries bycatch, environmental contaminants and pollutants, habitat degradation, and the presumed future effects of global climate change could also affect this region. Principal actions include eradication or control of introduced predators, restoration of habitat through removal of herbivores, and outreach and education aimed at generating local communities and industry to support more aggressive conservation measures.

In total, the initiative seeks to invest \$3.8 million to generate conservation returns that would substantially move approximately five high priority bird species towards long-term viability. NFWF expenditures are estimated to be approximately \$1.9 million over the identified 8-10-year timeframe. Risks to success include the vulnerability of species populations that are highly concentrated (because a single event can have a disproportionate effect), the effects of societal demands for space and goods and services that are seemingly in conflict with conservation of seabirds, and the challenge faced by NFWF and its partners to generate sustained funding to complete this initiative.

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CONSERVATION NEED

Given its small areal extent, the Caribbean holds a remarkably rich and diverse seabird community, supporting more than 50 species during the breeding season. Nearly two dozen of these species are considered of high priority to the United States government because those species range into U.S. territorial waters or occur in Puerto Rico. A report released by the U.S. Fish and Wildlife Service in 2009 identified seabirds as a group being dangerously imperiled and specifically identified several species endemic to the Caribbean.

Experts agree that Caribbean seabird populations have likely declined by 90% in the last 200 years. Early explorers often commented on the noisy seabird colonies as their ships sailed close to small and large islands alike. Evidence from tropical islands around the world suggests that rats are a significant cause of this decline. While efforts to remove invasive species from islands have been gaining strong support globally, the Caribbean region has been underrepresented in this conservation technique. An analysis of the Island Eradication Database shows that of the more than 700 vertebrate eradications that have occurred on islands globally, fewer than 15 have occurred in the Caribbean. Where eradications have occurred, positive responses have been recorded.

Many of the problems associated with seabird populations in the Caribbean stem from habitat loss and degradation. While that remains true today, it is the introduction of non-native predators that appears to be the greatest imminent threat to colonies. Considering that the Caribbean is an exclusively insular region and one of the top five biodiversity hotspots, home to nearly 8,000 endemic species, it is clear that eradication of damaging, invasive vertebrates will result in great conservation gains for seabirds and other species.

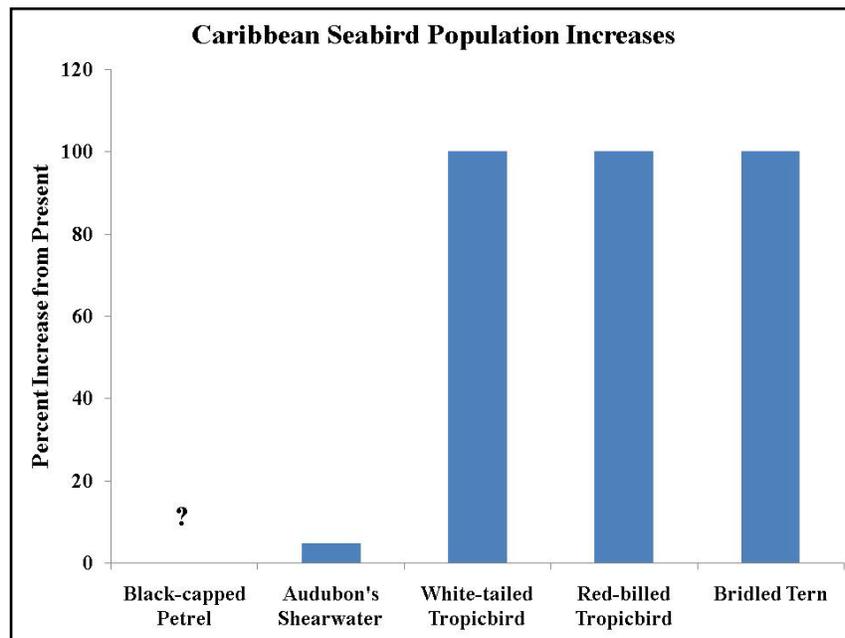
CONSERVATION OUTCOMES

Removal of non-native predators usually has an immediate and lasting effect on seabird populations. In more than 200 island eradications around the world where seabirds were a principal beneficiary of predator removal efforts, approximately three-fourths showed re-colonization of islands by seabirds, increased reproductive output, or greater survival of breeding birds over a relatively short period of time. We anticipate similar results for removal of predators in the Caribbean (Table 1; Figure 1). Targeting only four islands (see Implementation Plan), we expect to see the following results during the life cycle of this program (2009-2019) and beyond.

Table 1. Projected species outcomes for Caribbean Seabird Program¹.

| Focal Species Population Global Population | Time | Expected Increases Following Invasives Eradication (breeding pairs) | | | | Overall Benefits from Suite of Projects |
|--|-------|--|------------|---------------|---------------|--|
| | | Conception Island | Navassa | Petite Terres | Dog Island | |
| Black-capped Petrel < 2,000 pr World < 2,000 pr | Now | n/a | None | None | n/a | Risk of extinction greatly decreased if species established at protected sites beyond . |
| | 20 Yr | | Present | Present | | |
| | 50 Yr | | Increasing | Increasing | | |
| Audubon's Shearwater Endemic Subspecies: 2,700 pr World: 500,000 pr | Now | 10 | 10 | None | 2 | Regional population scale effect (5%) in 20 years; after 50 years, 1% increase in global population. |
| | 20 Yr | 66 | 66 | Present | 13 | |
| | 50 Yr | 2000 | 2000 | Increasing | 437 | |
| White-tailed Tropicbird Endemic Subspecies: 4,100 pr World: 50,000 pr | Now | 75 | 10 | n/a | n/a | More than double the population of a regional endemic subspecies in 3 generations. |
| | 20 Yr | 500 | 66 | | | |
| | 50 Yr | >14,000 | 2000 | | | |
| Red-billed Tropicbird Region: 1800-4000 pr World: 7500 pr | Now | n/a | n/a | 10 | 10 | Increase the global population by 50% in a little more than 2 generations with just 2 islands. |
| | 20 Yr | | | 66 | 66 | |
| | 50 Yr | | | 2000 | 2000 | |
| Bridled Tern Region: 9,000 pr World: 20,000 pr | Now | 10 | 10 | None | 44 | 100% increase in population in 3 generations; 60% increase in world population. |
| | 20 Yr | 66 | 66 | Present | 292 | |
| | 50 Yr | 2000 | 2000 | Abundant | 8600 | |

Figure 1. Projected population increases for focal species of the Caribbean Seabird Program.



¹ Table data and projected outcomes were generated in 2009 using best available information and input from program partners.

IMPLEMENTATION PLAN

Key Strategy 1: Island restoration (removal of invasive predators)

Caribbean seabird colonies are often restricted to only a few islands and are highly vulnerable to predation by introduced rats, monkeys and goats. We propose to build on the limited, but promising, progress in the Caribbean by removing damaging invasive vertebrates from four select islands that will have a disproportionate, positive impact on several very high priority seabirds, specifically Black-capped Petrel, Audubon's Shearwater, Red-billed Tropicbird, White-tailed Tropicbird, and Bridled Tern.

Conception Island, Bahamas -- Conception Island consists of one large island with smaller cays off the shore but on the same bank. Conception has approximately 14,000 m of shoreline and 1,750 ha of land. Booby Cay sits to the east of the main island and has 1,925 m of coastline and 20 ha of land, and the South Rocks are tiny rocks less than one hectare in total.

Biosecurity: Conception Island and its cays are uninhabited and isolated from other places in the Bahamas by 21 km of deep water. It is a national park with no warden, and is visited by a small number of boats each week due to poor anchorages.

Seabirds: Conception hosts breeding Audubon's Shearwaters (known to be present, but in unknown numbers, assume 1-10 pairs), as well as White-tailed Tropicbirds (large colony, 75 pairs), and Bridled Terns (small numbers) breeding on Conception itself. Bridled and Sooty terns and Brown Noddies nest on Booby Cay in small numbers, and White-tailed Tropicbirds, Bridled Terns, Sooty Terns, Brown Noddies, and Sandwich Terns also nest at South Rocks. Boobies no longer nest at Booby Cay, but undoubtedly did when that cay was first encountered by Europeans and named.

Invasive Vertebrates: Rats, and likely other introduced species, are presumed on the island/cays due to the extensive human habitation in the past and the reduced seabird numbers given the habitat available.

Cost: Based on island area, estimate for eradication of rats from Conception Island is approximately \$1.4 million.

Results: The increases in seabird populations can be roughly estimated using standard growth models: Audubon Shearwater numbers on Conception are likely to triple in 20 years, and the island would host 10% of the current global population in 50 years. This would also "solidify" the regional source population found in the Bahamas. Based on densities of breeding birds on nearby rat-free Long Cay and the relative area of suitable habitat size of Conception and its cays (its circumference is seven times that of Long Cay), these numbers would not approach the island's carrying capacity. Anticipated increases in White-tailed Tropicbirds and Bridled Terns

would also likely have population-scale significance.

Support/Stewardship: Conception Island and Booby Cay are part of the Exumas National Park and there is support within the Park for restoration. First step is to confirm invasive species present on the island and then develop plan and proceed with locally supported restoration effort. Critically Endangered Hawksbill and Endangered Green Turtles are common on the island.

Navassa Island, USA -- This pear-shaped island has 7,500 m of coastline and 500 ha in land area. It has sheer cliffs around all sides and a single location where access to the plateau on top of the cay is possible. It was mined for guano over the last two centuries and has a lighthouse station.

Biosecurity: The island is operated as a wildlife refuge by the USFWS and also claimed as territorial land by Haiti, which is 56 km distant at its nearest point. Haitian fishermen and researchers infrequently camp on the island, which is otherwise uninhabited and closed to the public.

Seabirds: Navassa hosts hundreds of Red-footed Boobies, dozens of Frigatebirds and Brown Boobies, as well as unknown numbers of Bridled Terns, Brown Noddies, White-tailed Tropicbirds, and Audubon's Shearwaters.

Invasive Vertebrates: Rats, goats, and cats.

Cost: If all three invasive mammals are targeted simultaneously, a first guess is \$2,000,000 inclusive of planning and US federal compliance and permitting.

Results: On this island, rats and cats are undoubtedly restricting populations; it is expected that populations would ultimately become orders of magnitude higher if these predators were removed. Using standard growth models, and assuming minimum number of Audubon's Shearwaters, numbers would triple in 20 years, and by 80 years, increase over 200 times, creating some of the largest colonies in the region. Anticipated increases in Bridled Terns would also likely have population-scale significance.

Notably, Navassa is only 80 km from the nearest known Black-capped Petrel nesting site. Clearing Navassa of invasive species would position it as an excellent location to establish this species on more than one island.

Support/Stewardship: Navassa is a NWR and the USFWS supports removal of the invasive vertebrates. It is our opinion that if money is available, then the project will get permitted. Protecting Navassa would also benefit Hawksbill Turtle, four species of endemic reptile, and dozens of landbird species including neotropical migratory landbirds.

Petite Terres, Guadeloupe -- Petite Terres is a small complex of two islands off the east side of Guadeloupe. The larger, western island, Terre de Bas, has 5,700 m of shoreline and 105 ha of land, while the smaller, eastern island, Terre de Haut, has 2,600 m of shoreline and 20 ha of land. There are ponds on the west side of Terre de Bas.

Biosecurity: The islands are 10 km from the nearest point of mainland at Grande-Terre, Guadeloupe. Terre de Bas has a lighthouse station, which was probably the original source for invasives species.

Seabirds: Terre de Bas has breeding Least Terns, while Red-Billed Tropicbirds inhabit the cliffs of the cays.

Invasive Vertebrates: Rats are known to be present.

Cost: Terre de Bas- \$150,000; Terre de Haut - \$50,000

Results: Petite Terres' abundant habitat would be suitable for Audubon's Shearwaters and many other seabird species if there were no invasive species. Given its size, it would be decades before recovering seabird species would reach carrying capacity. Naturalist Anthony Levesque, an officer of the park, has documented Black-Capped Petrels foraging and migrating just off the east coast of this location within range of a scope. The remoteness of the location from sources of reinvasion and the chance to attract known nearby petrels to this protected site make it a promising hedge against extinction for the Black-capped Petrel.

Support/Stewardship: Petite Terres is protected as a nature reserve. A regional initiative for invasive species eradications would benefit from directly involving the French islands via a demonstration project there. Petite Terres also hosts several endemic reptiles and plants, wetlands, and land birds.

Dog Island, Anguilla -- Dog Island is a large desert-scrub island approximately 200 ha in area with 7,500 m of shoreline. The vegetation is composed almost exclusively of goat-resistant species including prickly pear (*Opuntia*) and a thorny shrub (species?).

Biosecurity: The island is located 13 Km northwest of Anguilla, and 5 Km from Prickly Pear West, another small offshore cay. The island is uninhabited by humans and privately owned.

Seabirds: It hosts a large population of Sooty Terns (~113,000 pairs) and important populations of Masked Boobies (>25 pairs), Brown Boobies (>800 pairs), and Magnificent Frigatebirds (>200 pairs). Small numbers of Brown Noddies (~191 pairs), Bridled Terns (~ 44 pairs), Red-billed Tropicbirds (~ 15 pairs) and Laughing Gulls (1,000 pairs) also nest at the cay. Steve Holliday

(RSPB) suspects that Audubon's Shearwaters are nesting on the cay but no firm evidence is yet available.

Invasive Predators: Dog island is known to be infested with rats and goats. The Royal Society for the Protection of Birds (RSPB) and the Anguilla National Trust have already conducted a study on the feasibility of eradication.

Cost: The RSPB feasibility suggests a cost of approximately \$288,000 to remove rats and goats.

Results: The potential effects of eradication there could improve the habitat and nesting success of all the species, and we expect orders of magnitude increases in these already substantial populations could be achieved. Eradication and habitat improvement measures could increase Bridled Tern numbers such that the island population holds as much as the current regional population. Also Sooty Tern and Red-billed Tropicbird populations would be expected to increase. The Magnificent Frigatebirds are nesting in thorny shrub, but this species would normally prefer to nest in non-thorny vegetation including mangroves. The already huge population of Brown Boobies (~10% of the regional population) would likely benefit from higher nesting success.

Support/Stewardship: There is support from the local government for the project. Dog Island is privately owned and once an agreement can be secured with the owners, the restoration could proceed. The vision is to restore Dog Island as a 'Living Museum' that will attract visitors to Anguilla interested in viewing the globally important wildlife the islands have to offer. Work on Dog Island would benefit endangered Green Turtle and a variety of endemic lizards.

Risks to Success:

There are two risk areas for invasive animal removal programs – *financial* and *scientific*.

Financial: Two types of financial risk events have the potential to prevent long-term success: (1) insufficient generation of funds by NFWF and its partners during the course of this initiative; and (2) the ability of partners to maintain necessary funding for conservation activities once NFWF exits from the program. Further, working on remote islands increases logistical costs. Specifically, invasive animal removal programs tend to be expensive projects that require sustained investment throughout all the phases of assessment, planning, implementation, and monitoring, and a commitment of resources from the first stages, since even temporary disruptions can compromise the success of the project. Alleviating financial risk is largely accomplished through the selection of partners; partnering with organizations that have a demonstrated history of success in developing, implementing and evaluating invasive removal programs will reduce the overall risk.

Scientific: There are several other areas of scientific risk with this type of program including, incomplete biosecurity planning, unintended non-target species impacts during invasive removal programs, and

failure to remove all individuals of the target species. However, NFWF is managing those risks by working very closely with highly experienced organizations and agencies to minimize these potential pitfalls. Biosecurity and the threat of reintroduction are always challenges to eradication and restoration projects. Incorporation of bio-security planning into project design is the surest way to eliminate the risk of re-introductions. Risk of impacts to non-target species must always be dealt with in projects that involve eradicating invasive species; similarly the consequences of failing to remove target invasive species is a risk - careful planning and pre-implementation trials are the best tools to minimize these risks. However, overall, the probability of success is high because of the careful attention to planning.

Key Strategy 2: Creation of local capacity

Long-term sustainability of predator eradication requires that local communities adopt the program in partnership with the conservation organizations carrying out the initial eradication. That partnership forms the basis for enhancing the local capacity to monitor and eradicate any newly-arrived invasive animals, as well as expand the program to additional islands. Local capacity will be built by having active participation by local people in the program. While there is no or little added cost to this aspect of the program, buy-in and participation by local people will greatly reduce the risk of future re-colonization by predators (because the local people will want to keep predators off islands and they themselves will have the experience to eradicate).

MONITORING AND EVALUATING PERFORMANCE

NFWF's Monitoring & Evaluation Approach

To better demonstrate results and improve the effectiveness of our conservation investments, a comprehensive monitoring and evaluation strategy has been incorporated into the entire lifecycle of NFWF's initiatives. At initiative inception, NFWF works with scientists and practitioners to develop a business plan that identifies clear conservation goals, strategies to achieve these goals, and metrics for assessing progress. During proposal review, proposals are prioritized based on how well they align with the initiative's priority strategies. At the project level, individual grantees will monitor and provide updates on key project activity and outcome metrics in annual and final reports.

On an annual basis, data across individual projects will be scaled up into an initiative scorecard which will provide a snapshot of progress on the initiative's primary strategies and focal species and habitat outcomes. Every three years, NFWF's in-house evaluator will conduct an assessment to examine the factors that have facilitated and hindered successful implementation of the initiative. Towards the end of the initiative's life cycle, a more comprehensive third-party evaluation may be conducted if resources are available. Findings from all monitoring and evaluation activities will be used to continuously learn from our grant making and inform future decision-making to ensure initiative success.

Table 2. Core metrics for measuring Caribbean Seabird Program progress².

| Category | Core Initiative Metrics | 2009 Baseline | 2019 Goal |
|---------------------------------------|--|---------------|------------|
| FOCAL SPECIES | Audubon’s Shearwater (individuals) | 750 | TBD |
| | reduction in adult mortality | 0% | 90% |
| | new colonies created | 0 | 3 |
| | Bridled Tern (individuals) | 138 | TBD |
| | new colonies created | 0 | 2 |
| | Red-billed Tropicbird (individuals) | 45 | TBD |
| | White-tailed Tropicbird (individuals) | 0 | TBD |
| | new colonies created | 0 | 3 |
| HABITAT CONSERVATION | N/A | | |
| HABITAT RESTORATION | N/A | | |
| HABITAT MANAGEMENT | N/A | | |
| CAPACITY, OUTREACH, INCENTIVES | # of people with changed behavior | 0 | 50 |
| SPECIES-SPECIFIC STRATEGIES | Invasive animal or predator removal/fencing nests from predators: acres with goals met | 0 | 2,135 |
| | # island with predation goals met | 0 | 4 |
| PLANNING, RESEARCH, MONITORING | # research studies completed | 0 | 3 |
| | # research studies to inform management | 0 | 6 |

² Program metrics in this table reflect current priorities; changes are based on updated population data for focal species as well as program adjustments that capitalized on opportunities to implement invasive animal removal programs on a different suite of islands than was outlined in the initial business plan. Species goals are TBD as population growth rate data is still being generated.

FUNDING NEEDS

| BUDGET CATEGORY | TOTAL |
|--------------------------------|-------------|
| Habitat Conservation | 0 |
| | |
| Habitat Restoration | 0 |
| | |
| Habitat Management | 0 |
| | |
| Capacity, Outreach, Incentives | \$300,000 |
| | |
| Species-Specific Strategies | \$1,400,000 |
| | |
| Planning, Research, Monitoring | \$200,000 |
| | |
| Total: | \$1,900,000 |

APPENDIX 1 -- ABOUT THIS DOCUMENT

This business plan was drafted during 2008 and early 2009. The original document was developed under contract to the American Bird Conservancy, in consultation with more than a dozen other agencies and organizations. Thus, tremendous technical expertise and practical experience went into development of that draft plan. The document represents a first attempt to map out a series of discrete, strategic actions that can help improve the viability of seabird populations over a short period of time. The current business plan was modified from the original to best meet the goals and expectations of NFWF.

THE AMERICAN BIRD CONSERVANCY. Headquartered in The Plains, Virginia, ABC is a not-for-profit 501(c)(3) organization whose mission is to conserve native wild birds and their habitats throughout the Americas. American Bird Conservancy envisions an Americas-wide landscape where diverse interests collaborate to ensure that native bird species and their habitats are protected, where their protection is valued by society, and they are routinely considered in all land-use and policy decision-making. With a conservation presence in virtually every country in the Western Hemisphere, ABC has directed tens of millions of dollars towards improving the plight of birds. [www.abcbirds.org]

NATIONAL FISH AND WILDLIFE FOUNDATION. The National Fish and Wildlife Foundation is a 501(c)(3) organization dedicated to funding sustainable conservation initiatives. Chartered by the United States Congress in 1984, NFWF leverages federal grants and private support to achieve maximum conservation impact. Recently, the NFWF – through its Keystone Initiatives -- strategically repositioned itself to more effectively capture conservation gains by directing a substantial portion of its investments towards programs that had the greatest chance of successfully securing the long-term future of imperiled species. By leveraging innovative program design from scientific experts, such as Island Conservation

and American Bird Conservancy, NFWF is able to structure smart conservation programs that consistently achieve measurable and meaningful outcomes. [www.nfwf.org]