GEF-6 PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FULL SIZED PROJECT
TYPE OF TRUST FUND: GEF TRUST FUND

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PART I: Project Information

Project Title:	Safeguarding biodiversity in the Galapagos Islands by enhancing biosecurity and creating the enabling environment for the restoration of Galapagos Island ecosystems.		
Country(ies):	Ecuador	GEF Project ID:[1]	9282
GEF Agency(ies):	CI (select) (select)	GEF Agency Project ID:	
Other Executing Partner(s):	Island Conservation (IC)	Submission Date:	3/3/2017
GEF Focal Area(s):	Biodiversity	Project Duration (Months)	30
Integrated Approach Pilot	IAP-Cities ☐ IAP-Commodities ☐ IAP-Food Security ☐	Corporate Program: SGP ☐	
Name of parent program:	[if applicable]	Agency Fee ($)	297,132

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES[2]

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	**Trust Fund**	**(in $)**	
		GEF Project Financing	**Co-financing**
BD-2, Program 4	GEFTF	3,301,472	18,625,000
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
(select) (select) (select)	(select)		
Total Project Cost		3,301,472	18,625,000

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: To safeguard biodiversity in the Galapagos Islands by enhancing biosecurity and creating the enabling environment for the restoration of Galapagos Island ecosystems.

Project Components	**Financing Type**	**Project Outcomes**	**Project Outputs**	**Trust Fund**	**(in $)**	
					GEF Project Financing	**Co-financing**
Component 1: Furthering development of a state-of-the-art biosecurity system.	INV	**Outcome 1.1.:** The number of invasive alien species entering the Galapagos archipelago is substantially reduced. ***Target:*** *A >5% increase from baseline*[3] *in the number of pest interceptions*	**Output 1.1.1.:** Detection devices' needs identified, devices purchased and installed. **Output 1.1.2.:** One hundred percent of maritime port	GEFTF	1,000,000	6,315,000

[1] Project ID number will be assigned by GEFSEC and to be entered by Agency in subsequent document submissions.
[2] When completing Table A, refer to the excerpts on *GEF 6 Results Frameworks for GETF, LDCF and SCCF*.
[3] In 2014, a total of 7,034 confiscations were made across all categories of pest-risk goods at all ports (baseline).

		and subsequent confiscations of goods due to pest risk across all ports combined.	inspectors competent in operating and maintaining 100% of new detection devices. **Output 1.1.3.:** Infrastructure established and modified to allow inter-island biosecurity protocols to be implemented.			
Component 2: Solidifying the social infrastructure for the protection and recovery of Floreana Island ecosystems.	INV	**Outcome 2.1.:** The social license is established for the protection and recovery of Floreana Island ecosystems. ***Target:*** *Floreana Island residents take definitive actions to safeguard ecosystems by adopting ecologically-sustainable farming practices, and all project partners demonstrate support for the eradication of invasive rodents and feral cats, as well as the reintroduction of endemic species previously extirpated by invasive species.*	**Output 2.1.1:** Ecologically-sustainable farming practices instituted. **Output 2.1.2:** Floreana Parish Council declaration adopted. **Output 2.1.3.:** Operational Plan for eradication of invasive rodents and feral cats approved by the Project Steering Committee. **Output 2.1.4.:** Risk management plans developed in conjunction with the community and approved by the Project Steering Committee. **Output 2.1.5.:** Environmental and Social Impact Assessment process completed and environmental license awarded (if appropriate) by	GEFTF	1,144,260	7,865,000

			the government of Ecuador.			
Component 3: Advancing the recovery of island ecosystems following invasive species eradication through the re-establishment of keystone species (i.e. giant tortoises).	INV	**Outcome 3.1.:** Ecosystem processes are in the process of recovering through the translocation of giant tortoises to Santa Fe Island. ***Target:*** *Ecosystem processes on 2,413 ha (Santa Fe Island) are recovered through the translocation of giant tortoises.* **Outcome 3.2.:** Production of giant tortoises for future reintroductions throughout the archipelago is significantly increased. ***Target:*** *The enabling environment is established for the recovery of 23,193 additional ha by enhancing the capacity to house, breed, and head-start giant tortoises.*	**Output 3.1.1:** Giant tortoises translocated to Santa Fe Island. **Output 3.1.2.:** Ecosystem processes facilitated by giant tortoises are recovered on Santa Fe Island. **Output 3.2.1.:** Facilities for captive breeding and head-starting of giant tortoises are modified and expanded. **Output 3.2.2.:** Giant tortoise captive breeding stock are selected **Output 3.2.3.:** Scientific and technical findings reported in the professional literature to further capacity through knowledge management.	GEFTF	1,000,000	4,145,000
	(select)			(select)		
			Subtotal		3,144,260	18,325,000
			Project Management Cost (PMC)[4]	GEFTF	157,212	300,000
			Total Project Cost		3,301,472	18,625,000

For multi-trust fund projects, provide the total amount of PMC in Table B, and indicate the split of PMC among the different trust funds here: ( )

[4] For GEF Project Financing up to $2 million, PMC could be up to10% of the subtotal; above $2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount ($)
Recipient Government	Galapagos National Park Directorate (GNPD)	Grants	10,500,000
Recipient Government	Galapagos Biosecurity Agency (GBA)	Grants	4,500,000
CSO	Island Conservation (IC)	In-kind	1,400,000
CSO	Galapagos Conservancy (GC)	In-kind	1,925,000
GEF Agency	Conservation International (CI)	In-kind	300,000
Total Co-financing			18,625,000

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS [a)]

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	(in $)		
					GEF Project Financing (a)	Agency Fee (b)[b)]	Total (c)=a+b
CI	GEFTF	Ecuador	BD	(select as applicable)	3,301,472	297,132	3,598,604
				(select as applicable)			
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
Total GEF Resources					3,301,472	297,132	3,598,604

1. Refer to the Fee Policy for GEF Partner Agencies.

E. PROJECT PREPARATION GRANT (PPG)[5]

Is Project Preparation Grant requested? Yes X No ☐ If no, skip item E.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

Project Preparation Grant amount requested: $120,000					PPG Agency Fee: 10,800		
GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in $)		
					PPG (a)	Agency Fee[6] (b)	Total c = a + b
CI	GEFTF	Ecuador	BD	(select as applicable)	120,000	10,800	130,800
(select)	(select)		(select)	(select as applicable)			0
(select)	(select)		(select)	(select as applicable)			0
Total PPG Amount					**120,000**	**10,800**	130,800

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS[7]

[5] PPG requested amount is determined by the size of the GEF Project Financing (PF) as follows: Up to $50k for PF up to$2m (for MSP); up to $100k for PF up to $3m; $150k for PF up to $6m; $200k for PF up to $10m; and $300k for PF above $10m. On an exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

[6] PPG fee percentage follows the percentage of the Agency fee over the GEF Project Financing amount requested.

[7] Provide those indicator values in this table to the extent applicable to your proposed project. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the *GEF-6 Programming Directions*, will be aggregated and reported during mid-term and at the conclusion of the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and/or SCCF.

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascapes covering 300 million hectares	*Component 1 Archipelago wide: 788,200 hectares (ha) of terrestrial habitat and 13,300,000 ha of marine reserve* *The total land area in the Galapagos archipelago is 788,200 ha. Of that area, 96.7% (761,844 ha) are National Park and Natural Heritage for Humanity lands; the remaining 3.3% (26,356 ha) are human-inhabited urban and agricultural zones. The Galapagos Marine Reserve is 13,300,000 ha in size* *Component 2 Floreana Island only: 17,253 ha* *Component 3 Santa Fe Island only: 2,413 ha*
2. Sustainable land management in production systems (agriculture, rangelands, and forest landscapes)	120 million hectares under sustainable land management	*Hectares*
3. Promotion of collective management of transboundary water systems and implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services	Water-food-ecosystems security and conjunctive management of surface and groundwater in at least 10 freshwater basins;	*Number of freshwater basins*
	20% of globally over-exploited fisheries (by volume) moved to more sustainable levels	*Percent of fisheries, by volume*
4. 4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO_{2e} mitigated (include both direct and indirect)	*metric tons*
5. Increase in phase-out, disposal and reduction of releases of POPs, ODS, mercury and other chemicals of global concern	Disposal of 80,000 tons of POPs (PCB, obsolete pesticides)	*metric tons*
	Reduction of 1000 tons of Mercury	*metric tons*
	Phase-out of 303.44 tons of ODP (HCFC)	*ODP tons*
6. Enhance capacity of countries to implement MEAs (multilateral environmental agreements) and	Development and sectoral planning frameworks integrate measurable targets drawn from the MEAs in at least 10 countries	*Number of Countries:*

mainstream into national and sub-national policy, planning financial and legal frameworks	Functional environmental information systems are established to support decision-making in at least 10 countries	*Number of Countries:*

PART II: PROJECT JUSTIFICATION

1. Project Description. Briefly describe: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed; 2) the baseline scenario or any associated baseline projects, 3) the proposed alternative scenario, GEF focal area[8] strategies, with a brief description of expected outcomes and components of the project, 4) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing; 5) global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and 6) innovation, sustainability and potential for scaling up.

A. PROJECT OVERVIEW

A.1. Project description

1. The project aims to safeguard biodiversity in the Galapagos Islands by enhancing biosecurity across the Galapagos archipelago, solidifying the social licence to eradicate invasive vertebrate species from and reintroduce giant tortoises to Floreana Island, and translocating previously extirpated keystone species (giant tortoises) to Santa Fe Island. Project success will secondarily lead to a reduction in land degradation, and improve ecotourism opportunities. Consequently, ecosystem services, agricultural production, and economic investments will be better secured on human-inhabited islands in Ecuador and beyond.

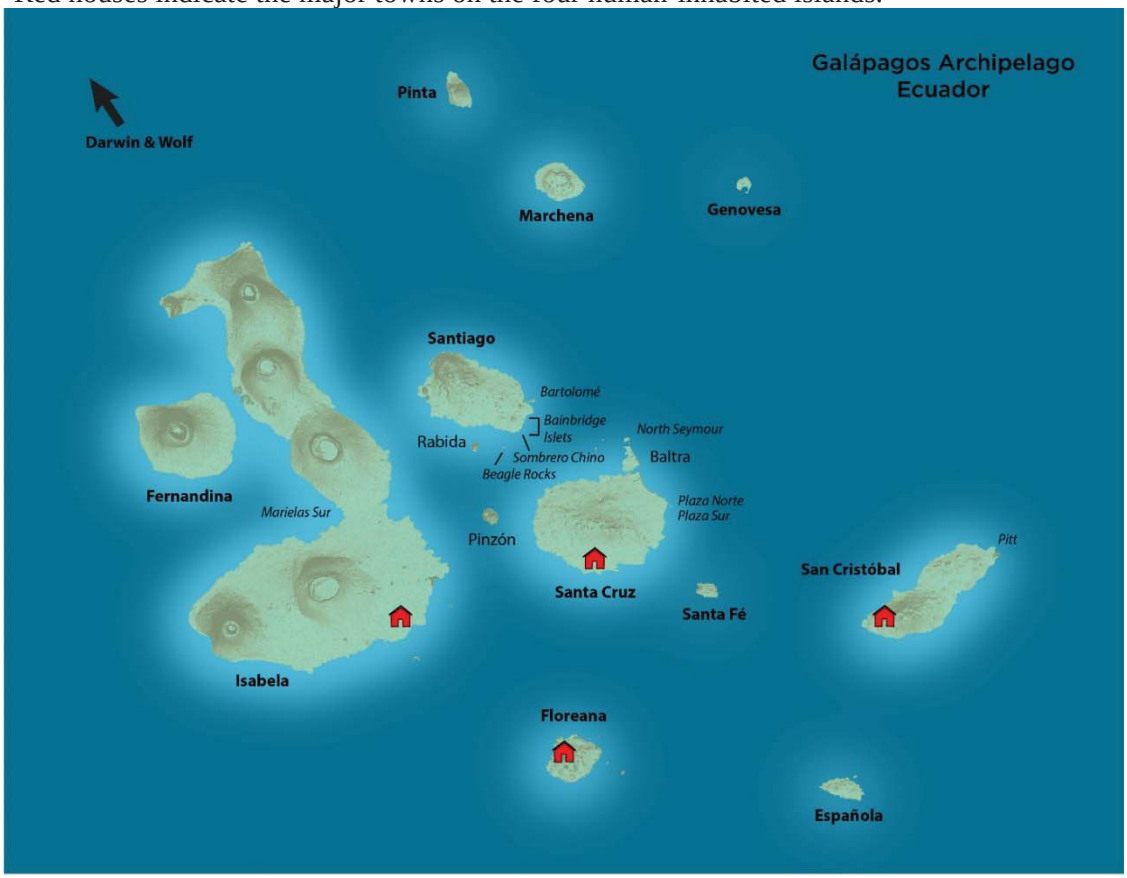
2. The Galapagos Islands were formed 3-5 million years ago when deep ocean volcanoes erupted. Situated just below the equator, the archipelago is 1,000 km off the coast of Ecuador in the Pacific Ocean. It is composed of 13 large islands and 100 smaller islands and islets that comprise 7,880 km^2 of land. Located at the confluence of three eastern Pacific currents, the Galapagos are a 'melting pot' for a large diversity of marine life. The equatorial climate, highly varied and rugged terrain, and extreme geographic isolation of the islands has resulted in the development of a rich array of terrestrial plants and animals that are found nowhere else in the world.

3. The Galapagos Islands were first discovered in 1535 by the Spaniard Tomás de Berlanga. The islands had no indigenous peoples, making it one of the last large archipelagoes contacted by humans. In 1835, famed naturalist Charles Darwin visited the Galapagos Islands and was deeply impacted by what he found: islands hosting a wide range of unique species, each species seemingly adapted for the habitats particular to the island(s) it inhabited. Darwin's observations led him to develop the theory of evolution which, when published in 1939, catalyzed a dramatic change in world view and scientific inquiry. Today, the Galapagos Islands are widely regarded as a 'living museum' and 'a showcase of evolution in progress.' The islands provide a profound example of how ecological, evolutionary, and biogeographic processes influence the flora and fauna on specific islands, as well as across the entire archipelago. Likewise, the convergence of ocean currents which are strongly influenced by climatic phenomena (e.g., El Niño) has had major evolutionary consequences for marine species and provides important insights about species evolution under rapidly changing conditions.

Figure 1. Map of the Galapagos archipelago.

[8] For biodiversity projects, in addition to explaining the project's consistency with the biodiversity focal area strategy, objectives and programs, please also describe which Aichi Target(s) the project will directly contribute to achieving.

Red houses indicate the major towns on the four human-inhabited islands.



4. Approximately 50 years ago, the quest for scientific knowledge led to the creation of a permanent research station on the island of Santa Cruz, in the center of the archipelago. Since that time, the Galapagos Islands have become some of the best studied tropical island ecosystems in the world, advancing knowledge across several scientific disciplines and providing a valuable testing ground for effective conservation strategies on islands globally. Despite being relatively young from a geological perspective, the Galapagos Islands host a diverse biota; scientists have documented more than 1,300 species unique to the archipelago[9]. Individually and collectively, these species represent some of the best examples of adaptive radiation available today. The exploration of deep sea communities in the Galapagos archipelago continues to reveal species new to science.

5. Terrestrial taxa emblematic of the Galapagos Islands include eleven species of giant tortoise (e.g., the Galapagos tortoise, *Chelonoidis nigra* from Floreana Island) and three species of land iguanas (e.g., the Galapagos land iguana, *Conolophus subcristatus*), the most northerly species of penguin in the world (Galapagos penguin, *Spheniscus mendiculus*), flightless cormorants (*Phalacrocorax harrisi*), the Darwin's finches (family Geospizinae) and Galapagos mockingbirds (*Mimus spp.*) made famous in Darwin's publications, and seemingly-fanciful plants (e.g., giant daisy trees, *Scalesia* spp.). The marine fauna also has an unusually high level of diversity and endemism; of the 2,909 marine species identified, 18% are endemic. High profile marine species include: sharks (e.g., whale sharks, *Rhincodon typus*), rays (e.g., manta rays, *Manta birostris*), and cetaceans (e.g., killer whales, *Orcinus orca*). The interactions between the terrestrial and marine biotas are exceptional; much of the island

[9] http://www.darwinfoundation.org/datazone/checklists/

wildlife [e.g., marine iguanas (*Amblyrhynchus cristatus*) and Galapagos sea lions (*Zalophus wollebaeki*)] is directly dependent on marine resources, while marine species receive vital nutrients from terrestrial fauna (e.g., guano from seabirds). In the Galapagos archipelago, terrestrial and marine life are inseparably linked.

6. Unlike other oceanic archipelagos, the ecological and evolutionary processes characteristic of the Galapagos Islands have, until recently, been minimally affected by human activities; more than 95% of species are still extant. The persistence of the rich, unique biodiversity made famous by Charles Darwin has positioned the Galapagos Islands as one of the most renowned natural sites in the world. They are one of the 'jewels' of Ecuador and a top conservation priority. All of the marine and coastal environs (13,300,000 ha) and nearly 97% of the land area (761,844 ha) in the Galapagos archipelago are under at least one form of protection.

7. The Government of Ecuador (GoE) created the Galapagos National Park (GNP) in 1959 and designated the Galapagos Marine Reserve in 1996. In acknowledgment of their global conservation value, the Galapagos Islands became the first World Heritage Site in 1978 and were designated as a United Nations Educational, Scientific and Cultural Organization (UNESCO) Man and Biosphere Reserve in 1984. However, largely due to threats posed by invasive alien species, UNESCO listed the Galapagos Islands as a World Heritage Site in Danger in 2007.[10] Within the Galapagos Islands, specific sites have additional protected area status.

8. The World Wildlife Fund (WWF) includes the Galapagos archipelago among the 'Global 200 Ecoregions,' thereby highlighting it as a priority for conservation.[11]

9. Birdlife International has designated ten distinct Important Bird Areas (IBA's) in the Galapagos archipelago: San Cristobal Island, Espanola Island, two satellite islands of Floreana Island (Champion and Gardner), Floreana Island, the uplands of Santa Cruz Island, Puerto Ayora, southern wetlands of Isabela Island, uplands of Isabela Island, coastal areas of Fernandina Island and western Isabela Island, and the uplands of Santiago Island[12]. The IBA status is intended to help prioritize funds and implement urgent actions within regional priority setting schemes. IBA's have become a focal point for organizing stakeholders to meet shared conservation goals.

10. The Alliance for Zero Extinction (AZE) identifies and safeguards the places where multiple species evaluated to be Endangered or Critically Endangered under IUCN-World Conservation Union criteria[13] are restricted to a single site. Within the Galapagos archipelago, AZE sites include: the coastal areas of Fernandina Island and western Isabela Island; Floreana Island and its satellite islands, Champion and Gardner; Espanola Island; and San Cristobal Island[14]. National 'Alliances for Zero Extinction,' representing partnerships of government agencies and non-government organizations, have been initiated to accelerate the protection of AZE sites in compliance with national commitments under the Convention on Biological Diversity (CBD).

1. The global environmental problems, root causes and barriers that need to be addressed:

1.1. Threats

[10] It was removed from the list of World Heritage Sites in Danger in 2010
[11] Olson and Dinerstein 2002
[12] http://www.birdlife.org/datazone/userfiles/file/IBAs/AmCntryPDFs/Ecuador.pdf
[13] http://www.iucnredlist.org/
[14] http://www.zeroextinction.org/search_results_country.cfm

11. Despite the various protection statuses awarded to the Galapagos Islands, the archipelago remains extremely vulnerable to environmental change. Eighty of the archipelago's native species are categorized as Critically Endangered on the IUCN Red List, and a further 164 are considered threatened with extinction[15]. The loss of individual species has profound, cascading impacts at the ecosystem level whenever ecosystem processes (e.g., pollination, nutrient cycling) are compromised. The gradual decline in biodiversity has an adverse effect on human livelihoods through the loss of: a) food and medicine supply (e.g., protein from fish, as well as plant medicines); b) ecosystem system function and resilience (e.g., water purification, soil fertility, and storm protection), c) cultural norms (e.g., spiritual and aesthetic values), and income opportunities (e.g., ecotourism and commercial fishing).

12. The GoE's 5th National Report to the CBD[16] identifies the main threats to the country's terrestrial biodiversity as: the loss and degradation of habitats (esp., deforestation for agricultural expansion), invasive alien species, wildlife trafficking, unsustainable hunting, pollution, climate change (including extreme weather events), and population growth. Ecuador's marine environments are largely threatened by overfishing, habitat-destructive fishing practices (e.g. dynamiting), the physical alteration of coastal and continental shelf habitats (e.g., estuaries and mangroves) for development, and land-based sources of pollution.

13. At subnational scales, the importance of these threats varies. In the Galapagos archipelago, protected area status has helped curb large-scale deforestation, coastal development, wildlife trafficking, unsustainable hunting, exploitative fisheries, and pollution. Nevertheless, all of the islands and associated marine ecosystems are being adversely impacted by four inter-related threats: invasive alien species, climate change, population growth, and expanding tourism[17]. The four human-inhabited islands (Santa Cruz, San Cristobal, Isabela, and Floreana) are also subject to habitat destruction for township development and agricultural expansion[18]. A fifth island (Baltra) that hosts tourism and military infrastructure (e.g., one of three airports in the archipelago) may become the focus of further industrial development. Parts of Baltra Island are not within the bounds of the GNP.

14. The greatest threat to biodiversity in the Galapagos Islands is biological invasion[19]. For this reason, the remainder of this section and the project proposed herein will focus on invasive alien species. Invasive alien species are one of the most significant drivers of environmental degradation and species extinction worldwide, and are generally considered the primary cause of biodiversity loss in island ecosystems[20]. They are responsible for the endangerment and extinction of a wide range of taxa, degradation of freshwater, marine, terrestrial ecosystems, and the alteration of biogeochemical cycles. They contribute to social instability and economic hardship, consequently placing constraints on the conservation of biodiversity, sustainable development, and economic growth. The globalization of trade, travel, and transport is greatly increasing the number and type of invasive alien species that are being moved around the world, as well as the rate at which they are moving. At the same time, changes in climate and land use are rendering some habitats, even the best protected and

[15] http://www.iucnredlist.org/; Roque-Albelo 2007; Tye 2007
[16] Ministry of Environment 2014; https://www.cbd.int/doc/world/ec/ec-nr-05-es.pdf
[17] The World Bank estimates that tourism contributed $1,039,000,000 to the country's economy in 2012, the majority of which was generated in the Galapagos Islands; http://data.worldbank.org/country/ecuador
[18] Human settlements are currently restricted to @3% of the land area of the Galapagos archipelago in specifically zoned rural and urban areas
[19] Watkins and Cruz 2007; Helmsley Charitable Trust's Galapagos Strategic Plan 2012; https://www.worldwildlife.org/ecoregions/nt1307
[20] Sax and Gaines 2008; Reaser et al. 2007

most remote natural areas, more susceptible to biological invasion[21]. In its 5th National Report to the CBD[22], the GoE identified strategic and timely actions to mitigate the adverse impacts of invasive alien species as conservation imperatives.

15. Unfortunately, hundreds of invasive alien species are already well established within the Galapagos archipelago. Some of these organisms arrived with seafarers more than 100 years ago, while others have been introduced (deliberately and inadvertently) within the last decade. Examples of invasive alien species that have already had substantial impacts in the Galapagos Islands include: black rats (*Rattus rattus*), house mice (*Mus musculus*), feral cats (*Felis catus*), feral goats (*Capra hircus*), feral donkeys (*Equus asinus*), fire ants (*Solenopsis geminata* and *Wasmannia auropunctata*), yellow fever mosquito (*Aedes aegypti*), Mediterranean fruit fly (*Ceratitis capitata*), Philornis (*Philornis downsi*), blackberry (*Rubus niveus*), and grape algae (*Caulerpa racemosa*).

16. Surveys of invasive alien species in the Galapagos Islands indicate that at least:

    - 19 species of non-native vertebrates are established (9 species of mammals, 4 species of birds, 3 species of reptiles, 1 species of fish, and 1 species of amphibian);[23]
    - 543 introduced terrestrial invertebrate species have been introduced, of which 55 are considered harmful or potentially harmful to native biodiversity;[24]
    - 640 plant species have been introduced, most with unknown potential impacts;[25] and
    - 7 marine invasive alien species are now present (another 30 species are awaiting analysis).[26]

17. Invasive rodents and feral cats have had particularly pervasive impacts on endemic birds, small mammals, small reptiles, and giant tortoises. Table 1 provides an overview of the biological and socio-economic consequences of invasive rodents and feral cats in the Galapagos archipelago.

18. The impacts of invasive alien species on endemic species can have ecosystem-wide ramifications. For example, when invasive rodents feed on giant tortoise eggs and hatchlings they reduce the number of tortoises available to spread seeds (through their excrement) and 'plant' the next generation of native trees and shrubs. As canopy cover declines, so do the populations of understory plants that require shading from the harsh tropical sun. The loss of understory vegetation makes landscapes more vulnerable to soil erosion and contributes to declines in soil fertility through mineral leaching. This impairs soil fertility and undermines the capacity of landscapes to be resilient to further perturbations (e.g., extreme weather events, climate change.)

19. The eradication of invasive alien vertebrates has demonstrated the capacity of natural landscapes to recover once the pressures of predation and herbivory by the invasive alien species have been removed. For example, vegetation monitoring that has followed the goat eradication work conducted in the Galapagos archipelago (Annex 4) has revealed that the native plant communities on Pinta, Santiago, Isabela and Floreana Islands are recovering without additional human intervention[27], and

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[21] McNeely 2001; Reaser et al. 2004; Simberloff and Rejmanek 2011
[22] Ministry of Environment 2014
[23] Phillips et al. 2012
[24] GBA 'Consolidating the system of preventing, controlling and eradicating invasive species in the Galapagos Islands' approved by National Planning Authority (2013)
[25] Tye 2007
[26] Keith et al. unpublished data
[27] Hamann, O. 1979. Regeneration of vegetation on Santa Fe and Pinta islands, Galapagos, after the eradication of goats. Biological Conservation 15:215-236; Hamann, O. 1993. On vegetation recovery, goats and giant tortoises on Pinta Island, Galápagos, Ecuador. Biodiversity and Conservation 2:138-151

that populations of eight endemic plant species listed as Critically Endangered or Endangered on the IUCN Red List have increased in both number of populations and individuals, including the endangered endemic tree, *Scalesia atractyloides*, that was feared extinct[28]. The dramatic recovery of this endemic tree following goat eradication on Santiago Island has led to a proposal to downgrade its endangered status[29].

Table 1. Impacts of Invasive Rodents and Feral Cats

IMPACTS	RODENTS	FERAL CATS
Biodiversity	• **F**eed on the eggs of endemic birds and reptiles, as well as the fruit/seeds of endemic plants • **P**rey on native insects, as well as small birds and reptiles • **T**hrough predation and disease, have contributed to the global extinction of at least 4 Galapagos endemic wildlife taxa, the local extinction of at least 17 endemic wildlife species and contributes to the threatened status of at least 65 IUCN Red List threatened animal species • **C**ontribute to fisheries decline by consuming inter-tidal species (e.g., chiton) and endemic shellfish • **D**isrupt biogeochemical cycles (e.g., guano deposition in highland forests) • **S**upport higher densities of introduced predators (e.g., feral cats), further exacerbating negative impacts on native wildlife	• **P**rey on large numbers of native insects, birds, mammals, and reptiles • **T**hrough predation, has contributed to the global extinction of at least 4 Galapagos endemic wildlife taxa, the local extinction of at least 17 endemic wildlife species and contributes to the threatened status of at least 14 IUCN Red List threatened animal species • **D**isrupt biogeochemical cycles (e.g., guano deposition in highland forests) • **A**re the critical host for *toxoplasma gondii*[30], which can be lethal to wildlife
Food Security	• **D**eplete food supplies by destroying in-field crops, depredating stored food/seed, and fecal contamination • **P**rey on chicks and eggs of poultry • **C**onsume marine resources that the residents of Floreana Island directly depend on for food	• **P**rey on poultry • **A**re the critical host for *toxoplasma gondii*, which can infect and be lethal to livestock
Human Health	• **C**ontaminate dwellings with excrement • **S**erve as primary vectors of disease and hosts for parasites, including	• **C**ontaminate areas near dwellings with excrement

[28] Atkinson, R., J. L. Renteria, and W. Simbaña. 2008. The consequences of herbivore eradication on Santiago: are we in time to prevent ecosystem degradation again? Pages 121-124 in L. J. Cayot, and M. V. Toral Granda, editors. Galapagos Report 2007-2008. CDF, GNP & INGALA, Puerto Ayora, Galapagos, Ecuador

[29] Tye, A., 2007. La flora endémica de Galápagos: aumentan las especies amenazadas, In Informe Galápagos 2006-2007. pp. 101-107. Parque Nacional Galápagos, Fundación Charles Darwin, Instituto Nacional Galápagos, Puerto Ayora, Galápagos

[30] On Floreana Island, *Toxoplasma gondii* is a threat to human residents and visitors, as well as the endemic Galapagos sea lions (*Zalophus wollebaeki*), Galapagos penguins (*Spheniscus mendiculus*), and other wildlife. Symptoms of toxoplasmosis in native fauna include poor coordination, blindness, lethargy, respiratory and enteric distress, and sudden death. In infected people, similar symptoms are exhibited and may include spontaneous abortions.

IMPACTS	RODENTS	FERAL CATS
	lymphocytic clorio-meningitis, plague, leptospirosis, hantavirus, and salmonellosis	• **P**rimary vectors of disease and hosts for parasites, including toxoplasmosis

1.2. Root Causes

20. A number of inter-acting factors make the Galapagos Islands particularly vulnerable to the introduction, spread, and impacts of invasive alien species. These include:

    - Geographic isolation that necessitates inter-continental trade and transport;
    - Growth of the resident populations on the four inhabited islands[31];
    - Rapid economic development and resources consumption (esp., tourism growth[32]); and
    - Extreme weather events (associated with climate change) that cause habitat disturbance.

21. With the exception of climate change-related factors, each of these root causes is directly related to what are known as the 'Three Ts' of biological invasions: trade, travel, and transport[33]. Trade, travel, and transport are the biological pathways by which invasive alien species are introduced into new ecosystems where they can cause harm and further spread.

22. In recent years, the biological isolation of the Galapagos archipelago has been significantly reduced by the growing number of cargo ships, private vessels, and planes bringing people, goods, and equipment to the islands (Annex 1). As tourism (an economic mainstay for the archipelago[34]) and resident population numbers increase, so do the risks of introducing invasive alien species into the archipelago's sensitive terrestrial and marine ecosystems.

23. In 1998, Ecuador passed the Special Regime Law for the Galapagos Islands (LOREG), establishing a legal framework to ensure the conservation and economic autonomy of the archipelago. LOREG included provisions for creating a formal entity dedicated to the preventing invasive alien species introductions through trade and tourism pathways. The organization, known as the Galapagos Inspection and Quarantine System (SICGAL), was responsible for monitoring activities within Galapagos Islands and preventing the transmission of non-native organisms among islands. In June 2015, a new version of the LOREG was passed, providing even more biosecurity enforcement powers to the new Galapagos Biosecurity Agency (GBA; further discussed later in this document), including penalties for infractions. During 2015, additional biosecurity regulations, based on the new law were developed.

24. Despite the advancement in regulatory frameworks, the rate of non-native species introductions into the Galapagos archipelago has remained steady in recent decades.[35] The combination of a booming tourism industry with weak biosecurity leaves the Galapagos Islands extremely vulnerable to biological invasion. Of particular concern is the number of air and sea pathways that could allow for non-native species introductions. At present, 11 air and seaports act as 'doorways' between the islands and the mainland.

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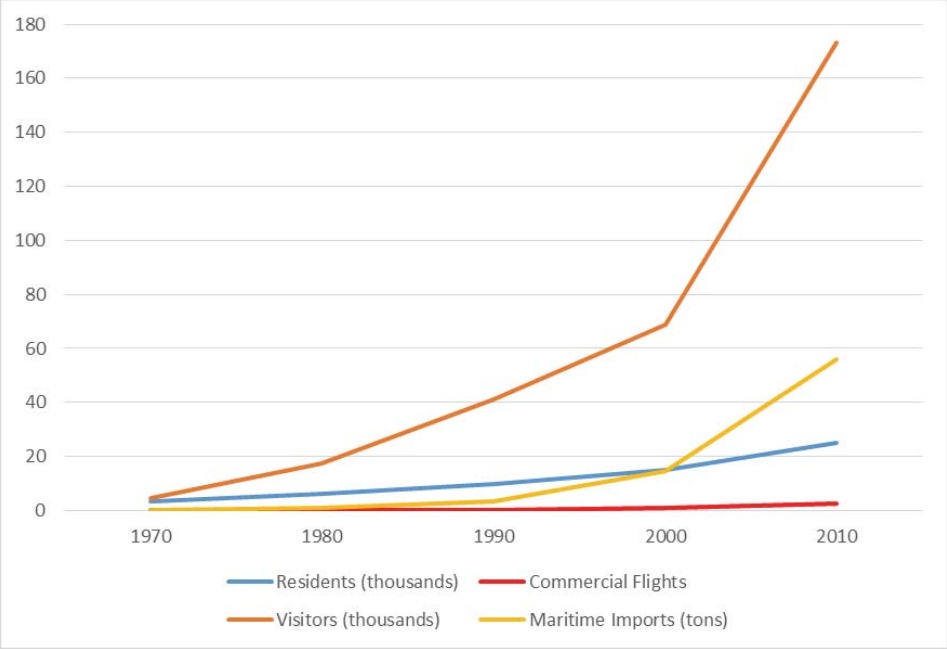
[31] Approximately 30,000 people (temporary and permanent residents) currently live on the islands
[32] Approximately 216,000 tourists visited the islands in 2014. GNPD 2015
[33] McNeely 2001
[34] Based on 2006 data, Galapagos tourism represented a total value of $419 million, $63 million of which entered the local economy. In 2006, 145,000 tourists visited Galapagos, while in 2014, 216,000 visited. Watkins and Cruz 2007; GNPD 2015
[35] GBA 2014

25. According to a study published by WildAid in 2012[36], three airlines operate over 40 flights per week to Baltra and San Cristobal Island airports from Quito and Guayaquil, transporting between 83-87 passengers per flight. Inter-island airlines have the capacity to provide over 50 passengers daily access from Baltra to Isabela and San Cristobal Islands, which is augmented by multiple 18-26 passenger ferry boats that depart daily from local ports. In addition to cargo ships and ferries, increasing numbers of tour boats and private yachts circulate in and around the Galapagos Marine Reserve, all with the potential to introduce invasive alien species.

26. Tourists exert additional pressure on already-strained local resources by creating a transient population in the archipelago. If 100,000 visitors remain in the islands for an average of seven days over the course of a year, they are the functional equivalent of an additional 2,040 residents requiring food, water, energy, and a wide range of other commodities. Figure 2 provides a summary of the steady, sharp growth in the human population and the associated demand for imported goods in the Galapagos archipelago since the 1970s.

Figure 2. Summary of Growth in the Number of Residents, Visitors, Passenger Flights and Maritime Cargo Arriving in the Galapagos, 1970 to 2010[37]



27. Such rapid growth in resident and visitor populations could mean that as soon as 2040, residents and visitors to Galapagos Islands will require over 150,000-160,000 tons of imported goods per year, more than triple the demand today. This level of inputs not only overwhelms current port infrastructure, but also presents the greatest threat to the archipelago's ecosystems from the introduction of new invasive alien species. The impacts that species introduced via cargo transport can have on the islands' native flora and fauna are virtually limitless. Pests and plant diseases can also affect the health and economic welfare of the resident human populations. Fresh produce is a known vector for plant diseases and soil nematodes. Regulations enacted in 2013 required ship's external

[36] WildAid 2012
[37] WildAid 2012, page 9

lights to be yellow and for bug-zappers to be functional on all boats, in order to minimize the risk of insects that are attacked to night lighting entering cargo shipments. Hull inspections of all boats are now required at mainland ports prior to departure to and upon arrival into Galapagos in order to reduce the risk of marine invasives being introduced through hull fouling.

28. In 2012, WildAid made recommendations to the Galapagos Biosecurity Agency (GBA) for improving biosecurity throughout the Galapagos archipelago[38]. Taking these recommendations into consideration, the GBA recently released a strategic plan for advancing a comprehensive state-of-the-art biosecurity program[39.] Examples of consistent priorities are included below and further detailed in Annex 3.

    - Create a hub port with shipping and cargo inspection capacities in Guayaquil (mainland Ecuador) to focus departure/inspections;
    - Increase in inspection staff by at least 50%, with a concentration at the Guayaquil hub port;
    - Establish a comprehensive training program for inspectors, to include instructions on how to use new detection devices and follow prescribed guidelines and rules;
    - Provide additional detection devices and other equipment at the ports to improve pest interception rates; and
    - Update protocols and guidance documents to better ensure standardization and proper implementation of procedures by inspectors.

1.3. Barriers

29. Many of the barriers that are typical of efforts to prevent, control, and eradicate invasive alien species (e.g., lack of political support; insufficient collaboration and public participation; ineffective policy, legislation, or other frameworks) have already been overcome in the Galapagos archipelago by the:

    - Global recognition of the Galapagos Islands as an area of substantial biological importance and a highly valued tourist destination;
    - Leadership of high-level political officials across environment, agriculture, and human health sectors who are already well aware of the adverse impacts that invasive alien species have on biodiversity and human livelihoods at international, national, and subnational scales;
    - Long and successful history of scientific and technical cooperation with other governments, non-governmental institutions (NGOs), inter-governmental organizations (IGOs), and academic institutions;
    - Substantial financial investment in conservation in the Galapagos archipelago by the GoE, various international donors and collaborating NGOs;
    - A special law (LOREG), management authorities (GNPD, GBA), a plan (Total Control Plan), and a fund (Fund for the Control of Invasive Species in Galapagos; FEIG) explicitly committed to preventing the introduction and mitigating the impacts of invasive alien species; and
    - The substantial experience that the GoE and its partners have in the design and implementation of large-scale, multi-faceted conservation projects in the Galapagos Islands.

30. The remaining barriers to the prevention, eradication, and control of invasive alien species are largely technical and financial in nature (Table 2). Many of these barriers are particularly challenging to overcome in the Galapagos archipelago due to Ecuador's socio-economic status as a developing

[38] WildAid 2012; pages 40-43
[39] GBA Strategic Plan 2015

country, wide dispersion of the islands across the archipelago and their often steep and rugged terrain which hinder accessibility, the logistical difficulties inherent in securing island borders, the rapid increase in trade and tourism upon which the region depends (discussed above), and the urgency and large-scale of action required to secure species that are on the brink of extinction.

Table 2. Barriers to and Opportunities for Achieving Goals to Prevent, Eradicate, and Control Invasive Alien Species in the Galapagos Islands

BARRIERS	NEEDS/OPPORTUNITIES
Paucity of scientific and technical information on the vast majority of invasive alien species. *The GNPD and GBA have successfully minimized this barrier through international cooperation.*	• Use of various 'new' online databases and tools for accessing and analyzing technical information on invasive alien species globally (e.g., CABI Compendium[40], Global Database on Invasive Alien Species[41], Threatened Island Biodiversity database[42], Database of Island Invasive Species Eradications[43])
Limited technical capacity to design and implement highly effective prevention, eradication, or control programs. *This remains a barrier for the GNPD and GBA due to limited education and training opportunities for Ecuadorians. The GNPD and GBA must increase collaborations with international partners to address this barrier.*	• International collaboration to provide technical capacity in the short-term and improve capacity over the long-term • Leveraging Ecuador's Prometeo program[44]
Lack of equipment and personnel to adequately inspect the vast amount of cargo and equipment in transit. *This remains a barrier for the GBA due to: a) lack of financial capacity to afford equipment and employ personnel and b) the lack of qualified personnel in Ecuador. This GEF 6 project is intended to help Ecuador overcome this barrier in the short- and long-term.*	• International collaboration to establish standards of excellence at ports of departure and entry through detailee ('personnel loan') initiatives, training, equipment loans, and granting programs
Decline in taxonomic capacity to identify (esp. rapidly identify) invasive alien species once intercepted. *This barrier is particularly challenging for the GBA due to the lack of qualified personnel and limited access to computing equipment (thus internet access) at the ports of entry. At this time, Ecuador must engage in international cooperation in order to address this barrier.*	• Global efforts to raise awareness of the 'taxonomic impediment' (e.g., Global Taxonomy Initiative[45]) • New on-line tools, as well as barcoding technologies and experts for specimen identification • International cooperation in specimen identification • GBA constructing new laboratory and facilities for housing reference collections in 2017

[40] http://www.cabi.org/isc/
[41] http://www.issg.org/database/welcome/
[42] http://tib.islandconservation.org/
[43] http://diise.islandconservation.org/
[44] http://prometeo.educacionsuperior.gob.ec/
[45] https://www.cbd.int/gti/

BARRIERS	NEEDS/OPPORTUNITIES
	• Leveraging Ecuador's Prometeo program[46]
High cost of effective biosecurity programs. *The GBA is actively engaging in international cooperation to overcome this barrier. Component 1 of this GEF 6 project is intended to assist with financing port-based inspection equipment.*	• Consolidation of pathways through 'hub' ports, such as is planned for Guayaquil • Cooperation in port financing among trade partners and high-use industries • Personnel and equipment sharing among neighboring countries and trade partners • Sharing of current practices through scientific and policy fora, as well as online resources (e.g., CABI Compendium[47] and ISSG Pathways Management Resource[48]) • Global efforts to develop standards, guidelines and tools that make biosecurity programs more cost-effective (e.g., various activities under the International Plant Protection Convention[49] and World Organization for Animal Health[50])
High cost of eradication programs. *The GNPD is actively engaging in international cooperation to overcome this barrier, and has already completed several invasive alien species eradications in the Galapagos archipelago. Component 2 of this GEF 6 project is a major step towards overcoming this barrier for invasive rodents and feral cats on Floreana Island.*	• Sharing of best practices through scientific and policy fora, as well as online resources (e.g., Database for Island Invasive Species Eradications[51]) • Innovative approaches to increasing cost efficacy • Personnel and equipment sharing among countries with similar programs • International collaboration among countries sharing pathways and/or borders
High cost of control programs. *The GNPD and GBA are actively engaging in international cooperation to increase the cost effectiveness of control programs. GNPD already has invasive alien species control programs in place for feral pigs (Sus scrofa), blackberry (Rubus niveus) and other invasive alien species. GBA has programs in place for giant African snails (Achatina fulica), Mediterranean fruit fly (Ceratitis capitata) and other invasive alien species. Although the control of invasive alien species in the Galapagos archipelago is not being funded through this GEF 6 project, it is being financially and technically supported by other donors and collaborators working in Ecuador. This includes applied research into biocontrol agents for some of the worst invasive insects and plants in Galapagos [e.g. fire ants (Solenopsis germinata and Wasmannia auropunctata) and blackberry (Rubus niveus)].*	• Sharing of best practices through scientific and policy fora, as well as online resources • Personnel and equipment sharing among countries with similar programs • International collaboration among countries sharing the same invasive species, pathways and/or borders • Improvements and growing investments in biocontrol as tool for an increasing number of invasive alien species

[46] http://prometeo.educacionsuperior.gob.ec/
[47] http://www.cabi.org/isc/
[48] http://acronym.co.nz:8086/about.aspx
[49] IPPC; https://www.ippc.int/en/core-activities/standards-setting/
[50] OIE; http://www.oie.int/international-standard-setting/overview/
[51] http://diise.islandconservation.org

31. The project described herein will take into full account the remaining barriers to minimizing the spread and impact of invasive alien species. It will also take the existing assets into consideration. The following sections focus on the activities to be executed through this GEF 6 project, as well as their justification.

2. The baseline scenario and any associated baseline project:

2.1 Baseline scenario:

32. The GoE is well aware of the adverse impacts that invasive alien species have on biodiversity and human livelihoods, particularly in the Galapagos Islands. Annex 2 provides an overview of the major accomplishments that the GoE and its partners have made in the prevention, control, and eradication of invasive alien species over the last two decades. Although the costs of specific activities are not available at this time, an estimate of expenditures has been provided as an indicator of investment level.

33. Many of the recent advances in the prevention, eradication, and control of invasive alien species in the Galapagos Islands were achieved between 2002 and 2011 under the auspices of the 'Control of Invasive Species in the Galapagos Archipelago' (ECU/00/G31) project funded by the Global Environment Facility (GEF) and executed by the Ministry of Environment (MoE)[52]. Major accomplishments included:

- Establishment of the Fund for Control of Invasive Species in the Galapagos (FEIG);
- Greater management capacity of the Galapagos National Park Directorate (GNPD) and Charles Darwin Foundation (CDF);
- Improved border protection by the Galapagos Inspection and Quarantine System (SICGAL), advances in public policy by the National Institute of the Galapagos (INGALA); and
- A pilot goat eradication project on northern Isabela Island.

34. The terminal project evaluators concluded, however, that the Total Control Plan for effectively managing invasive alien species was "not fully positioned and internalized within Galapagos Institutions" and thus unable to adequately address current invasions, nor prevent additional invasive alien species from establishing in the Galapagos archipelago. Project ambition, complexity, and institutional/political stability were cited as driving factors[53].

35. Numerous challenges to minimizing the spread and impact of invasive alien species do remain to be addressed in the Galapagos archipelago[54]. The baseline scenario, including priority needs for preventing, eradicating, and controlling invasive alien species in the Galapagos Islands, are summarized below.

2.1.1. Prevention (Biosecurity/Pathway Management): Puzzle Pieces that Keep Invasive Alien Species Out

36. The GoE recognizes that international trade, travel, and transport are pathways for the introduction of invasive alien species, and that prevention is typically the most cost-effective means for minimizing

[52] http://www.hear.org/galapagos/invasives/features/gef.htm
[53] Coello and Sanders 2011
[54] FEIG baseline study 2010

the impact of invasive alien species. The GBA was established in 2012 to prevent the introduction of invasive alien species into the Galapagos archipelago. In 2014, quarantine inspectors made 7,034 confiscations across all categories of pest-risk goods at all ports. In 2014, 102 inspectors were able to inspect 98.6% of the 18,452.3 tons of organic cargo moving between the continent and Galapagos Islands by air and sea[55]. Greater effectiveness of the GBA is currently limited by staff size and capacity, too many entry points for vessels and air traffic to enter the Galapagos archipelgo without adequate inspection, a lack of advanced technologies at all ports to make screening of cargo more effective and timely, and failure of the public/tourists to understand the importance of biosecurity and thus comply with rules and regulations[56].

37. Annex 3 provides an overview of the GBA's priorities for advancing biosecurity throughout the Galapagos archipelago. These priorities were recently set out in the GBA's 2015-2018 Strategic Plan, a document largely informed by a needs analysis and recommendations for biosecuirty improvement completed by WildAid in 2012. A complementary plan for a consolidated port in Guayaquil is currently being advanced by the Galapagos Government Council (GGC). Table 3 provides an overview of the two priorities to be explicitly addressed by the project proposed here.

38. Failure to meet the GBA's priority needs in the near-term will result in:

    - Invasive alien species continually being spread through trade and transport pathways into the Galapagos archipelago and beyond;
    - New introductions of invasive alien species in the Galapagos Islands across all taxonomic groups;
    - Increasing threats to endemic species (80 already Critically Endangered, and 164 more that are threatened) and the 788,200 hectares of terrestrial and 13,300,000 hectares of marine fragile habitats in the archipelago (96.7% terrestrial and 100% marine under protected area status);
    - Ongoing, and likely more severe, impacts on native species and ecosystems, as well as human health, human livelihoods, and animal health;
    - Reduced ecosystem and socio-economic resilience to climate change and other environmental disturbances; and
- Loss of investment in all other conservation activities in the Galapagos archipelago – historical, current, and future.

[55] GBA 2014
[56] WildAid 2012; GBA Strategic Plan 2015-2018

Table 3. Priorities for Biosecurity Advancement to Be Addressed by the GEF 6 Project: Puzzle Pieces that Keep Invasive Alien Species Out

PRIORITIES[57]	BASELINE/BACKGROUND	ENTITY	ACTIONS/ROLE
Provide inspectors with adequate training	Inspectors have insufficient training to implement quarantine procedures in a standardized and consistent manner. The WildAid 2012 report recommended comprehensive training for all inspectors.	GBA, WildAid, This GEF-6 Project	The GBA 2015-2018 Strategic Plan calls for development and implementation of a training plan for specialized personnel (e.g., intercept identifiers, equipment operators) and the mobilization of sufficient funds to support this training. This priority is partially addressed under Component 1 of the GEF 6 project proposed herein.
Increase inspector effectiveness by providing them with automated equipment	Insufficient equipment and obsolete technology limit the quality of passenger and cargo inspections. Maritime ports lack X-ray devices, ionizing equipment, sniffers for organic products, and detectors of dangerous substances. These devices enable faster, more accurate, and non-intrusive inspection. The WildAid 2012 report identified the lack of technical capacity as a key factor hindering inspection capacity at ports of entry.	GBA, This GEF-6 Project	The GBA 2015-2018 Strategic Plan calls for the implementation of technology and equipment necessary for system-wide biosecurity of quarantine cargo and passengers, and training of inspection specialists (e.g., equipment operators). Identified potential funding sources are GoE investment projects and international cooperation. This priority is partially addressed under Component 1 of the GEF 6 project proposed herein.

2.1.2. Eradication: Puzzle Pieces that Eliminate Already Established Invasive Alien Species

39. Populations of several invasive alien species are already causing substantial harm to endemic species and fragile ecosystems within the Galapagos archipelago. See Section 1.1 for examples. Typically, the eradication of invasive alien species populations is best accomplished prior to the establishment of the species in a new locale, or when the established population is small and easily accessible.

40. Since 1960, the GNPD and parters have attempted 52 invasive vertebrate population eradications in the Galapagos Islands (Annex 4). Of these 52 attempts, 34 (65%) were sucessful, 9 (17%) were successful but followed by reinvasion of the species from nearby islands, and 9 (17%) failed due to insufficient funding to implement the work at the scale necessary to achieve complete eradication. In the case of the reinvasions, the risk of animals swimming from nearby islands to the islands from which invasive vertebrates had been successfully eradicated was fully recognized prior to the project being initiated.

41. The decision was made to accept the risk in order to: 1) substantially reduce the current impact of the invasive vertebrate population(s) and 2) study the process of reinvasion (if it occurred) so that the

[57] Priorities derived from GBA 2015-2018 Strategic Plan, GBA 2015 Plan for Port Consolidation, consultations with the GBA Directorate, and WildAid 2012 report to the GoE on advancing biosecurity in the Galapagos archipelago

lessons learned could be incorporated into the design of future projects. All 11 eradications of invasive mammals attempted on islands larger than 150 ha in the last 12 years have been successful and no reinvasions have occurred. The feral goat and pig eradications were the largest attempted worldwide.

42. As technical information, eradication tools (e.g., rodent baits), and funds have increased over the years, so has the success rate of the invasive vertebrate eradications. With the exception of two successful eradications that were followed by a reinvasion (black rats on Bartolome and Sombrero Chino Islands, 2011), all of the invasive vertebrate eradication projects over the last decade have been successul and results sustained. Upon completion of rodent eradications on Pinzon and Plaza Sur Islands in 2012, invasive mammals had been eradicated from all feasible uninhabited islands.

43. Despite these successes, additional invasive vertebrate eradication work is needed within the Galapagos archipelago. In 2012, the GNPD undertook an archipelgo-wide analysis of the presence and impact of invasive alien species and subsequently released a report entitled, "Control and Eradication of Priority Invasive Species to Reduce the Vulnerability of Endemic and Native Species of the Galapagos Islands." Invasive rodents and feral cats were considered among the top priorities for invasive vertebrate eradication due to: 1) their prevalence on multiple islands in the archipelago, 2) devastating impacts to biodiversity and human livelihoods, 3) proven capacity for island-wide eradication, and 4) they are the only invasive mammals remaining on the island with the smallest human population – Floreana Island (population @140).

44. Floreana Island, a 17,253 ha island in the south-central reaches of the archipelago, is of particular interest to the GNPD for multiple reasons:

- Because it is one of the oldest islands in the archipelago, Floreana Island has a higher rate of endemism than the younger islands to the west (endemic species per km^2);
- Due to its long history of human occupation (pirates and buccaneers began routinely visiting Floreana Island in the 1600s[58]), the endemic species on Floreana Island are among the most threatened in the world. The IUCN Red List currently includes 61 plant and animal species on Floreana Island considered Threatened (i.e. Vulnerable, Endangered or Critically Endangered) (Annex 5);
- Floreana has a higher concentration of IUCN Critically Endangered species (one in every 17.2 km^2) than any other major Galapagos island. It also has the highest concentration of IUCN threatened animals (one in every 7.8 km^2) for any Galapagos island where invasive vertebrates are present (unpublished analyses);
- The human population on Floreana Island is highly dependent on local resources, subsistence farming and nature-based tourism. Therefore, adverse impacts on biodiversity pose substantial threats to the local people;
- On the highlands of Floreana Island, invasive alien species (in combination with agriculture) have already led to the degradation of 38% of the humid vegetation zone, 2% of the transitional vegetation zone, and 0.5% of the arid lands[59].
- Floreana Island has the potential to serves as a 'transformational opportunity' for invasive alien vertebrate eradication on human-inhabited islands. Because the island and the human population are smaller than the other islands in the Galapagos archipelago and the biodiversity is already

[58] Gonzalez et al. 2008
[59] Gardener et al. 2010

well-studied, Floreana Island offers the best opportunity for the GNPD and its partners to establish effective protocols for the eradication of invasive rodents and feral cats from inhabited islands. Once the eradication procedures are proven, they can be upscaled to the three remaining human-inhabited islands in the Galapagos archipelago and potentially hundreds of human-inhabited islands worldwide. The capacity to permanently eliminate invasive rodents and feral cats from islands with human populations will establish a new benchmark in island biodiversity conservation: species and ecosystems that could not be previously protected from the adverse impacts of invasive vertebrates can be protected and their viability secured over the long-term.

45. Most species of large invasive mammals have already been removed from Floreana Island. Feral pigs (*Sus scrofa*) were eradicated in the 1980s and feral cattle (*Bos taurus*) were eradicated in 2007. Feral goats (*Capra hircus*) and donkeys (*Equus asinus*) were eradicated from the island in 2008. Remaining invasive vertebrates include: black rats (*Rattus rattus*), house mice (*Mus musculus*), feral cats (*Felis catus*), smooth-billed ani (*Crotophaga ani*), and an introduced gecko (*Phyllodactylus reissii*). At this time, livestock, poultry, and dogs are being well-maintained by the local residents. GBA census data indicates that as of February 2017 only three unsterilized domestic cats remain at two household in town. Sterilization campaigns by the GBA, supported by IC, have seen all other domestic cats sterilized. The remainder of the domestic cats are expected to be sterilized by the end of 2017.

46. The invasive alien vertebrates currently inhabiting Floreana Island are distributed across the whole of the island. Invasive rodents and feral cats tend to have higher concentrations in areas of human activity. However, the island-wide densities of the invasive vertebrates vary by species, season, and year. Responding to the GoE's urgent need to protect the biodiversity and people of Floreana Island, IC undertook a study in 2012 in order to assess the feasibility of eradicating invasive rodents and feral cats from Floreana Island. The results of this feasibility study, published by IC in 2013[60], indicated that the eradication of invasive rodents and feral cats is feasible from a technical perspective. Based on the report, the priorities identified by the GNPD were to:

    - Eradicate black rats, house mice, and feral cats island-wide;
    - Once eradication is complete, repatriate at least five endemic species to Floreana Island from satellite islands and secure their populations;
    - Facilitate habitat recovery to the benefit of all threatened species, as necessary;
    - Establish a community-based early detection/rapid response (EDRR) program on Floreana Island to facilitate detection and eradication of new introductions; and
    - Apply lessons learned from the Floreana Island eradication work to other human-inhabited islands in the archipelago.

47. Two limitations to project implementation remained, however: lack of definitive social license (stakeholder acceptance) for eradication actions and insufficient funding. Because eradication efforts can encounter socio-cultural obstacles (e.g., beliefs that animals should not be removed or not removed via certain methodologies) and may present non-target risks to humans, livestock, and pets, it is imperative that a 'social infrastructure' is established well before a project commences. If funding is not made available for the project described herein, the global environmental benefits discussed in a later section and highlighted below will not be realizable for the biodiversity or people of Floreana Island.

[60] Island Conservation 2013. Floreana Island Ecological Restoration: Rodent and Cat Eradication Feasibility Analysis v.6.1. (English and Spanish)

48. Failure to eradicate invasive rodents and feral cats from Floreana Island will:

- Enable the persisting invasive vertebrate species to continue to predate upon, compete with, and/or spread pathogens and parasites to the native species of Floreana Island, including 61 species identified on the IUCN Red List as threatened with extinction;
- Likely result in the continued decline in threatened species: 6/14 vertebrate species and 14/14 invertebrate species (Annex 5);
- Allow for further degradation of Floreana Island's 17,253 hectares of sensitive terrestrial habitat;
- Decrease the nutrient transfer from the marine environment to the terrestrial environment by seabirds, thereby having an adverse impact on vegetation structure and composition;
- Prevent both terrestrial and marine ecosystems from being able to support the long-term viability of native species, and possibly human livelihoods;
- Substantially undermine investments already made in environmental conservation, ecotourism, and sustainable agriculture on Floreana Island; and
- Reduce Floreana Island's ecological and socio-economic resistance to the adverse impacts of climate change and other major environmental disturbances.

49. The GoE will also lose the opportunity for Floreana Island to serve as a catalyst for similar eradication work on other islands of the Galapagos archipelago. Other governments will not benefit from data and well-tested protocols that would enable them to move forward with invasive vertebrate eradications on human-inhabited islands worldwide.

2.1.3. Control: Puzzle Pieces that Prevent the Further Spread and Impact of Invasive Alien Species[61]

50. *Although invasive alien species control initiatives are not an explicit aspect of the activities proposed for GEF 6 funding, they are one of the four aspects of a comprehensive approach to minimizing the spread and impact of invasive alien species (aka., prevention, eradication, control, and restoration). Because invasive alien species control activities will be carried out by project partners as a complement to the invasive vertebrate eradication work that is proposed for GEF 6 funding, we have included a brief description of the 'control baselines' for the Galapagos archipelago below. It is important to note, however, that: 1) the restoration of ecological structure and function would not be feasible without the eradication and/or control of invasive alien species and 2) some of the partner activities are sufficiently integrated with the GEF 6 project to serve as co-financing. Control activities will not be addressed as part of the alternative scenario or incremental cost reasoning since they are not an aspect of the GEF 6 funding proposed herein.*

51. Many well established invasive alien species cannot be eradicated for logistical reasons (e.g., wide distribution, limited accessibility to invaded sites), methodological reasons (e.g., methods not developed), and/or social reasons (e.g., distributed over private land, valued by segment of the community). However, if there is sufficient scientific information, technical capacity, and funding, action can be taken over the long-term to control their population size and impacts at priority sites. Control programs have already been established for some highly impactful species in the Galapagos archipelago [(e.g., feral pigs (*Sus scrofa*), giant African land snails (*Achatina fulica*), blackberry (*Rubus niveus*) and biological control of cottony cushion scale (*Icerya purchasi*) by ladybird beetles (*Rodolia cardinalis*)]. The GNPD, GBA, and partners have identified numerous other species of flora and fauna for which control is desired, but currently not feasible due to limited funding, a shortage of highly trained personnel, and/or inadequate control technologies (e.g., biological control agents). On

[61] Control activities conducted by GNPD and GBA contribute to the overall objective of Component 2 – Preventing Extinctions – and are included as co-financing within that component.

human-inhabited islands, there have also been barriers to controlling livestock and pets that have the potential to become feral (invasive) due to a culture of 'free-range' management, lack of acceptance of spay/neuter programs, and other socio-political concerns.

52. As funding becomes available, priorities for invasive alien species control in the Galapagos archipelago are to:

    - Identify and, if feasible, employ biocontrol agents to manage high impact invasive alien species, including fire ants (*Solenopsis geminata* and *Wasmannia auropunctata*), Philornis (*Philornis downsi*), and blackberry (*Rubus niveus*); and
    - Establish a community-based program for the control of invasive plants at the agro-ecosystem interface.

53. Failure to control invasive alien species in the Galapagos archipelago will:

    - Enable the persisting invasive vertebrate species to continue to predate upon, compete with, and/or spread pathogens and parasites to the native species;
    - Allow for further degradation of sensitive marine and terrestrial habitats, thus preventing these ecosystems from being able to support the long-term viability of endemic species, and possibly human livelihoods;
    - Substantially undermine investments already made in environmental conservation, ecotourism, and sustainable agriculture; and
    - Reduce ecological and socio-economic resistance to the adverse impacts of climate change and other major environmental disturbances.

2.1.4. The Recovery of Species and Ecosystem Processes: Puzzle Pieces that Enable Ecosystem Restoration

54. The decline of endemic species in the Galapagos archipelago (see Annex 5 for Floreana Island) has a wide range of ecosystem-wide impacts, including reductions in seed dispersal, pollination, food supply, and soil nutrient availability. Species reintroductions, as well as the recovery of ecological structure and function, may be impossible where ecologically damaging invasive alien species persist.

55. Failure to achieve species recovery and ecosystem restoration in the Galapagos archipelago would eventually lead to the collapse of terrestrial ecosystems and a severe decline in marine ecosystems. Ecological and socio-economic resistance to climate change would be compromised to the degree that endemic species and human populations might not be able to persist in the Galapagos Islands.

56. Where invasive predators (e.g. invasive rodents and feral cats) and herbivores (e.g. feral goats) have been exterminated, ecosystem restoration is feasible for most previously-impacted species. However, occasionally, other barriers exist that impede recovery efforts. The endangered Galapagos hawk faces a socio-cultural barrier on Floreana Island. Galapagos hawks have been extirpated through human hunting from inhabited islands within the archipelago (excepting the massive island of Isabela which has several volcanoes), likely as a result of their naiveté to humans and habit of predating on poultry[62]. Currently, Floreana farmers allow poultry to range freely. This makes the poultry particularly vulnerable to predation by hawks and hawks the likely target of predator control actions by farmers. The adoption of poultry cooping practices would greatly reduce the risk of predation and thus enable the successful reintroduction of Galapagos hawks to Floreana.

[62] Island Conservation unpublished data; Bollmer et al. 2006

57. Due to their roles as seed dispersers and ecological engineers, giant tortoises (*Chelonoidis* spp.) function as keystone species within Galapagos ecosystems. Thus, the recovery of giant tortoises and their associated ecosystem processes (e.g. seed dispersal) are of particular importance to the restoration of Galapagos Island ecosystems, especially arid islands.

58. The Galapagos archipelago hosts two morphologically distinct types of giant tortoises: saddlebacks and dome. Contrary to the huge dome-carapace tortoises of the wet, lush highland regions of the larger Galapagos Islands, the saddlebacks' physical characteristics (small size, longer legs and neck, raised front of the carapace) are well-suited to arid islands and their associated floras. By the mid-1800s unsustainable harvesting and invasive alien species contributed to the extinction of saddleback tortoises on Pinta, Floreana, Santa Fe, and Fernandina Islands. Volcanism may have also contributed to the Fernandina tortoise species' extinction. Despite these pressures, the tortoises of Pinzón (*C. ephippium*) and Española Islands (*C. hoodensis*) managed to persist, although under threatened status. Española tortoises nearly went extinct, with a global population of 15 individuals in 1960. A captive breeding and head-starting program was initiated in 1963 and to date more than 1500 of their captive-raised offspring have since been released onto the island. This population is now considered to be self-sustaining, with translocated tortoises now breeding[63]. Luckily some other saddleback tortoises were also able to survive where explorers had relocated them to Isabela Island's Wolf volcano. Genetic sampling of that population led to the identification of individuals of Pinta and Floreana descent, and some pure-bred individuals may exist. A massive effort managed to re-identify individuals and translocate them to captive breeding facilities on Santa Cruz Island, but replication of this effort is needed to secure appropriate breeding stock.

59. Although it is not feasible to resurrect extinct species, the saddleback tortoises are similar enough in ecological function to enable the recovery of ecological processes through the translocation of closely related species ('ecological replacements'). IUCN has developed guidelines[64] to direct conservation-oriented translocations in an ecologically-sound manner. The GNPD's Santa Cruz Tortoise Center has been conducting giant tortoise breeding, head-starting, and translocation activities as part of island-specific recovery efforts for over five decades, resulting in amazing conservation success stories like Española.

60. Santa Fe Island (2,413 ha) is one of the oldest islands in the archipelago, is uninhabited and is home to a suite of island endemics, including the Santa Fe land iguana (*Conolophus pallidus*), Santa Fe leaf-toed gecko (*Phyllodactylus barringtonensis*), Galapagos rice rat (*Aegialomys galapagoensis*), and two island endemic plants (*Opuntia echios* var. *barringtonensis*, *Scalesia helleri* ssp. *helleri*). The island has not suffered any known extinctions, with the exception of Santa Fe giant tortoises which were driven to extinction by seafarers in the 1800s. Feral goats were introduced before 1900 and were eradicated in 1972, removing the island's only invasive mammal. Vegetation recovered over the following decades. The island is fully within the Galapagos National Park, has multiple visitor sites and is popular among tourists. As part of the Giant Tortoise Recovery Initiative Española tortoises as the closest genetic relative and of the same saddleback morphology will be used as ecological replacements for the extinct Santa Fe tortoise to re-initiate ecosystem processes that had evolved over more than 800,000 years. In 2015, 201 Española tortoises were released on Santa Fe, and additional

[63] Gibbs et al. 2014
[64] IUCN 2013

efforts will be required over the next years to build capacity and restore the island with approximately 4000 tortoises[65].

61. Captive breeding and head-starting efforts for giant tortoises in the Galapagos archipelago are primarily conducted at the GNPD's Santa Cruz Tortoise Center. As of February 2017, the center has seven corrals housing 46 adult tortoises that are part of breeding programs, and two corrals for non-breeding adult tortoises (sterilized males). Adult breeding stock includes 16 tortoises of Floreana and Pinta origin brought from remote Wolf volcano on Isabela Island in November 2015. For some populations, like Pinzon Island tortoises, eggs are harvested from the wild. Galapagos giant tortoises lay approximately 10-18 eggs per year in captivity, with sex being determined by the temperature they're incubated at. The center's two incubators have capacity for 16 trays each, with up to 12 tortoise eggs per tray. Four dark boxes for up to 40 hatchling tortoises each house tortoises upon hatching and up to one-month in age. At one-month, hatchlings are moved to one of thirty-one covered pens for growing out 20-30 hatchlings each. These pens are covered to protect hatchlings from invasive rats and other predators at this vulnerable life-stage. At approximately two years of age tortoises are moved from covered pens to one of four pre-adaptation corrals housing approximately 200 tortoises each, and where they stay until approximately five-years old. At this point they are the size of a small dinner plate and are ready for repatriating. In recent years, the center has produced, on average, 250 head-started tortoises per year for repatriating back to islands for population restoration and ecological replacement[66]. Four species have been the target of these efforts to-date.

2.2. Baseline projects:

62. The investments by the GoE, its technical partners, and donors (including the GEF) to secure the unique species and ecosystems of the Galapagos Islands are substantial, especially considering the country's budgetary limitations and numerous socio-economic needs. Numerous organizations, both within and outside of the Galapagos archipelago, have already made strong commitments to regional conservation and pledged their support to future activities. Examples of financial expenditures made in 2014 by institutions that will take a lead in this GEF 6 project include (US$): GBA ($4,965,207), GNPD ($1,960,451)[67], WildAid ($250,000), IC ($814,960), for a total of $7,990,618. Annex 6 provides an overview of baseline projects in the Galapagos archipelago that will complement the GEF 6 project proposed here. These investment projects prioritize and aim to direct public and non-reimbursable international cooperation to national priorities.

63. All aspects of this project are already underpinned by existing technical, operational, and/or financial capacity. Relationships among the project partners have, in many cases, been long established and benefit from a history of past successes. Coordination in the archipelago can be challenging due to its geographic spread and distance from GoE ministries in Quito. However, the project team members are familiar with these conditions and have developed operating procedures that cost-effectively meet communication and collaboration needs.

64. The GoE is not only committed to minimizing the impact and spread of invasive alien species, but is also determined to set a global example in an iconic archipelago, thus inspiring and empowering other countries to more effective conserve their biodiversity. Ecuadorian agencies, in collaboration with

[65] Tapia et al. 2015. Plan para la Reintroducción de las Tortugas Gigantes a la isla Santa Fe como Estrategia para su Restauración Ecológica.
[66] Definitions are in accordance with IUCN 2013 'Guidelines for Reintroductions and Other Conservation Translocations'
[67] FEIG contributions are included within the GBA and GNPD amounts.

their partners in the Galapagos Islands and beyond, have been strategically advancing the work initiated under the previous GEF 3 project. Since 2011, examples of tangible successes have included:

- Creation of a separate institution under the MoE to exclusively manage biosecurity of the Galapagos archipelago. The Galapagos Biosecurity Agency (Agencia de Regulación y Control para la Bioseguridad y Cuarentena de Galápagos; GBA) was formed in 2012, and has since assimilated a range of responsibilities from other government institutions into a single agency;
- Eradication of introduced rodents from Pinzón, Rábida, and ten smaller islands (over 2,300 ha total) and improved capacity to implement larger, more complex rodent eradication projects; and
- Operationalization of the FEIG, which has been disbursing funds to support invasive alien species projects within the archipelago.

65. The GEF 6 project proposed herein will build upon this platform of accomplishments, while taking into consideration the lessons learned during execution of the previous GEF 3 project, as well as smaller projects in the region that address invasive alien species.

3. The proposed alternative scenario with the proposed project, with a brief description of the expected outcomes and components of the project:

66. Although the GoE clearly recognizes invasive alien species as the primary threat to biodiversity and sustainable livelihoods in the Galapagos archipelago and has already invested substantial resources in invasive alien species prevention and management, more work remains to be done. In particular, there is an urgent need to put the critical 'pieces of the puzzle' in place so as to: 1) enable better linkages among 'puzzle pieces' (e.g., invasive vertebrate eradication will facilitate habitat restoration) and 2) clarify and strengthen the entire picture (e.g., enhancing the biosecurity system will substantially increase pest detection and thus substantially reduce the risk of future invasions). The proposed project, 'Safeguarding biodiversity in the Galapagos Islands by enhancing biosecurity and creating the enabling environment for the restoration of Galapagos Island ecosystems,' will enable the GoE and its partners to fill key funding and technical gaps, enhance connectivity, and catalyze new opportunities within an already existing framework of strategic, regional conservation activity (Annex 6).

67. The **objective** of the project is 'to safeguard biodiversity in the Galapagos Islands by enhancing biosecurity and creating the enabling environment for the restoration of Galapagos Island ecosystems.'

68. The work will be organized into three technical components, each with a single outcome and multiple outputs. The relatively few activities/items identified for GEF financial support (Indicative Project Description Summary, pg. 1) have been selected based on:

- Priority needs to prevent and mitigate the impacts of invasive alien species on biodiversity in the Galapagos Islands (Annex 5);
- Their ability to prevent the extinction of IUCN Critically Endangered species and facilitate ecosystem recovery region wide;
- The likelihood that they can serve as catalysts for the next phase of work in the Galapagos, as well as similar initiatives in other island systems worldwide;
- The inability of other donor institutions and organizations to access sufficient resources (i.e. GEF funding is allowing incremental activities to occur); and

- National priorities for public finances and international non-reimbursable cooperation[68,69].

Component 1: Furthering development of a state-of-the-art biosecurity system

69. Biosecurity encompasses efforts to prevent harm from both intentional and unintentional introductions of any biological organism to the environment, human and animal health, and/or infrastructure[70,71]. Biosecurity is generally carried out at ports of entry and departure, as well as along the travel pathways between destinations. In the Galapagos archipelago, biosecurity is largely achieved through the interception of invasive alien species ('quarantine pests;' herein 'pests') and the treatment (e.g., fumigation) of goods and conveyances potentially infected with pests at the five marine and three air ports that serve commercial transport and tourism industries. Outside the archipelago, marine ports in Guayaquil and airports in Quito and Guayaquil service the Galapagos Islands and are additional pre-arrival inspection points.

70. **Outcome 1.1.**: By furthering the development of a state-of-the-art biosecurity system, this component will result in a substantial reduction in the number of invasive alien species entering the Galapagos archipelago, thereby protecting biodiversity and human livelihoods over the long-term. Achieving Component 1 also helps to secure the investments that will be made in Component 2 (solidifying social infrastructure), as well as the complementary work to be done by project partners on invasive alien species control, endangered species recovery, and ecosystem restoration.[72]

71. **Component Target:** By the end of the project, the GBA (with support from WildAid) intends to increase pest interceptions and subsequent confiscations of goods due to pest risk across all ports combined by at least 5% above the 2014 baseline.

72. **Outputs:** The project outcomes, as well as associated targets, will be achieved in a step-wise manner by:

    - **Output 1.1.1.:** Identifying the needs for, acquiring, and installing pest detection devices at maritime ports of entry/departure.
      Output target: Number of detection devices that meet needs criteria installed.[73]

    - **Output 1.1.2.:** Training marine port inspectors in the effective use of these devices.
      Output target: One hundred percent of maritime port inspectors are competent in operating and maintaining all of the new detection devices.

    - **Output 1.1.3.:** Inter-island biosecurity protocols implemented.
      Output target: Inter-island biosecurity protocols are being implemented.

73. The work to be accomplished under this component is capitalizing on the existing strength of the GBA's biosecurity program, which is already among the best in the world. While the benefits to

[68] GNPD 'Reducing vulnerability of endemic species by eradicating priority invasive species' project, approved by National Planning Authority (2012)
[69] GBA 'Consolidating the system of preventing, controlling and eradicating invasive species in the Galapagos Islands' approved by National Planning Authority (2013)
[70] Meyerson and Reaser 2002a.
[71] Meyerson and Reaser 2002b
[72] These activities are not part of the GEF 6 funding, but are being co-financed by project partners. The GEF 6 funding helps to catalyze and secure these projects.
[73] Specific type, umber, and location to be determined during the PPG phase

biodiversity of adding new pest detection equipment, training for inspectors to effectively use the new equipment, and the implementation of inter-island biosecurity protocols are incremental, they will be substantial over the long-term and benefit the whole of the archipelago, as well as continental Ecuador and Ecuador's trading partners. The invasive alien species confiscated as a result of the enhanced detection capacities will be eliminated from the pathway by which they were being translocated and never have the opportunity to establish in natural ecosystems.

74. During the Project Preparation Grant (PPG) phase, the Project Steering Committee and/or their designates will work with the GBA to: 1) based on an assessment of needs, establish selection criteria for both the detection devices and hand-held data entry devices; 2) make recommendations for the procurement of specific devices and their site placement; 3) identify new equipment training needs for inspectors at maritime ports of entry; and 4) make recommendations for meeting the training needs, as well as assessing inspector competency post-training.

75. The GoE has already developed significant biosecurity capacities through international cooperation and the adoption of lessons learned from Chile, Australia, New Zealand, the USA, and elsewhere. The GBA will soon be poised to reciprocate with lessons learned from the addition of new technologies and inspector capacities. Ecuador will be able to provide 'peer' support to other developing countries (esp. Spanish speaking countries) through South-South cooperation and other platforms. The GoE has already signed an agreement with Chile for relevant information exchange.

Component 2: Solidifying the social infrastructure for the protection and recovery of Floreana Island ecosystems

76. The GNPD's 2012 report, "Control and Eradication of Priority Invasive Species to Reduce the Vulnerability of Endemic and Native Species of the Galapagos Islands," identifies invasive rodents and feral cats as among the top priorities for invasive vertebrate eradication in the Galapagos Islands due to their prevalence and devastating impacts on multiple islands in the archipelago, as well as the proven capacity to eradicate these species to the substantial benefits of biodiversity.

77. Eradicating invasive rodents and feral cats species from Floreana Island was of particular interest to the GNPD, not only because of the remarkably high endemism and vulnerability of Floreana Island's biodiversity (Annex 5), but also because Floreana Island has the potential to serve as a 'transformational opportunity' for the eradication of invasive alien vertebrates from other human-inhabited islands (see discussion under previous section, as well as Section 6).

78. A recent, peer readiness check of preparations for the Floreana invasive rodent and feral cat eradication revealed that the project is, by far, the most advanced for any human-inhabited island. Some similarly intended projects have not been able to advance past the feasibility analysis and draft operational planning stage due to lack of community buy in (e.g., Tristan da Cunha, British Overseas Territory[74]).

79. **Outcome 2.1.:** In order for invasive alien species eradication programs to achieve success, social license (permission from applicable stakeholders) needs to be secured during the planning process and maintained throughout the course of the project. Component two is designed to establish the requisite social infrastructure for the eradication of invasive rodents and feral cats from Floreana Island, as well as the commitment to recover and protect Floreana Island ecosystems.

[74] Varnham et al. 2011

80. **Component Target:** The target for this component will achieved when Floreana Island residents take definitive actions to safeguard ecosystems by adopting ecologically-sustainable farming practices, and all project partners demonstrate support for the eradication of invasive rodents and feral cats, as well as the reintroduction of endemic species previously extirpated by invasive species.

81. **Outputs:** Incrementally achieved outputs, as well as associated targets, will include:

- **Output 2.1.1:** Ecologically-sustainable farming practices are instituted on Floreana Island.
  Output target: Floreana farmers adopt ecologically-sustainable farming practices.

- **Output 2.1.2:** Declaration adopted by the Floreana Parish Council.
  Output target: The Floreana Parish Council, as elected community representatives, unanimously approves a declaration to support the protection and restoration of Floreana ecosystems, including the eradication of invasive species and the reintroduction of giant tortoises as keystone species.

- **Output 2.1.3.:** Project Steering Committee review and approval of the Operational Plan for the eradication of invasive rodents and feral cats.[75]
  Output target: The Operational Plan is approved by the Project Steering Committee.

- **Output 2.1.4:** Risk management plans approved by the Project Steering Committee.
  Output target: The risk management plans are approved by the Project Steering Committee.

- **Output 2.1.5:** The Environmental and Social Impact Assessment is completed as approved as necessary.
  Output target: The Environmental and Social Impact Assessment is completed and, if necessary, approved by the GoE.

82. Once the social infrastructure is in place, the eradication of invasive rodents and feral cats from Floreana Island can commence. Although these eradication measures will not be enacted under the auspices of this project, it is worth noting the profound positive ecological impact that will emerge as a secondary result of the investments in social infrastructure. Annex 7 provides an overview of the likely 'status benefits' to the 61 Floreana species currently listed as Vulnerable, Endangered, or Critically Endangered by the IUCN once invasive rodents and feral cats are removed from the island. The population status of 12/14 threatened vertebrate and 14/14 threatened invertebrate species is projected to improve. Furthermore, the eradication of invasive rodents and feral cats will, ultimately, enable the repatriation and recovery of at least six IUCN Red List threatened endemic species. These include the Floreana giant tortoise (*Chelonoidis elephantopus*), Floreana mockingbird (*Mimus trifasciatus*), Galapagos rail (*Laterallus spilonotus*), Lava gull (*Larus fuliginosus*), Galapagos racer (*Alsophis biserialis*) and Galapagos hawk (*Buteo galapagoensis*).[76]

Component 3: Advancing the recovery of island ecosystems following invasive species eradication through the establishment of keystone species (i.e. giant tortoises)

83. Although invasive rodents and feral cats have not yet been removed from Floreana Island, invasive vertebrates have been removed from Santa Fe and other Galapagos islands. These islands are now candidates for the recovery of endangered species and associated ecological processes.

[75] Currently under development
[76] Repatriation activities will be fully supported by co-financing. They would not be feasible, however, without the GEF 6 Trust Funds being made available for the Component 2 activities described herein.

84. **Outcome 3.1.:** Ecosystem processes are in the process of recovering through the translocation of giant tortoises to Santa Fe Island.

85. **Component Target:** Ecosystem processes on 2,413 ha (Santa Fe Island) are recovered through the translocation of giant tortoises.

86. **Outcome 3.2.:** Production of giant tortoises for future reintroductions throughout the archipelago is significantly increased.

87. **Component Target:** The enabling environment is established for the recovery of 23,193 additional ha by enhancing the capacity to house, breed, and head-start giant tortoises.

88. **Outputs:** Outputs, as well as associated targets, from Component 3 will include:

- **Output 3.1.1.:** Giant tortoises are translocated to Santa Fe Island.
  Output target: The translocation of giant tortoises to Santa Fe Island.

- **Output 3.1.2.:** Ecosystem processes facilitated by giant tortoises are recovered on Santa Fe Island.
  Output target: Ecosystem processes facilitate by giant tortoises (e.g., seed dispersal) are recovered on Santa Fe Island.

- **Output 3.2.1.:** Facilities for captive breeding and head-starting of giant tortoises are modified and expanded.
  Output target: There is a significant increase in the production of tortoises for the reintroduction purposes.

- **Output 3.2.2.:** Giant tortoise captive breeding stock are selected.
  Output target: Captive bred tortoises have high species-specific genetic diversity.

- **Output 3.2.3.:** Scientific and technical findings reported in the professional literature to further capacity through knowledge management[77].
  Output target: Scientific and technical findings are reported in the professional literature.

Environmental and Social Safeguard Implications
The CI-GEF Agency will conduct the safeguard screening at the beginning of the PPG phase. In addition to the Gender Mainstreaming Plan, this project will be required to develop the Stakeholder Engagement Plan and the Accountability and Grievance Mechanisms.

4. Incremental/additional cost reasoning and expected contributions to the baseline (refer to the GEF guidelines):

89. Invasive alien species are the most substantial threat to biodiversity in the Galapagos archipelago. Absent incremental GEF funding, the GoE will remain dedicated to its ongoing efforts to protect the Galapagos Islands from the adverse impacts of invasive alien species. The projects listed in Annex 6 provide a well-established baseline of related, smaller scale activities led by the GNPD, GBA, and

[77] It can take more than a year for a submitted manuscript to be accepted and published in peer-reviewed literature. Therefore, the indicator for this output is expected to be based on the number of manuscripts submitted rather than the number of manuscripts published.

their partners. However, absent the GEF 6 funds, the GBA will not be able to move toward a state-of-the-art biosecurity program in a timely manner. Incursions of a wide range of invasive alien species that could have otherwise been prevented (by the thousands/year) through the provision of better detection technologies will be introduced into the Galapagos archipelago and mainland ports of departure. Unless substantial funds (tens to hundreds of million US dollars) are raised at a later date to combat these organisms, the adverse impacts may be severe and long-lasting. Prevention is by far the most cost-effective strategy to minimizing the risks and impacts of invasive alien species.

90. The team leading this project has carefully identified activities for GEF 6 funding that, though small in number, will fill in critical pieces of the larger 'puzzle' being assembled to comprehensively combat invasive alien species in the Galapagos archipelago. Filling in these key pieces will enable other pieces of the puzzle to be strategically put in place and the overall framework substantially strengthened in the short- and long-term. For example, garnering the social license for the eradication of invasive rodents and cats on Floreana Island, will enable the removal of these harmful organisms, recovery of endemic species, and restoration of ecosystems. Likewise, the translocation of giant tortoises to Santa Fe Island will enable the recovery of ecological processes (e.g. seed dispersal) which will foster ecosystem restoration and, in turn, build resilience to future ecological stressors, most notably climate change.

91. In brief, the allocation of GEF 6 incremental funding for this project will build upon the baseline summarized in Section 2, by:

- Advancing a state-of-the-art biosecurity system;
- Solidifying the social infrastructure for the protection and recovery of Floreana Island ecosystems;
- Enacting sustainable-farming practices on Floreana Island as the cultural norm; and
- Translocating giant tortoises to Santa Fe Island;

which, in turn, will:

- Functionally protect the Galapagos Islands protected area network;
- Strengthen protection of 244 Threatened species throughout the Galapagos archipelago's terrestrial and marine habitats;
- Enable the eradication of invasive rodents and feral cats on Floreana Island;
- Facilitate the recovery of critical ecological processes on Santa Fe Island;

which, in turn will:

- Facilitate recovery of native vegetation, thus reducing forest degradation;
- Enable the recovery of as many as 55 threatened species on Floreana Island (Annex 7);
- Allow for the reintroduction of at least 6 threatened vertebrate species on Floreana Island (including Floreana giant tortoises), and as many as 7 other Galapagos endemic species;
- Reduce the risks of disease transmission to wildlife, livestock, and people;
- Enhance ecosystem resilience to climate change and other disturbances; and
- Facilitate a thriving tourist economy to support the local peoples of the Galapagos Islands and Ecuador

Further details on these expected contributions can be found in the following section.

Co-financing:

92. Co-financing exists for each component of the project, and project management. Component 1 co-financing comes primarily from the GBA, with additional contributions from GNPD and GC. Complimentary activities are being conducted by MoAG, GGC and WildAid and will be determined if they are appropriate to be considered as co-financing during the PPG. Component 2 co-financing includes invasive species control, eradication, and developing the social license for invasive species eradication and comes from GNPD, IC and GC. Complimentary activities are being conducted by GGC and will be determined if thay are appropriate as co-financing during the PPG. Component 3 co-financing includes native species and habitat restoration and is from GNPD and GC. Project Management co-financing is from CI. Co-financing amounts by organization are listed in Part I. Table C., while total co-financing by component is listed in Part I. Table B.

5. Global environmental benefits and/or adaptation benefits:

93. Prevention is the logical first line of defense against biological invasion, but it requires substantial technical and financial investments in order to be highly effective. Hundreds of non-native organisms have already been introduced into the Galapagos archipelago (see discussion Section 1) and more than 7,000 goods were confiscated at ports of entry in 2014 due to pest risk[78]. By further advancing pest surveillance capacity at Galapagos ports of entry and departure points on mainland Ecuador, this project is anticipated to decrease the entry of pests by at least 5%, thereby facilitating the recovery and long-term protection of biodiversity across the archipelago's 788,200 ha of terrestrial habitats and 13,300,000 ha of marine reserve. Since invasive alien species do not respect jurisdictional boundaries, this project will also help to ensure that the Galapagos Islands' protected area system (96.7% of the land area, plus the marine reserve) is protected in actuality, not just concept.

94. The eradication of invasive rodents and feral cats from the 17,253 ha of Floreana Island requires establishment of a social license prior to the initiation of the eradication work. The eradication of invasive vertebrates from human-inhabited islands in the "next great frontier" for conservation success in the Galapagos. Outcomes of the process related to securing social license will be carefully evaluated and principles and case-studies made available for use on human-inhabited islands in the Galapagos archipelago and beyond.

95. As soon as stakeholder permission is secured and funding is made available, the work necessary to eradicate invasive rodents and feral cats from Floreana Island can commence. The island's native flora and fauna will experience direct and immediate benefits across terrestrial, freshwater, and marine ecosystems. Of particular importance is the opportunity to recover populations of 61 endemic plant and animal species that are currently threatened with extinction (Annex 5). Once the invasive predators are removed, populations of at least five IUCN Red List threatened endemic species and eight other species can be repatriated to Floreana Island and their populations secured, including, the Floreana giant tortoise (*Chelonoidis elephantopus*), Floreana mockingbird (*Mimus trifasciatus*), Galapagos rail (*Laterallus spilonotus*), Lava gull (*Larus fuliginosus*), and Galapagos hawk (*Buteo galapagoensis*).[79]

96. The adoption of ecologically-sustainable farming practices (e.g. livestock and poultry containment) by Floreana residents will be achieved through a conflict transformation process that is currently

[78] GBA 2014

[79] Repatriation activities to Floreana will not be feasible without the GEF 6 Trust Funds being made available for the Program 4 activities described herein, and implementation of rodent and cat eradication.

underway and for which there is significant enthusiasm. By adopting these farming practices, current human-wildlife conflicts will be resolved and future conflicts avoided. This will translate into new opportunities for species recovery and ecosystem restoration. For example, the current losses of young poultry to short-eared owls (*Asio flammeus galapagoensis*) will cease once chicken coops are being utilized, thus breaking a cycle that includes the persecution of owls by poultry farmers. The adoption of cooping practices will also establish the necessary conditions for the reintroduction of Galapagos hawks (*Buteo galapagoensis*) to Floreana Island.

97. Tourism is on the rise in the Galapagos Islands, despite the economic downfall in many parts of the world; the number of visitors increased from 40,000 in 1990 to 145,000 in 2006 to 216,000 in 2014[80]. The World Bank estimates that tourism contributed $1,039,000,000 to Ecuador's economy in 2012, the majority of which was generated in the Galapagos Islands.[81] The recovery of Santa Fe and Floreana Island ecosystems (particularly the recovery of endemic species) has the potential to increase ecotourism income to the benefit of Galapagos residents and commercial enterprise operators, and well as the mainland economy.

98. Although Biodiversity is the primary GEF Focal Areas addressed by this project, successfully preventing future introductions of invasive alien species in the Galapagos archipelago and the recovery of endemic species, as well as their associated ecological processes, will provide benefits to other GEF Focal Areas, including: Land Degradation (by facilitating the recovery of vegetation and thus reducing erosion), Climate Change Mitigation (by securing carbon stocks and fostering ecosystem resilience), international waters (by functionally protecting 13,300,000 ha of marine reserve and minimizing potential future impacts of invasive species), and Sustainable Forest Management/REDD+ (by promoting better management of livestock, pets, and pests that adversely impact forest health).

6. Innovativeness, sustainability and potential for scaling up:

Innovativeness:

99. Technology innovations are improving the capacity for pest detection and identification, as well as the rapid response to pests, at ports of entry. DNA barcoding in one such technology[82]. This project will make emerging technologies and the requisite training for use available to port inspectors contextually feasible.

100. Approximately 50% of IUCN Critically Endangered and Endangered island-based mammals, reptiles, and amphibians exist on islands that also have human populations greater than 10,000 people[83]. There is a clear and immediate need to advance innovative approaches and tools to establish social license to be able to eradicate invasive alien vertebrates on human-inhabited islands[84]. By achieving social license for the eradication of invasive rodents and feral cats through this project, the GoE and its partners enable Floreana Island to become the first large, inhabited island globally from which all invasive alien mammals have been eradicated. This will protect and facilitate recovery of 61 IUCN Red List threatened species. It will also make it feasible to re-establish viable populations of at least five IUCN Red List threatened endemic species via repatriation to Floreana Island, specifically,

[80] http://www.galapagos.gob.ec/wp-content/uploads/downloads/2015/05/Informel_2014.compressed.pdf
[81] http://data.worldbank.org/country/ecuador
[82] http://www.barcodeoflife.org/
[83] http://tib.islandconservation.org/
[84] Glen et al. 2013

the Floreana giant tortoise (*Chelonoidis elephantopus*), Floreana mockingbird (*Mimus trifasciatus*), Galapagos rail (*Laterallus spilonotus*), Lava gull (*Larus fuliginosus*), and Galapagos hawk (*Buteo galapagoensis*).[85] Success of the project proposed herein will, therefore, enable a global precedent: the establishment of conservation projects on hundreds of human-inhabited islands in Ecuador and across the world.

101. Recovering giant tortoise populations is vital to restoration of Galapagos ecosystem structure and function. The Giant Tortoise Restoration Initiative by GNPD, GC and other partners are using advanced genetic approaches, analyses, and modelling to determine optimal captive breeding strategies and incorporate adaptive data-driven management approaches into population restoration strategies. For example, Yale University geneticists have used the specimen fragments of Santa Fe tortoises available in museums to determine that the Española tortoise is the species most closely related to the extinct Santa Fe tortoise. Española tortoises reared in the Santa Cruz Tortoise Center are thus being used to reestablish a tortoise population on Santa Fe. The first 201 juvenile Española tortoises were released in June 2015. In addition to population-level criteria for the translocated species, ecosystem-level criteria are now also being used for determining the success of tortoise reintroduction efforts[86]. The scientific, technical, and infrastructure investments made for the translocation of tortoises to Santa Fe will enable tortoise recovery projects on other Galapagos Islands. Over the long-term, the re-establishment of tortoises is likely to increase tourist experience and thus tourist dollars.

Sustainability:

102. The GoE has a proven track record of conservation investment in the Galapagos archipelago. Effective partnerships with international organizations, non-governmental organizations, academic institutions, and local communities are already well-established and making substantial achievements in the conservation of biodiversity at individual-island and archipelago-wide scales. Terminal Reviewers of the GEF 3 'Control of Invasive Species in the Galapagos Archipelago' (ECU/00/G31) project concluded that ambition, complexity, and institutional/political stability prevented the project from achieving all of its intended outcomes.[87] In contrast, this GEF 6 project is designed to strategically focus on a small number of priorities ('critical pieces of the puzzle') and will be carried out within a period of expected political stability, such as that which Ecuador has experienced in recent years.

103. Through this GEF 6 project, further investments will be made in the local institutions and communities that have the desire and need to ensure the sustainability of the project outcomes. This will be accomplished through, for example: 1) building institutional, programmatic, and personnel capacity to enable superior project management in the near- and long-term; 2) advancing a state-of-the-art biosecurity system; 3) training inspection personnel to be highly effective at detecting pests arriving at and departing from ports of entry, 4) building the capacity of Floreana farmers to operate more productively over the near- and long-term; and 5) developing increased capacity to captive breed and head-start giant tortoises for translocating to other islands.

104. The activities under Component 1 reflect the priorities recently set forth in the GBA's 2015-2018 Strategic Plan. It is the GBA's intent to continue institutionalizing the capacities required to prevent

[85] Repatriation activities (Program 3) will be fully supported by co-financing. They would not be feasible, however, without the GEF 6 Trust Funds being made available for the Program 4 activities described herein.
[86] Gibbs et al. 2014
[87] Coello and Sanders 2011

the further introduction of invasive alien species, this includes securing the funding and training necessary to support infrastructure and staff development over the long-term.

105. The biosecurity activities being conducted under Component 1 will reduce the likelihood of further invasions throughout the Galapagos Islands and surrounding waters. These capacities will be further built upon and will be critical in protecting investments made in eradicating invasive species from Galapagos Islands.

106. Both national and international NGOs have made substantial investments in biodiversity conservation in Ecuador. It is anticipated that NGOs will continue to provide technical and financial assistance in order to help the GoE meet its conservation goals in the Galapagos archipelago. IC has, for example, established an office in the Galapagos Islands in order to be as well positioned as possible to assist with invasive vertebrate eradications into the foreseeable future.

107. Success of this project will help reinforce the GNP's UNESCO World Heritage Site status and enable Ecuador to contribute to the effort by the IUCN to set global standards for protected areas management in relation to invasive alien species; the Galapagos Islands will be functionally protected from the impacts of biological invaders.

Potential for scaling up:

108. At the national and international level, the Galapagos Islands are regarded as a biodiversity icon. Their high profile will undoubtedly help to facilitate the transfer and adoption of project outcomes, including information, technology, and implementation process models. The GEF 6 project described herein is explicitly designed to serve as a catalyst for future conservation projects in the Galapagos archipelago and other island contexts by:

- Transferring technologies (e.g., biosecurity scanning equipment and inspection capacity);
- Empowering local people to take pride in and constructively resolve conflicts over natural resource use in order to protect biodiversity and human livelihoods;
- Serving as a model and inspiration for restoring island ecosystems, including the recovery of historically impacted endemic species' populations; and
- Creating the enabling environment for the next phase of substantial conservation actions (e.g. eradication of invasive rodents and feral cats from and the reintroduction of Floreana giant tortoise and Galapagos hawks to Floreana Island).

109. The GBA will soon be poised to reciprocate the biosecurity capacities gained through guidance from other countries by sharing lessons learned from the addition of new technologies. Ecuador will provide 'peer' support to other developing countries (esp. Spanish speaking countries) through South-South cooperation and other platforms. In this regard, the GoE has already signed an agreement with Chile for information exchange.

110. Once the requisite social license is secured, Floreana Island has the potential to serve as a 'transformative opportunity' for invasive alien vertebrate eradication on human inhabited islands. Similarly intended eradication projects have not been able to get through the feasibility analysis stage due to lack of community buy in. The knowledge gained from processes to solidify social license to be undertaken in this project will be applied to the three other inhabited islands in the Galapagos archipelago. It is also intended to benefit the Juan Fernandez Islands, Chile; Fernando de Noronha Islands, Brazil; Guadalupe and Tres Marias Islands, Mexico; Lord Howe and Christmas Islands,

Australia; Stewart and Great Barrier Islands, New Zealand; Kaho'olawe Island, Hawaii; and Mona Island, Puerto Rico; amongst others.

2. *Stakeholders.* Will project design include the participation of relevant stakeholders from civil society and indigenous people? (yes ☒ /no☐) If yes, identify key stakeholders and briefly describe how they will be engaged in project design/preparation.

111. This project will engage a wide range of stakeholders across governmental, inter-governmental, non-governmental, academic, and private sector institutions, as well as local peoples who inhabit the Galapagos archipelago and the thousands of tourists who visit the region each year. Although the majority of the stakeholders are based in Ecuador's Galapagos Islands, substantial scientific and technical expertise will also be provided by the GoE's partners located around the world. Because the project team intends to share scientific information, technologies, and lessons learned in the Galapagos Islands broadly, all island nations and nations with islands under their jurisdiction have the potential of being project beneficiaries. In some cases, technical advancements (e.g., inspection and quarantine) may be equally applicable in island and continental contexts. Under these circumstances, investments in this project could translate into improvements in biodiversity conservation and ecosystem resilience worldwide.

112. The institutions listed in Table 4 comprise the proposed project leadership team capable of 'safeguarding biodiversity in the Galapagos Islands by enhancing biosecurity and creating the enabling environment for the restoration of Galapagos Island ecosystems.' The "†" symbol indicates that these potential partners will be engaged further in the ProDoc development stage.

Table 4. Project Stakeholders

STAKEHOLDER	ROLE	ENGAGEMENT IN THE PROJECT
GOVERNMENT AGENCIES		
Ministry of Environment (MoE)	Formulates and coordinates Ecuador's environmental policies and leads efforts to protect the nation's terrestrial and marine ecosystems	The MoE will serve as the Government of Ecuador's (GoE) primary point of contact for GEF 6 project management and coordination. Ecuador's focal point for GEF 6 is a delegate of the Minister of Environment. The GNPD and GBA, both units of the MoE, will serve as the government leads for 'on-the-ground' implementation activities.
Galapagos National Park Directorate (GNPD)	Part of the MoE; manages and controls the Galapagos Marine Reserve and Galapagos National Park, promotes scientific research with conservation goals, and engages local communities and visitors in conservation activities	The GNPD will lead aspects of Component 1 and Components 2 & 3, coordinating activities with GBA, FPC, IC, GC and other stakeholders. They will provide a designate to serve on the Project Steering Committee. http://www.galapagospark.org/
Galapagos Biosecurity Agency (GBA)	Part of the MoE; controls, regulates, prevents, and reduces risk of the introduction and spread of non-native organisms	The GBA will lead aspects of Component 1 activities and provide a designate to serve on the Project Steering Committee. They will also coordinate with GNPD and IC on Component 2 activities, specifically aspects related to activities outside of the National Park. They will ensure that the environmental impact assessment adequately addresses risks to livestock and pets, and in conjunction with MoPH aspects related to human safety. http://www.bioseguridadgapagagos.gob.ec/

STAKEHOLDER	ROLE	ENGAGEMENT IN THE PROJECT
Ministry of Agriculture, Livestock, Aquaculture, and Fisheries (MoAG)	Manages and executes the proper distribution of economic resources, technical assistance, and other support to agriculture producers	The MoAG will interface with the GBA on Component 2 activities in the context of managing livestock. They will also assist GNPD on Component 2 activities, ensuring that the environmental impact assessment adequately addresses risks to agriculture and livestock. http://singapgalapagos.agricultura.gob.ec/
Ministry of Public Health (MoPH)†	Regulates, plans, coordinates, controls, and manages public health in Ecuador	The MoPH will interface with the GNPD and GBA on Component 2 activities ensuring that the environmental impact assessment and implementation adequately addresses risks to human health.
Galapagos Government Council (GGC)†	Executes regional policies and activities within the Galapagos; formerly known as Instituto Nacional Galapagos (INGALA)	Provides oversight of major projects that are carried out within the Galapagos. Are coordinating the development of a consolidated cargo wharf in Guayaquil for improving Galapagos' biosecurity (component 1). http//www.gobiernogalapagos.gov.ec/
Floreana Parish Council (La Junta Parroquial de Floreana; FPC)	Part of the San Cristobal municipality; represents 140 residents of Floreana Island	The residents of Floreana Island have requested technical assistance for the eradication and control of invasive alien species. The FPC will provide local political support, community leadership and representation, facilitate community engagement, and participate in stakeholder meetings. They will coordinate with GNPD, GBA and IC to accomplish Component 2 activities in a manner that fully engages stakeholder input and maximizes the benefits of project execution to the people and biodiversity of Floreana Island. They will also coordinate with GBA on component 1 activities that fall within the FPC's jurisdiction.
NON-GOVERNMENTAL ORGANIZATIONS (NGOs)		
Conservation International (CI)	CI empowers societies to responsibly and sustainably care for nature, our global biodiversity, for the well-being of humanity	CI will serve as the implementing agency for this GEF 6 project. http://www.conservation.org
Island Conservation (IC)	Prevents extinctions by removing invasive alien species from island ecosystems	IC will serve as the executing agency for this GEF 6 project. IC will provide technical assistance to GNPD, GBA and other partners to implement Component 2, as well as provide a designate to the Project Steering Committee. http://www.islandconservation.org
WildAid†	Collaborates with the GBA to strengthen the analysis of invasion pathways and catalyze the infrastructure development needed to improve biosecurity	WildAid will support the GBA and GNPD in implementation of Component 1. http://www.wildaid.org/ecuador
Durrell Wildlife Conservation Trust (Durrell)†	Provides the research and capacity building necessary to save the most threatened species and threatened places worldwide	Durrell's work on captive holding endangered species will support development of non-target species risk management strategies as part of Component 2. http://www.durrell.org/
Galapagos Conservancy (GC)	Advances and supports conservation of the	GC will support the GNPD in implementation of Component 3.

STAKEHOLDER	ROLE	ENGAGEMENT IN THE PROJECT
	Galapagos Islands through directed research, informed public policy, and building a sustainable society	GC is providing co-financing to support Components 1, 2 and 3 of this project. GC also provides technical support to DPNG in tortoise breeding activities, as well as planning and implementing tortoise translocations, such as will be conducted on Santa Fe Island and as is proposed for Floreana Island after the eradication of invasive mammals. http://www.galapagos.org/

3. *Gender Considerations.* Are gender considerations taken into account? (yes ☒ /no☐). If yes, briefly describe how gender considerations will be mainstreamed into project preparation, taken into account the differences, needs, roles and priorities of men and women.

113. Every effort will be made by the GoE, CI, and Island Conservation to further gender equality in the Galapagos archipelago by building on an existing platform of success. In order to ensure that the project meets CI-GEF Project Agency's Gender Mainstreaming Policy, Island Conservation (as the EA) will develop a Gender Mainstreaming Plan (GMP) during the PPG phase of the project. The aim of the GMP is to identify needs and opportunities to mitigate potentially adverse effects of the project on men and women, as well as promote gender equality as an aspect of the project.

114. The GMP will include an assessment of gender roles, responsibilities, uses, and needs relating to the environment/natural resources on which the project will be based (e.g., patterns, participation in management, etc.), as well as both short-term and long-term costs and benefits of the project to men and women. It will also include potential roles, benefits, impacts, and risks for women and men of different ages, ethnicities, social structure, and status. Specific actions and activities will be identified to ensure that gender-related adverse impacts of this project are appropriately avoided, minimized, and/or mitigated. The GMP will explicitly describe the actions and processes to be put in place during the PPG and implementation phases in order to ensure that women and men: 1) receive culturally compatible social and economic benefits, 2) do not suffer adverse effects during the development process, and 3) receive full respect for their dignity and human rights. Finally, the GMP will provide specific indicators for monitoring and evaluating progress towards gender equality within the project.

115. The GoE, EA, and IA have procurement procedures that explicitly recognize the promotion of gender equality as a standard business practice. As a result, gender equality will be taken into consideration through their procurement programs when sourcing staff, equipment, and consultants with GEF trust funds and/or co-financing. The following is a list of examples of project elements that are particularly gender-sensitive and thus focal areas for the GMP. The project team will need to ensure that:

Component 1:

- Detection devices can be effectively operated by women and men;
- Training courses are gender sensitive in terms of participation, instructional design, and use of language;

Component 2:

- Community consultative processes are designed to facilitate equal participation, mutual respect, and collective decision making by women and men;

- The potential project impacts (positive and negative) on both men and women are taken into consideration during the Environmental and Social Impact Assessment (ESIA);

Component 3:

- Community consultative processes are designed to facilitate equal participation, mutual respect, and collective decision making by women and men;

Shared by components 1-3:

- Presentations on lessons learned made to decision makers and resource managers within Ecuador reach both women and men in leadership positions; and
- All publications resulting from the project use gender sensitive language and are made equally accessible to men and women.

4 Risks. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable).

116. Table 5 provides an overview of the managerial, technical, and environmental risks that have the potential to prevent the project team from achieving the project's objectives and outputs (Indicative Project Description Summary, pg. 1). We provide a brief overview of measures that will be employed to avoid, minimize or mitigate these risks, the majority of which are already being employed as institutionalized policies and practices in Ecuador.

Table 5. Potential Risks to Project Success

RISK	LEVEL	MITIGATION STRATEGY
Failure to agree on the Galapagos archipelago as a conservation priority	Low	The Galapagos Islands are considered one of the natural 'jewels' of Ecuador and a top conservation priority. Their unique biodiversity supports local people and draws substantial nature-based tourism income. The World Bank estimates that tourism contributed $1,039,000,000 to the country's economy in 2012, the majority of which was generated in the Galapagos Islands.[88] In order to facilitate protection of its unique biodiversity, Ecuador created the Galapagos National Park in 1959 and designated the Galapagos Marine Reserve in 1996. The Galapagos Islands became the first World Heritage Site in 1978 and were designated a UNESCO-Man and the Biosphere Reserve in 1984. Within the Galapagos Islands, specific sites have additional protected area status. This project will help secure these protected area designations and tourism income by reducing the risk of ecological degradation by invasive alien species.
Project too ambitious	Low	The Terminal Reviewers for Ecuador's GEF 3 project, 'Control of Invasive Species in the Galapagos Archipelago' (ECU/00/G31), cited project ambition and complexity as two of the reasons the activity did not fully achieve its outcomes. The project proposed herein reflects the lessons learned during GEF 3 project execution. Rather than being used to 'pepper' the Galapagos archipelago with numerous new activities, the GEF 6

[88] http://data.worldbank.org/country/ecuador

RISK	LEVEL	MITIGATION STRATEGY
		funds will be employed to fill a small number of key technical and funding gaps ('critical pieces of the puzzle'), as well as create needed linkages within an already existing framework of strategic, regional conservation activity.
Inability to secure sufficient scientific and technical resources	Low	The Government of Ecuador (GoE) and its partners have already committed substantial scientific and technical capacity to the region. Examples of collaborative scientific and technical support activities to take place within the scope of this project include advancement of port-based technologies for detecting invasive alien species (e.g., scanning equipment) and advanced genetics methods and modelling to support data-based adaptive management in tortoise recovery programs.
Insufficient support from project partners	Low	The GoE's conservation initiatives are strategically opportunistic; they follow a 'common sense' approach that engages the direction and capacities of various private, public, and international organizations. Many of these partners have a long history of collaboration with Ecuadorian agencies at national and subnational levels. All of the partner organizations identified within this proposal are currently engaged with the GoE on conservation initiatives that will provide the necessary foundation and linkages to make this project a success. They are committed to maximizing the return on their substantial investments in conservation of the Galapagos archipelago.
Inadequate consultation with key stakeholders	Low	The GoE and its conservation partners are committed to working together through inclusive, transparent, participatory processes. They have already established a history of consultation and collaboration with the people of the Galapagos archipelago, as well as visiting tourists. Participatory processes and methods are explicitly reflected in the protected areas management plan (2013), management of the Galapagos Marine Reserve, and previous consultations on environmental management with the Floreana Island community.
Failure to obtain consent for eradication and recovery work from the residents of Floreana Island	Low - Medium	The solidification of social licence for invasive vertebrate eradication and endemic species recovery (Component 2) is being undertaken as a direct response to a request for assistance from the Floreana Parish Council (FPC). The 140 residents of Florena Island recognize the urgent need to: 1) build environmental and social resilience in the face of climate change and 2) eradicate invasive alien species, where feasible, to achieve this island-wide resilience. Unlike most conservation projects which involve 'first world-based' organizations trying to convince 'developing countries' what their priorities should be and how they should be achieved, this project is explicitly being designed to meet the needs identified by local people who already understand the intimate linkages between biodiversity, livelihoods, and human survival.
Weak governmental coordination and management capacity	Medium	The large scale of GEF projects can create substantial challenges for government agencies that lack the human capacity to manage them effectively. Poor coordination has been cited in numerous GEF mid-term and terminal reviews as a barrier to project success. The GoE has garnered substantial experience in GEF project management across multiple

RISK	LEVEL	MITIGATION STRATEGY
		agencies and in cooperation with a large number of non-governmental partner institutions. Every effort has been made to incorporate the lessons learned from executing one project into the design and management frameworks for future projects. The GoE is prepared to dedicate the highly-qualified staff needed to ensure project success. A Project Steering Committee will provide a means for the government to effectively collaborate with other partners in the implementation of the project proposed herein.
Government turnover leading to changes in priority	Medium	The Terminal Reviewers for Ecuador's GEF 3 project, 'Control of Invasive Species in the Galapagos Archipelago' (ECU/00/G31), cited institutional/political instability as one of the reasons the activity did not fully achieve its intended outcomes. The stability currently seen in Ecuador is possibly the greatest it has ever been in recent history. The Ecuadorian president, Rafael Correa, has been in power for eight years. Presidential elections in late 2013 saw him re-elected for another term. This has provided significant stability at all levels of government and allowed longer-term policies to be enacted. It is noted that presidential re-elections will occur in 2017. However, it is anticipated that this stability will continue throughout the three-year term of this project.
Failure to adequately educate and inspire key stakeholders	Medium	The GoE agencies and institutional partners listed in this proposal are already well-informed and committed to conservation in the Galapagos archipelago. Several activities are planned within the scope of the projects providing co-financing to engage, educate, and inspire the local communities with whom on-the-ground GEF 6 project implementation is planned. In some cases, GEF 6 project activities are being undertaken in response to requests for support from key stakeholders. For example, the FPC previously requested that IC help the community address invasive alien species on Floreana Island.
New organizations in Implementing (IA) and Executing Agency (EA) roles	Medium	Although both Conservation International, Galapagos National Park Directorate, Galapagos Biosecurity Agency and Island Conservation are new to their respective IA and EA roles in GEF project management, these organizations have substantial previous experience in implementing GEF projects and proven, formalized processes for ensuring effective project management. GNPD, GBA and IC will designate individuals to serve on the Project Steering Committee in order to help ensure effective project execution.

RISK	LEVEL	MITIGATION STRATEGY
Future incursions of invasive alien species	Medium/High	Invasive alien species do not respect jurisdictional boundaries and no biosecurity system, no matter how well financed, can be 100% effective. Recognizing this, a multi-phased approach is being taken to invasive alien species management in Ecuador that comprehensively addresses prevention, eradication, control, and restoration/resilience. One part of the GoE's strategy involves dealing with incursions, where species have passed through the biosecurity filters but have not fully established and are incipient populations. The GoE is investing in both port-based and on-the-ground programs to detect and when feasible eliminate future incursions of potentially harmful marine and terrestrial non-native organisms before they can become established. For example, the GBA is investing in developing a canine program for increasing detection rates of invasive species in cargo and in the field. On Floreana Island, this translates into rodent detection dogs inspecting boats and cargo before and upon arrival, other rodent detection and removal devices at ports and on boats, GBA inspectors and a community interested in maintaining their island rodent-free. GBA staff will be equipped and trained in developing and employing response strategies to potential incursions. These aspects will form part of a comprehensive Floreana Island biosecurity plan being developed by GBA in consultation with other partners.

5. Coordination. Outline the coordination with other relevant GEF-financed and other initiatives.

117. The GoE and many of the project partners have had the opportunity to learn (directly and indirectly) from previous GEF projects executed within Ecuador, as well as similarly themed projects conducted in other countries/regions (Annexes 8 and 9). Every effort will be made to strategically incorporate the scientific, technical, and managerial lessons learned from these activities into the design and execution of this GEF 6 project.

6. Consistency with National Priorities. Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes ☒ /no☐). If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.

118. Article 8(h) of the CBD calls on Parties to "as far as possible and as appropriate: Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species." This priority was recently explicitly reiterated in Target 9 of the Aichi Biodiversity Targets[89] associated with the CBD's Strategic Plan 2011-2020[90]: "By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment."

119. The proposed GEF project explicitly advances Targets 9 and 12 (Table 6). In addition to the Targets, numerous CBD decisions recognize invasive alien species as a primary threat to biodiversity, particularly in Small Island Developing States (SIDS). These decisions urge multi- and bilateral agencies and other donors to make funding available for the development and implementation of

[89] https://www.cbd.int/sp/targets/
[90] https://www.cbd.int/sp/

invasive alien species strategies and action plans in geographically and evolutionarily isolated ecosystems as an urgent priority.[91]

Table 6. GEF Project Relevance to Aichi Biodiversity Targets

TARGETS	PROJECT RELEVANCE
9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment	• A state-of-the-art biosecurity system will prevent new invasions (e.g., detection technology advancement) • Advances in biosecurity at ports of entry/departure will greatly reduce the movement of invasive alien species along air and marine transport pathways • The enabling environment will be establishd for the eradication of high priority invasive alien species from Floreana Island.
12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained	• The translocation of Galapagos tortoises will facilitate the recovery of ecological processes on Santa Fe Island. • The actions that Floreana farmers take to contain poultry will enable the reintroduction of Galapagos hawks. • The eradication of invasive alien species made feasible by this project is anticipated to benefit all 61 IUCN Red Listed species on Floreana Island, resulting in down listing as their populations grow and stabilize • The eradication of invasive rodents and feral cats made feasible as a result of the 'enabling environment' created by this project will enable at least five threatened endemic species to be repatriated to their island of origin and viable populations established • Through strengthening the regions biosecurity system and the engagement of local peoples in community-based initiatives and education programs, the conservation of regions biodiversity will be better secured over the long-term

120. Ecuador's first ***National Biodiversity Strategy and Action Plan*** (NBSAP; 'Política y Estrategia Nacional de Biodiversidad del Ecuador;'[92]) focused on the time period 2001-2010. It proposed four main conservation measures: (1) consolidate and strengthen the sustainability of production activities based on native biodiversity; (2) ensure the existence, integrity and functionality of all biodiversity components (ecosystems, species, genes); (3) balance pressures from conservation and sustainable use on biodiversity; and (4) guarantee the respect and exercise of individual and collective rights to participate in decisions related to access and control of resources, and ensure that the benefits derived from the conservation and sustainable use of biodiversity, as well as from the use of knowledge, innovations and practices of the indigenous communities and local populations, are justly and equitably distributed.

121. Due to the late timing of the approval (2007), as well as limits in legislation, institutional capacity, and funding, the GoE has faced challenges in enacting the vision and activities set out in the NBSAP. As a result, the country's initiatives have been strategically opportunistic, followed a 'common sense' approach, and engaged the guidance and capacities of various private, public, non-

[91] http://www.cbd.int/invasive/
[92] http://www.cbd.int/doc/world/ec/ec-nr-05-es.pdf

governmental and international organizations. Although not explicitly consistent with the program of work set out in the NBSAP, numerous achievements in biodiversity conservation have been made, particularly in the Galapagos archipelago (see Section 2).

122. The project proposed herein advances the four main conservation measures set out in the NBSAP by: 1) protecting and restoring native ecosystems, and 2) securing the livelihoods of the people who depend on them. By advancing biosecurity technologies, Component 1 will provide conservation benefits throughout Ecuador and with Ecuador's neighbors and trading partners. Although the target location for solidifying social license for rodent and feral cat eradication and tortoise restoration activities (Component 2) is a single island (Floreana) in the Galapagos, we intend up-scale the project as additional funding becomes available to transfer 'current practices[93]' to other human-inhabited islands in Ecuador (e.g., Santa Cruz, San Cristobal, Isabela, Santay Islands) and beyond. Not only will this GEF 6 serve to support the objectives of Ecuador's first NBSAP, it will enable other governments to advance NBSAP objectives as well.

123. Ecuador recently submitted its ***5th National Report*** to the CBD[94], describing the country's current and future progress towards achieving the Aichi Biodiversity Targets in conjunction with the Strategic Plan for Biodiversity 2011-2020. Invasive alien species were recognized as one of the top threats to biodiversity in terrestrial, aquatic, and marine ecosystems. The GoE also noted that invasive alien species is a cross-cutting issue; the spread and impact of invasive alien species is intimately linked to habitat degradation, pollution, and climate change, for example. Invasive alien species prevention, eradication, and control are thus important aspects of any agenda to curtail other substantial threats to biodiversity and, ultimately, to build ecosystem resilience. Invasive alien species were recognized as an issue of particular concern for the Galapagos archipelago.

124. The GoE released a report on its activities to implement the ***CBD Programme of Work on Protected Areas*** in 2012 ('Plan de Acción para la Implementación del Programa de Trabajo sobre Áreas Protegidas de la Convención sobre la Diversidad Biológica).[95] Ecuador has a strong commitment to not only establishing protected areas, but ensuring that they do, in fact, convey long-term protection to biodiversity and the people who rely on natural resources for their livelihoods and well-being. Approximately 1/3 (32%) of Ecuador's terrestrial and marine environments have been afforded legal protection status; 47 of these are described in the report to the CBD, including the Galapagos Islands. This project will support implementation of Ecuador's protected areas plan by: a) helping to ensure that the biodiversity of the Galapagos National Park and Marine Reserve is protected in accordance with the multiple protected area designations held by the Galapagos Islands, b) integrating local peoples into protected area planning and implementation, and c) building the capacity of protected area managers and local people on other Ecuadorian islands (e.g., Isla de la Plata) to achieve conservation through the removal of invasive alien species and recovery of threatened species.

125. In addition to furthering Ecuador's commitments to the CBD, this GEF 6 project explicitly advances more than a dozen ***national- and sectorial-level plans and strategies***. Examples are listed in Table 7.

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[93] We intentionally use 'current practices' rather than the more common 'best practices,' because we believe that practices should continue to evolve as more information and experience becomes available. 'Best practices' suggests the availability of perfect knowledge and a static context, neither of which are realistic in the context of invasive alien species eradications.

[94] http://www.cbd.int/doc/world/ec/ec-nr-05-es.pdf

[95] https://www.cbd.int/doc/world/ec/ec-nbsap-powpa-es.pdf

Table 7. Examples of National Priorities Advanced by this GEF 6 Project

NATIONAL STRATEGIES/PLANS/REPORTS/ ASSESSMENTS	GEF PROJECT ALIGNMENT AND CONTRIBUTION
Galapagos Biosecurity Agency (GBA) Strategic Plan 2015-2018	Sets out priorities for the GBA and partners for the next three years. The GEF 6 project proposed herein will implement priorities to advance detection technologies, raise staff capacity, create a pest interception database, and automate data entry to better ensure timely and accurate pest intercept reporting.
Management Plan for the Protected Areas on Galapagos for a Good Standard of Living (2013)	Secures and expands eco-tourism opportunities in association with the Galapagos National Park and the Galapagos Marine Reserve. Helps maintain the World Heritage Site status which facilitates tourist interest in the Galapagos archipelago.
Galapagos Biosecurity Agency's 'Consolidating the system of preventing, controlling and eradicating invasive species in the Galapagos Islands' approved by National Planning Authority (2013)	Explicitly implements major capital investments required to increase the efficacy of biosecurity for the Galapagos archipelago.
National Climate Change Plan (2013)	Supports the plan's call for ecosystem-based approaches to climate mitigation.
Galapagos National Park's 'Reducing vulnerability of endemic species by eradicating priority invasive species' project, approved by National Planning Authority (2012)	Explicitly implements invasive rodent and feral cat eradication activities in order to protect and restore populations of vulnerable endemic species.
Galapagos National Park's 'Reducing vulnerability of endemic species by eradicating priority invasive species' project, approved by National Planning Authority (2012)	Explicitly implements invasive rodent and feral cat eradication activities in order to protect and restore populations of threatened endemic species.
Ecuador's 2020 Strategic Plan for Sustainable Tourism Development (2012)	Helps secure current levels of eco-tourism and facilitates opportunities for increasing eco-tourism by securing the endemic species of flora and fauna that are of particular interest to tourists (e.g., giant tortoises).
Floreana Parish Council's Strategic Plan (2011)	Protects and enhances natural resources that the community relies upon, such as fresh water and wildlife that enhances the ecotourism experience.
Plan for Total Control of Introduced Species (2007)	Furthers the 'Total Control Plan' by advancing biosecurity and eradicating high priority invasive alien species from Floreana Island.

126. The proposed project explicitly supports Program 4 (Prevention, Control, and Management of Invasive Alien Species) of the Biodiversity focal area (BD2). Successful implementation of the Program 4 activities will make it feasible to conduct future work (with other funding) to support Biodiversity Program 3 (Preventing the Extinction of Known Threatened Species). Once social license in obtained through the project described herein, the eradication of invasive rodents and feral cats from Floreana Island will have secondary benefits that support other GEF program areas. For

example, invasive vertebrate eradication will enable habitat recovery across the 17,258 ha of Floreana Island's diverse landscape, thus creating an enabling environment for reduced land degradation and improved carbon storage and climate change resilience. The translocation of giant tortoises and recovery of their associated ecosystem process on Santa Fe Island will have similar cascading benefits.

127. Although Biodiversity is the primary GEF Focal Area addressed by this project, successfully preventing future introductions of invasive alien species in the Galapagos archipelago, establishing sustainable farming practices on Floreana Island, and recovering giant tortoises on Santa Fe Island will provide benefits to other GEF Focal Areas, including: Land Degradation (by facilitating the recovery of vegetation and thus reducing erosion), Climate Change Mitigation (by securing carbon stocks and fostering ecosystem resilience), International Waters (by functionally protecting 13,300,000 ha of marine reserve from threats by marine invasive species), and Sustainable Forest Management/REDD+ (by promoting better management of livestock, pets, and pests that adversely impact forest health).

7. Knowledge Management. Outline the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

128. Model transfer' is an explicit aspect of project Component 3, as well as the general standards of practice for the EA and IA. The publication of scientific and technical results and lessons learnt will share knowledge accumulated with other land managers and conservation practitioners regionally and internationally.

129. Throughout the course of this project, the Project Steering Committee will work to ensure that the scientific information, technology development, and implementation processes are carefully tracked and reported on in a manner that enables this project to serve as a catalyst for future conservation projects in the Galapagos archipelago, as well as in other island contexts. We anticipate contributing: 1) data for scientific analysis to the TIB[96] and DIISE[97], 2) improved technological capacity (e.g., biosecurity scanning equipment and inspection capacity), 3) cost-effective protocols (e.g., information on effective eradication methodologies), 4) scientific and technical findings presented through peer-reviewed publications and scientific conferences, and 5) greater local capacity to limit the further spread of invasive alien species through priority pathways (thus reducing risks of biological invasion to trade partners and through the tourism pathway). At the national and international level, the Galapagos Islands are regarded as a biodiversity icon and leader in invasive alien species management. Their high profile will undoubtedly help facilitate the transfer and adoption of project outcomes, including information, technology, and the implementation process as a procedural model.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

[96] http://tib.islandconservation.org/
[97] http://diise.islandconservation.org

A. Record of Endorsement[98] of GEF Operational Focal Point (s) on Behalf of the Government(s):

(Please attach the Operational Focal Point endorsement letter(s) with this template. For SGP, use this SGP OFP endorsement letter).

Name	Position	Ministry	Date *(MM/dd/yyyy)*
Diana Martucci Larrea	GEF Operational Focal Point	Ministry of Environment	**03/03/2017**

B. GEF Agency(ies) Certification

This request has been prepared in accordance with GEF policies[99] and procedures and meets the GEF criteria for project identification and preparation under GEF-6.

Agency Coordinator, Agency name	Signature	Date *(MM/dd/yyyy)*	Project Contact Person	Telephone	Email
Miguel Morales		03/03/2017	Orissa Samaroo	7033412550	osamaroo@conservation.org

C. Additional GEF Project Agency Certification (Applicable Only to Newly Accredited GEF Project Agencies)

For newly accredited GEF Project Agencies, please download and fill up the required **GEF Project Agency Certification of Ceiling Information Template** to be attached as an annex to the PIF.

[98] For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required even though there may not be a STAR allocation associated with the project.

[99] GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF

ANNEXES

Annex 1.

Travel To/Between the Galapagos Islands in 2011[100]

Mode of Transport	# Trips
Commercial flights	2,870
Private flights	82
Inter-island flights	1,889
Cargo boat trips	224
Inter-island ferries	8,726
Privately-owned yachts and sailboats	326

Annex 2.

Action and Investment Timeline for Invasive Alien Species in the Galapagos Archipelago

1991

- Inspection work initiated by Charles Darwin Foundation, setting the foundation for the Galapagos Province Inspection and Quarantine System (SICGAL)
- Feral goats eradicated from Marielas Sur

1994

- Ministry of Agriculture issues Health and Quarantine Regulations for the archipelago
- Special Regulations for Agricultural Health and Quarantine and for Natural Areas for the Galapagos Islands issued – established an inspection system which becomes SICGAL

1996

- Galapagos declared in zoo-sanitary emergency due to foot and mouth disease

1997

- PDF-A for the Control of Invasive Species in the Galapagos Archipelago Project (CISGP) under GEF 3 obtained ($25K)
- International workshop for planning the eradication of goats from northern Isabela Island

1998

- PDF-A for CISGP implemented
- PDF-B for CISGP requested ($350K)
- New Constitution of Ecuador adopted – allows for the Galapagos to be governed by a special regime
- Special Regime Law for the Conservation and Sustainable Development of the Province of Galapagos (LOREG) enacted – establishes that invasive alien species are a serious problem and that all individuals and organizations must contribute to the total control of introduced species and prevent their entry and spread
- LOREG makes the Ecuadorian Service for Agricultural Health (SESA) responsible for inspection and quarantine efforts at ports and airports, established mechanism for distribution of revenues from entry fees, whereby 5% of revenue would be allocated to SICGAL
- Galapagos National Park and Charles Darwin Foundation start operating SICGAL

[100] WildAid 2012, page 8

- Galapagos Marine Reserve (GMR) created

1999

- Goat eradication begins on Pinta Island
- Eradication of two blackberry species begins
- Foot and mouth disease state of emergency lifted
- Desender et al. (1999) reports that areas affected by feral goats around Alcedo volcano on Isabela Island have reduced species diversity, including adverse impacts to tortoises

2000

- Feral pigs eradicated from Santiago Island, making it the largest successful feral pig eradication
- Feral goats eradicated from Marchena Island (but followed by reintroduction)
- Goat eradication begins on Baltra Island
- United Nations Foundation awards Charles Darwin Research Station the Control and Eradication of Invasive Species UNF/UNFIP SCO-LAC-99-072 project ($4M)
- Environmental Management of the Galapagos Islands project financed with a $13M loan from IDB (1274/OC-EC) to complement CISGP

2001

- CISGP endorsed by the GEF Sec on 25 April and signed by the GoE and UNDP on 19 October (6 year, $18.65M GEF and $32.5M co-financing)
- Launch CISGP
- Smooth-billed ani successfully eradicated from Fernandina and Genovesa Islands (but followed by reintroduction)
- Feral goat eradication begins in Santiago Island
- World Heritage Site expanded to include GMR

2002

- SESA takes over SICGAL
- INGALA Council approves Regional Plan
- Black rats successfully eradicated from Bainbridge – 2 Island
- Black rat eradication from Bainbridge – 1 and Lobos Island fails
- Feral cats eradicated from Baltra Island ($144K)
- Little fire ant eradicated from Marchena Island ($213K)
- Feral goats successfully eradicated from Marchena Island (but followed by reintroduction)
- Introduced cottony cushion scale biological control agent the predatory beetle (*Rodolia cardinalis*) is released after four years of trials and is highly effective. First biological control of a pest in Galapagos.

2003

- CISGP struggling with fundraising and various administrative and governance challenges
- Regulations for the Total Control of Introduced Species in the Province of Galapagos issued, creating as an integral program within SESA SICGAL
- Kofi Annan visits Galapagos and commissions Maurice Strong, as special envoy, to visit the Galapagos and analyze opportunities to improve stakeholder relations and sustainability outcomes
- Feral goat eradication on Baltra Island successfully completed ($10K)
- Feral goat eradication on Pinta Island successfully completed ($84K)
- Feral goats successfully eradicated from Marchena Island
- Rock doves eradicated from Santa Cruz Island
- Two blackberry species eradicated from Galapagos ($11K)

2004

- Feral goat eradication begins on northern Isabela
- Black rat eradication from Marielas Sur and Venecia Islands fails
- Feral donkeys successfully eradicated from Santiago Island

- Maurice Strong visits Ecuador and proposes fund for Galapagos
- INGALA Council approves Regional Plan
- LOREG enacted
- CISGP Mid-Term Evaluation (MTE) undertaken, including recommendations to strengthen the CISGP project

2005

- Rock doves eradicated from the urban areas of San Cristobal and Isabela islands, completing eradication from the archipelago
- Feral donkeys eradicated from northern Isabela Island

2006

- Feral goats eradicated Santiago ($6.1M[101]), and northern Isabela ($4.1M) islands. Santiago largest island worldwide to have been eradicated of feral goats
- The GNPD Management Plan recognizes IAS as the main threat to Galapagos biodiversity (MAE 2006)
- Environmental Management of the Galapagos Islands project (IDB 1274/OC-EC) ends

2007

- Government of Ecuador declares Galapagos at risk and a national priority
- Galapagos Islands put on List of Endangered World Heritage sites (largely due to invasive alien species impacts)
- Total Control Plan approved
- Galapagos at risk: a socioeconomic analysis report released by Charles Darwin Foundation
- Fund for the Control of Invasive Species of Galapagos (FEIG) created
- International workshop develops a roadmap for eradicating introduced rodents from Galapagos Islands
- Black rats eradicated from Seymour Norte and Mosquera Islands
- Tilapia eradicated from 'El Junco' Lagoon, San Cristobal Island, effectively eradicating this species from the archipelago
- Field activities completed for the CISGP

2008

- New Constitution of the Republic of Ecuador confirmed the special regime to be administered by a Council of Government (CGG) responsible for planning, managing resources, and organizing other activities. LOREG is updated accordingly.
- Phytosanitary emergency declared due to Mediterranean fruit fly in Galapagos
- CISGP work focusing on establishing a trust fund for invasive alien species control
- Black rats eradicated rom Bainbridge – 1 Island
- Feral goats eradicated from Baltra Island
- Feral cattle and donkeys eradicated from Floreana Island
- Action Plan to Save the Floreana mockingbird developed, highlighting need to eradicate introduced rodents and cats from Floreana Island
- Genetic testing of more than 1,600 tortoise blood samples collected on Wolf Volcano identify numerous tortoises with partial ancestry from Floreana (extinct since the 1850s)

2009

- CISGP work continues to make the trust fund (FEIG) operational
- Final evaluation of the CISGP undertaken determines that there was considerable funding yet to be spent ($600K of GEF funds) and outcomes yet to be met – thus evaluation considered the Pre-Final Evaluation (PFE)
- New Work Plan for CISGP established and initiated
- Helmsley Charitable Trust initiates grants to NGOs in Galapagos

[101] Includes cost of donkey eradication in 2004

- Black rats eradicated from Marielas Norte
- Feral goats eradicated from Floreana Island ($644K) and Wolf Island

2010

- Introduction of 39 sterilized hybrid tortoises on Pinta Island to reinitiate ecosystem services
- Galapagos taken off List of Endangered World Heritage Sites
- Guezou et al. (2010) and Truemen et al. (2010) report existence of 870 species of invasive plants
- Lessons learned from the Plant Eradication Program in Galapagos published[102], with major lesson learned being that ineffective engagement strategies with people caused most eradications to be unsuccessful

2011

- First FEIG call for proposals released by the Minister of the Environment
- Terminal evaluation of CISGP undertaken
- Eradication of introduced rodents from Rabida and 10 other islands successfully completed ($1.4M). First aerial broadcast of bait for rodent eradication in South America

2012

- GBA established
- WildAid report released on establishing an effective biosecurity system
- Eradication of black rats from Pinzon and mice from Plaza Sur islands successfully completed ($2.6M)
- Rediscovery on Rabida Island of two island endemic land snail species considered extinct, and endemic gecko known only from subfossils discovered two years post rat eradication
- GNPD invasive alien species project approved by National Planning Authority for $16.7M
- Review paper Current status of alien vertebrates in the Galápagos Islands published[103], reporting 19 species of non-native vertebrates are established
- Paper published on positive population response of giant Galapagos tortoises to feral goat removal on Alcedo volcano[104]
- 'Galapagos Marine Invasive Species: Prevention, Detection and Management' project initiated. Co-financing by Darwin Initiative ($500K)
- Helmsley Charitable Trust Galapagos conservation strategic plan 2012-16 released (proposed $15M investment). Identifies invasive alien species (new introductions, presence of existing species) and El Niño events as the highest ranked direct threats to Galapagos biodiversity.
- International workshop 'Giant Tortoise Recovery through Integrated Research and Management', generated the priorities and strategies for the Giant Tortoise Restoration Initiative

2013

- Floreana invasive rodent and feral cat eradication feasibility assessment produced for GNPD and Floreana Parish Council by Island Conservation
- GBA invasive alien species consolidation project approved by National Planning Authority for $10.6M

2014

- GNPD Management Plan, incorporates both the Galapagos National Park and Marine Reserve for first time
- Giant tortoise hatchlings surviving on Pinzon Island, in the absence of rat predation, for first time in 150 years[105]
- Black rats found to have reinvaded Sombrero Chino and Bartolome Islands through analysis of pre- and post-eradication DNA samples. Both islands were within known swimming distance of rats
- Giant Tortoise Restoration Initiative launched with defined goals for every species of Galapagos tortoise

[102] Gardener et al. 2010
[103] Phillips et al. 2012
[104] Marquez et al. 2012
[105] Tapia et al. 2014

2015

- New Galapagos Special Law (LOREG) comes into effect, increasing powers of GBA to effectively implement and enforce biosecurity
- GBA institutional strategic plan 2015-2018 released
- International Workshop on Marine Bioinvasions of Tropical Island Ecosystems held to develop an Action Plan to Minimize Risks of Marine Bioinvasions in the Galapagos Marine Reserve
- Ministry of Transport register $9.12M project with National Planning Authority for cargo consolidation at Guayaquil port to improve biosecurity
- 201 Espanola giant tortoises (*Chelonoidis hoodensis*) translocated to Santa Fe Island as an ecological replacement for Santa Fe tortoises that went extinct >150 years ago
- Major expedition to Wolf Volcano on northern Isabela Island collects hybrid tortoises with partial Pinta and Floreana tortoise ancestry to initiate breeding programs for the two islands

2016

- GGC secure land and financing for Guayaquil cargo consolidation port to improve Galapagos' biosecurity

2017

- Helmsley Charitable Trust terminates its conservation program, exiting Galapagos

Annex 3.

Priorities for Biosecurity Advancement: Puzzle Pieces that Keep Invasive Alien Species Out
Blue shading indicates priority to be addressed in the GEF 6 project proposed herein

PRIORITIES[106]	BASELINE/BACKGROUND	ENTITY	ACTIONS/ROLE
Create an autonomous entity to oversee and implement biosecurity measures in the Galapagos	SICGAL, under the MoAG, conducted agricultural quarantine operations, but was not an autonomous entity and not explicitly focused on halting the incursions of invasive alien species in the Galapagos archipelago.	MoAG, MoE	In 2012, the MoAG handed over to MoE the responsibilities for implementing biosecurity within the Galapagos. The GBA was then formed. GBA functions as an autonomous entity within the MoE and has explicit duties to prevent the movement of invasive alien species into and within the Galapagos archipelago.
Develop an institutional strategic plan for GBA	Under SICGAL in 2011 strategic planning points were identified but never implemented. GBA is a new Agency. The WildAid 2012 report called for a more strategic approach to quarantine and inspection. GBA institutional strategic plan 2015-2018 completed by GBA with support from WildAid.	GBA, WildAid	Completed. GBA 2015-2018 Strategic Plan released in July 2015. Develop a strategic plan for 2019 onwards.
Increase % of organic cargo inspected	Organic cargo inspected: 2011: 1-2% 2014: 98.6% WildAid 2012 report identified the need to increase the percentage of organic cargo inspected. By 2014 nearly 99% of organic cargo was being inspected.	GBA	Maintain rate of inspection of organic cargo.
Increase number GBA quarantine inspectors	# inspectors at air and sea ports of departure and arrival: 2002: 40 2010: 30 2013: 41	GBA	GBA 2015-2018 Strategic Plan calls for the recruitment of qualified personnel, a training plan for specialized personnel (e.g., intercept identifiers, equipment operators), mobilization of sufficient funds to support recruitment and training, and establishing procedures for the inspection work to be carried out at cargo and passenger terminals.

[106] Priorities derived from GBA 2015-2018 Strategic Plan, GBA 2015 Plan for Port Consolidation, consultations with the GBA Directorate, and WildAid 2012 report to the GoE on advancing biosecurity in the Galapagos archipelago

PRIORITIES[106]	BASELINE/BACKGROUND	ENTITY	ACTIONS/ROLE
	June 2015: 100 The current number of inspectors has increased dramatically but is still insufficient to meet the growing biosecurity needs resulting from steady increases in tourism and inter-island traffic in the Galapagos. The WildAid 2012 report recommended an increase in the overall number of inspectors, as well as inspectors with specialized capacities (e.g., specimen identification).		
Provide inspectors with adequate training	Inspectors have insufficient training to implement quarantine procedures in a standardized and consistent manner. The WildAid 2012 report recommended comprehensive training for all inspectors.	GBA, WildAid, This GEF-6 Project	The GBA 2015-2018 Strategic Plan calls for development and implementation of a training plan for specialized personnel (e.g., intercept identifiers, equipment operators) and the mobilization of sufficient funds to support this training. This priority is partially addressed under Component 1 of the GEF 6 project proposed herein.
Create a pest-interception database with remote data entry capacity	Pest intercept data is currently entered into Excel spreadsheets from data recorded on hard-copy datasheets and other documentation (e.g., data entry logs/journals). This procedure results in data entry and analysis delays, and is prone to data entry errors. The Director of the GBA has made it a priority to automate both data entry and data management by creating a pest intercept database with remote data entry capacity.	GBA, WildAid, and others TBD	GBA and partners to seek funding
Pest-intercept reporting and adaptive management	Due to the inadequacies in pest intercept data management (see above), the GBA has lacked the capacity to report on pest intercepts in an accurate and timely manner. Without this information, the port authorities are unable to make the well-informed decisions necessary to effectively target conveyances and persons for inspection. The Director of the GBA has thus established pest intercept data analysis and reporting as a near-term priority.	GBA, WildAid, and others TBD	GBA and partners to seek funding

PRIORITIES[106]	BASELINE/BACKGROUND	ENTITY	ACTIONS/ROLE
Consolidate and improve cargo port operation	The freight system for the Galapagos region is inefficient, resulting in excessive delays, limited inspection capacity, and marginal inspection effectiveness. The passenger transport between the islands is experiencing rapid growth; there is insufficient port capacity to keep up with the inspection needs. The WildAid 2012 and GBA 2015-2018 Strategic Plan recommended a consolidation of port functions and streamlining of quarantine operations. In 2015, a Ministry of Transportation (MoT) investment project for constructing a port in Guayaquil to centralize cargo for Galapagos was registered by the National Planning Authority for $9.12M.	GBA, MoT, GGC, municipalities, WildAid	The GBA 2015-2018 Strategic Plan calls for the construction and improvement of consolidated port activities in Guayaquil, development of adequate port infrastructure at all ports, implementation of technology and equipment necessary for system-wide biosecurity of quarantine cargo and passengers, qualified and trained human resources. Port consolidation is in progress: In 2016 the GGC was passed the land designated for the port in Guayaquil by the MoT and have secured financing for port construction.
Increase inspector effectiveness by providing them with automated equipment	Insufficient equipment and obsolete technology limit the quality of passenger and cargo inspections. Maritime ports lack X-ray devices, ionizing equipment, sniffers for organic products, and detectors of dangerous substances. These devices enable faster, more accurate, and non-intrusive inspection. The WildAid 2012 report identified the lack of technical capacity as a key factor hindering inspection capacity at ports of entry.	GBA, This GEF-6 Project	The GBA 2015-2018 Strategic Plan calls for the implementation of technology and equipment necessary for system-wide biosecurity of quarantine cargo and passengers, and training of inspection specialists (e.g., equipment operators). Identified potential funding sources are GoE investment projects and international cooperation. This priority is partially addressed under Component 1 of the GEF 6 project proposed herein.
Establish canine units for increasing efficacy of detecting high risk organic products and invasive alien species	2014: two giant African snail detection dogs imported, 6 GBA staff trained as trainer/handlers initiating GBA's canine program, kennels constructed (GBA, IC, Dogs for Conservation, GC). Feasibility study for implementing canines at airports and ports determined actions to be feasible (Chile's Agriculture and Livestock Service, Dogs for Conservation).	GBA, WildAid, IC, Chile's Agriculture and Livestock Service, GC	The GBA 2015-2018 Plan explicitly cites detection dogs as one of the 'technologies' that need to be established and well-maintained in order to increase interception capacities. A cooperative agreement is being finalized between GBA and Chile's Agriculture and Livestock Service, which includes assistance in developing GBA's canine program for enhancing biosecurity. WildAid proposes to facilitate capacity building in this area.
Improve capacity to identify quarantine pests	Infrastructure is insufficient and inadequate. There is a basic laboratory for the analysis of samples in Santa Cruz that needs upgrading. There is very limited capacity for risk analysis and no on-staff experts or an established network of experts to	GBA	The GBA 2015-2018 Strategic Plan calls for the implementation of a leading, adequately staffed laboratory in Santa Cruz with rapid diagnostic capacities, and portable equipment. It also directs the mobilization of funds to meet these technical needs.

PRIORITIES[106]	BASELINE/BACKGROUND	ENTITY	ACTIONS/ROLE
	advise GBA on specimen identification. The WildAid 2012 report explicitly recommended hiring inspectors with the capacity to identify intercepted pests.		
Improve infrastructure	In 2014, GBA purchased a block of land in San Cristobal Island for offices; offices in Santa Cruz Island were expanded.	GBA	In 2015-16 office construction in San Cristobal Island and office and laboratory expansion in Santa Cruz Island is scheduled within GBA investment project. Identified potential funding sources for additional infrastructure development are within the GoE (Ministry of Finances, MoE, National Planning Authority).
Improve public awareness of the invasive alien species issue	A lack of knowledge of invasive alien species issues among the local communities in the Galapagos Islands exists, and the GBA has not been effectively taking action to raise this awareness. Therefore, people continue to violate the quarantine laws due to a lack of understanding and appreciation of the need for the regulation of goods.	GBA	The GBA 2015-2018 Strategic Plan calls for the development and implementation of a comprehensive communication and education plan, greater collaboration with state and aid agency investment projects, and active enforcement of existing regulations.
Develop a plant and animal health surveillance system	There is no comprehensive system in place to ensure the knowledge and management of plant and animal health. This undermines the capacity of the GoE to prevent and control the spread of pests and diseases in the Galapagos archipelago.	GBA, MoAG	The GBA 2015-2018 Strategic Plan calls for the development of a Plant and Animal Health Surveillance program to prevent the spread of pests and disease to and within the Galapagos Islands. It directs the provision of financial resources to implement this program through GoE investment projects, and international cooperation.
Improve livestock management so as to reduce the risk of disease transmission and/or the animals becoming feral	Farmers/ranchers are lacking adequate training in animal care and management. They are thus unable to implement 'best practices' and utilize technologies that improve herd and flock production, health, and overall management	GBA, MoAG	The GBA 2015-2018 Strategic Plan calls for training seminars to be developed and delivered to owners of pig and poultry farms, as well as the periodic inspection/control of these operations.
Additional or improvement to existing regulations required for management of new	Regulations for pets were managed by municipalities until 2015, when this was handed over to GBA. Regulations for livestock, agriculture and cargo shipping agents are currently inadequate.	GBA, GGC, MoAG	The GBA 2015-2018 Strategic Plan calls for revision and changes to certain procedures and regulations, and the development of these where they are absent.

PRIORITIES[106]	BASELINE/BACKGROUND	ENTITY	ACTIONS/ROLE
competencies, including pets, livestock and agriculture, and other competencies such as regulations for cargo shipping agents.			
Increase the regulatory/legal staff supporting biosecurity	There is an insufficient number of legal staff and/or specialized staff in the legal unit to enforce biosecurity regulations. Under the new Galapagos Special Law (June 2015), GBA can enforce regulations with sanctions, creating an increased need for legal staff within the Agency.	GBA	The GBA 2015-2018 Strategic Plan calls for increase in numbers and capacity of legal personnel to focus on administrative and legal violations.

Annex 4.

Invasive Vertebrate Eradications in the Galapagos Archipelago, sorted by island size[107]

Island	Size (Ha)	Pop	Black Rats	Brown Rats	House Mice	Rock Dove	Smooth-billed Ani	Feral Cats	Feral Dogs	Feral Goats	Feral Donkeys	Feral Pigs	Feral Cattle
Gran Felipe	0.04	-	2011 ✓										
Marielas Norte	0.30	-	1988 ! / 2009 ✓										
Pitt	0.40	-	1989 ✓										
Marielas Sur	1.00	-	1988 ! / 2004 ✗							1991 ✓			
Bainbridge 2	3.00	-	2002 ✓										
Beagle W & N	5.00	-	2011 ✓										
Mosquera	5.00	-	1980 ✗ / 2007 ✓										
Lobos	7.00	-	2002 ✗										
Bainbridge 1	11.00	-	2002 ✗										

[107] http://diise.islandconservation.org/

Island	Size (Ha)	Pop	Black Rats	Brown Rats	House Mice	Rock Dove	Smooth-billed Ani	Feral Cats	Feral Dogs	Feral Goats	Feral Donkeys	Feral Pigs	Feral Cattle
			2008 ✓										
Venecia	13.00	-	2004 ✗	1980 ✗									
Plaza Sur	13.00	-			2012 ✓					1961 ✓			
Sombrero Chino	21.00	-	2011 !										
Bainbridge 3, 5 & 6	27.00	-	2011 ✓										
Bartolome	124.00	-	2011 !										
Wolf	134.00	-								2009 ✓			
Seymour Norte	184.00	-	2007 ✓										
Rabida	499.00	-		2011 ✓						1971 ! 1977 ✓			
Genovesa	1,411.00	-					2001 !						
Pinzon	1,815.00	-	1989 ✗ 2012 ✓										
Santa Fe	2,413.00	-							1978 ✓	1972 ✓			
Baltra	2,610.00	-						2002 ✓		2008 ✓			
Pinta	5,940.00	-								1985 ✗ 1990 2003 ✗ ✓			
Espanola	6,048.00	-								1978 ✓			
Marchena	12,996.00	-								1979 ! 2000 ! 2002 ! 2003 ✓			
Floreana	17,253.00	140								2009 ✓	2008 ✓	1980 ✓	2008 ✓
San Cristóbal	55,809.00	6,000				2005 ✓							
Santiago	58,465.00	-								2006 ✓	2004 ✓	2000 ✓	
Fernandina	64,248.00	-					2001 !						
Santa Cruz	98,555.00	12,000				2003 ✓							
Isabela (northern)	250,000.00	-								2006 ✓	2005 ✓		
Isabela (total)	458, 812.00	1,800				2005 ✓							

✓ Successful eradication; ✗ Eradication failure; ! Reinvasion following successful eradication

Annex 5.

IUCN Red Listed (Threatened) Species Native to Floreana Island – Current and Projected Population Status under a 'No Eradication' Scenario[108]

Name	Species	Current Status on Floreana	Current IUCN Status [109]	Projected population status (0 action)[110]
Vertebrates: Common name				
1. Galapagos petrel	*Pterodroma phaeopygia*	Present	CR	↓ Pr; PD
2. Medium tree finch	*Camarhynchus pauper*	Present	CR	↓ Pr; PD; DD; D
3. Floreana mockingbird	*Mimus trifasciatus*	Extirpated	CR	= RNP
4. Green sea turtle	*Chelonia mydas*	Present	EN	Pr
5. Galapagos sea lion	*Zalophus wollebaeki*	Present	EN	= D
6. Galapagos penguin	*Spheniscus mendiculus*	Present	EN	↓ Pr; PD; DD; D
7. Galapagos martin	*Progne modesta*	Present	EN	↓ Pr; PD
8. Galapagos racer	*Alsophis biserialis*	Extirpated	EN‡	= RNP
9. Floreana lava lizard	*Microlophus grayii*	Present	VU‡	↓ Pr; PD
10. Marine iguana	*Amblyrhynchus cristatus*	Present	VU	↓ Pr; PD; DD
11. Floreana giant tortoise	*Chelonoidis elephantopus*	Extirpated	VU	↑ Pr; †
12. Galapagos rail	*Laterallus spilonotus*	Extirpated	VU	= RNP =
13. Lava gull	*Larus fuliginosus*	Extirpated	VU	RNP
14. Galapagos hawk	*Buteo galapagoensis*	Extirpated	VU	= RNP
Invertebrates: Class: Order				
15. Gastropoda: Stylommatophora	*Naesiotus galapaganus*	Present	CR	↓ Pr; PD; DD

[108] Citations supporting projected population status threats available upon request. Threatened plants are provided here, but impacts of rodents at a species level are poorly studied. No significant direct impacts from cats on plants are known. In general, endemic vegetation is recovering on Floreana Island after feral goat, donkey, and cattle eradications. Although rodent eradication would likely have a net positive effect, it is unlikely for most plant species to reverse the trend of population recovery. Further, vegetation trends are strongly regulated in the Galapagos Islands by rainfall (e.g., ENSO events), providing additional complicating factors to providing species specific trends with any certainty.

[109] Vertebrates: IUCN 2015, Jiménez-Uzcátegui et al. 2007; Invertebrates: Roque-Albelo 2007; Plants: Tye 2007. Roque-Albelo 2007 and Tye 2007 use IUCN criteria and provide more recent assessments than the IUCN Red List which suggests updating of these taxa. Jiménez-Uzcátegui et al. 2007 provides assessments for two vertebrate species not assessed by IUCN Red List and are indicated by ‡.

[110] Indicates how the IUCN Red List status could be expected to change if invasive rodents and feral cats are not eradicated from Floreana Island in the near future.

Name	Species	Current Status on Floreana	Current IUCN Status [109]	Projected population status (0 action)[110]
16. Gastropoda: Stylommatophora	*Naesiotus eschariferus*	Present	CR	↓ Pr; PD; DD
17. Gastropoda: Stylommatophora	*Naesiotus jacobi*	Present	CR	↓ Pr; PD; DD
18. Gastropoda: Stylommatophora	*Naesiotus cinerarius*	Present	EN	↓ Pr; PD; DD
19. Gastropoda: Stylommatophora	*Naesiotus cucullinus*	Present	EN	↓ Pr; PD; DD
20. Gastropoda: Stylommatophora	*Naesiotus nux*	Present	EN	↓ Pr; PD; DD
21. Gastropoda: Stylommatophora	*Naesiotus perspectivus*	Present	EN	↓ Pr; PD; DD
22. Gastropoda: Stylommatophora	*Naesiotus planospira*	Present	EN	↓ Pr; PD; DD
23. Gastropoda: Stylommatophora	*Naesiotus rugulosus*	Present	EN	↓ Pr; PD; DD
24. Gastropoda: Stylommatophora	*Naesiotus calvus*	Present	VU	↓ Pr; PD; DD
25. Gastropoda: Stylommatophora	*Naesiotus unifasciatus*	Present	VU	↓ Pr; PD; DD
26. Gastropoda: Stylommatophora	*Naesiotus ustulatus*	Present	VU	↓ Pr; PD; DD
27. Insecta: Lepidoptera	*Eupithecia perryvriesi*	Present	VU	↓ Pr; PD; DD
28. Insecta: Lepidoptera	*Tyrintheina umbrosa*	Present	VU	↓ Pr; PD; DD
Plants: Family				
29. Asteraceae	*Lecocarpus pinnatifidus*	Present	CR	Population declines[111]
30. Linacea	*Linum cratericola*	Present	CR	
31. Verbenaceae	*Lippia salicifolia*	Present	CR	
32. Amaranthaceae	*Lithophila subscaposa*	Present	CR	
33. Rubiaceae	*Psychotria angustata*	Present	CR	

[111] Populations of all listed plant species are anticipated to decline but due to a lack of species specific information it is uncertain whether IUCN Red List status will change.

Name	Species	Current Status on Floreana	Current IUCN Status [109]	Projected population status (0 action)[110]
34. Amaranthaceae	*Alternanthera nesiotes*	Present	EN	
35. Asteraceae	*Baccharis steetzii*	Present	EN	
36. Rubiaceae	*Galium galapagoense*	Present	EN	
37. Amaranthaceae	*Lithophila radicata*	Present	EN	
38. Cactaceae	*Opuntia megasperma var. megasperma*	Present	EN	
39. Lamiaceae	*Salvia prostrata*	Present	EN	
40. Lamiaceae	*Salvia pseudoserotina*	Present	EN	
41. Asteraceae	*Scalesia pedunculata*	Present	EN	
42. Asteraceae	*Acmella darwinii*	Present	VU	
43. Amaranthaceae	*Alternanthera galapagensis*	Present	VU	
44. Amaranthaceae	*Alternanthera galapagensis*	Present	VU	
45. Rubiaceae	*Borreria dispersa*	Present	VU	
46. Euphorbiaceae	*Chamaesyce nummularia var. glabra*	Present	VU	
47. Euphorbiaceae	*Chamaesyce nummularia var. nummularia*	Present	VU	
48. Solanaceae	*Iochroma ellipticum*	Present	VU	
49. Cactaceae	*Jasminocereus thouarsii var. thouarsii*	Present	VU	
50. Molluginaceae	*Mollugo flavescens ssp. insularis*	Present	VU	
51. Molluginaceae	*Mollugo floriana ssp. floriana*	Present	VU	
52. Nolanaceae	*Nolana galapagensis*	Present	VU	
53. Poaceae	*Paspalum redundans*	Present	VU	
54. Plantaginaceae	*Plantago galapagensis*	Present	VU	
55. Polygalaceae	*Polygala galapageia var. insularis*	Present	VU	
56. Polygalaceae	*Polygala sancti-georgii var. sancti-georgii*	Present	VU	
57. Myrtaceae	*Psidium galapageium*	Present	VU	
58. Rubiaceae	*Psychotria rufipes*	Present	VU	
59. Asteraceae	*Scalesia affinis*	Present	VU	
60. Asteraceae	*Scalesia villosa*	Present	VU	
61. Boraginaceae	*Tournefortia rufosericea*	Present	VU	

IUCN Status: CR Critically Endangered, EN Endangered, VU Vulnerable

〓 No change; 🡻 Decline; 🡹 Increase

Predation or herbivory (reducing fecundity) at one or more life stages = Pr; Disease = D; Reintroduction Not Possible = RNP; Population Decline = PD; Distribution Decline = DD; † Reintroduction planned but in absence of eradication would likely require captive breeding and head-starting to sustain the population in perpetuity.

Annex 6.

Baseline and Co-financing Projects that Address Invasive Alien Species in the Galapagos Archipelago[112]

[112] Historical baseline information can be found in Annex 2

PROJECT NAME	YEARS (Start-End)	BUDGET (USD)	DONOR(S)	OBJECTIVES/BRIEF DESCRIPTION OF HOW IT IS LINKED TO THIS GEF PROJECT
Baseline				
GNPD's annual operations related to invasive alien species and habitat management	Annual through 2017	$6,420,000 / year (using 2014 as a reference)	GoE (GNPD)	The GNPD manages invasive alien species within Park and Marine Reserve boundaries and implements habitat restoration strategies within the Park to protect biodiversity. Activities include invasive alien plant, invertebrate and vertebrate control, monitoring and identification of invasive alien species in the Marine Reserve, replanting native forest after controlling invasive plants, repatriating tortoises and mangrove finches, species monitoring and censuses, and conduct public outreach and education.
GBA's annual operations	2012-2017	$5,000,000 / year (using 2014 as reference)	GoE (GBA), WildAid, Island Conservation, Galapagos Conservancy	The GBA aims to prevent invasive alien species arriving to and establishing within the Galapagos archipelago. They do this by inspecting cargo, luggage, boats and planes prior to departure for and upon arrival to the islands, control and where feasible eradicate non-native species in areas outside the National Park, monitor livestock for disease, conduct public outreach and education, and create and enforce regulations.
MoAG's Bio-agriculture project for Galapagos (2014) and MoAG's annual operations	2014-2017	$600,000 / year (using 2014 as reference)	GoE (MoAG)	The Galapagos bio-agriculture project will increase the quantity and quality of local agricultural production, shorten supply chains and promote consumption of fresh local produce. This will reduce importations of organic products and therefore reduce risks of importing invasive alien species.
Galapagos Invasive Species Fund (FEIG)	2012-2015	Approx. $600,000 / year	GoE, UNDP (GEF), KfW, Galapagos Conservancy, Conservation International	The FEIG provides incremental funds to implement invasive alien species projects in the archipelago. FEIG funds support the overall strategies to effectively manage invasive alien species, as such future investments will be made depending upon regional priorities. FEIG is currently having operational aspects redefined.
Component 2 preparations	2014-2017	$600,000 / year	Island Conservation	IC has provided technical assistance to project partners in planning and preparations, implementing the stakeholder community engagement strategy, and assisting in developing the invasive rodent and feral cat eradication operational plan for Floreana Island.
GNPD's Enhancing Electronic Monitoring Capacity of Vessels in the Galapagos Marine Reserve	2010-2017	$870,000 in 2010-12 by Sea Shepherd, and $100,000/ year for operating	GoE (GNPD, Ecuadorian Navy), World Wide Fund for Nature, Sea Shepherd, WildAid, Conservation International	Systems have been established to allow for all vessels to be tracked remotely, and incorporates radars, and long range video cameras, which reduces the need for large costly oceanic patrol vessels. Although designed primarily for managing fishing and tourism vessels the system also supports Component 1, allowing identification and enforcement of illegal landings or entry to the marine reserve by boats that have not passed through or are attempting to evade biosecurity filters.

PROJECT NAME	YEARS (Start-End)	BUDGET (USD)	DONOR(S)	OBJECTIVES/BRIEF DESCRIPTION OF HOW IT IS LINKED TO THIS GEF PROJECT
'Galapagos Marine Invasive Species: Prevention, Detection and Management' by University of Southampton and Charles Darwin Foundation	2012-2017	$500,000	GoE (GBA, GNPD, Ecuadorian Navy, Oceanography Institute), Galapagos Conservancy, UK Department for Environment, Food & Rural Affairs' (DEFRA) Darwin Initiative	This project has established baselines for invasive marine species, introduced risk assessment tools and rapid response protocols for invasive marine species control/eradication, conducted community outreach, established an invasive marine species detection program, and built capacity in GBA/GNPD staff and local students. These activities complement project components but are not part of them, they have largely been completed.
CO-FINANCING				
Component 1.				
GBA's operations	2017-2020	$4,500,000	GoE (GBA), WildAid, Island Conservation, Galapagos Conservancy	The GBA aims to prevent invasive alien species arriving to and establishing within the Galapagos archipelago. They do this by inspecting cargo, luggage, boats and planes prior to departure for and upon arrival to the islands, control and where feasible eradicate non-native species in areas outside the National Park, monitor livestock for disease, conduct public outreach and education, and create and enforce regulations. These activities complement project components but are not part of them, they are ongoing and there is no need to apply GEF 6 funding to these type of activities at this time. GBA staff, equipment and infrastructure will be involved in Component 1.
GNPD's operations related to biosecurity	2017-2020	$1,400,000	GoE (GNPD)	GNPD manage biosecurity aspects within the Galapagos National Park, including managing facilities and inspections of equipment, supplies and personal gear of researchers and Park staff prior to inter-island travel. Marine patrolling activities conducted by GNPD throughout the marine reserve serve a dual biosecurity role in reducing illegal activities that could result in introductions of invasive species.
GNPD's Enhancing Electronic Monitoring Capacity of Vessels in the Galapagos Marine Reserve	2017-2020	$300,000	GoE (GNPD, Ecuadorian Navy)	Systems have been established to allow for all vessels to be tracked remotely, and incorporates radars, and long range video cameras, which reduces the need for large costly oceanic patrol vessels. Although designed primarily for managing fishing and tourism vessels the system also supports Component 1, allowing identification and enforcement of illegal landings or entry to the marine reserve by boats that have

PROJECT NAME	YEARS (Start-End)	BUDGET (USD)	DONOR(S)	OBJECTIVES/BRIEF DESCRIPTION OF HOW IT IS LINKED TO THIS GEF PROJECT
				not passed through or are attempting to evade biosecurity filters.
Component 1 co-financing	2017-2020	$115,000	Galapagos Conservancy	GC provides funding to the GBA for biosecurity activities such as establishing detection dogs and the associated infrastructure and training.
Component 2				
GNPD's operations related to invasive alien species management	2017-2020	$5,700,000	GoE (GNPD)	The GNPD manages invasive alien species within Park and Marine Reserve boundaries and implements habitat restoration strategies within the Park to protect biodiversity. Activities include invasive alien plant, invertebrate and vertebrate control, monitoring and identification of invasive alien species in the Marine Reserve, and conducting public outreach and education. These activities complement project components but are not part of them, they are ongoing and there is no need to apply GEF 6 funding to these type of activities at this time. GNPD staff, boats and other infrastructure will be involved in Component 2.
Component 2 co-financing	2017-2020	$1,400,000	Island Conservation	IC has and will continue to provide technical assistance to project partners in planning and preparations, implementing the stakeholder community engagement strategy, and developing planning documents for invasive rodent and feral cat eradication from Floreana Island. These aspects are in support of Component 2. IC will also be the EA for this project.
Component 2 co-financing	2017-2020	$765,000	Galapagos Conservancy	GC provides funding to invasive species control and eradication activities, such as supporting IC in developing technical and social readiness for the eradication of invasive vertebrates from Floreana Island.
Component 3				
GNPD's operations related to species and habitat restoration	2017-2020	$3,100,000	GoE (GNPD)	The GNPD implements habitat and species restoration strategies within the Park to protect biodiversity. One of these projects is the Giant Tortoise Recovery Initiative. Activities include public outreach and education. GNPD staff, facilities, boats and other infrastructure will be involved in executing Component 3.
Component 3 co-financing	2017-2020	$1,045,000	Galapagos Conservancy	GC provides co-financing and technical assistance to GNPD in implementing the Giant Tortoise Recovery Initiative which has strategies identified for each of the giant tortoise species. GC also supports, amongst other activities, GNPD efforts to restore endemic *Scalesia* forests.
Project Management Cost				

PROJECT NAME	YEARS (Start-End)	BUDGET (USD)	DONOR(S)	OBJECTIVES/BRIEF DESCRIPTION OF HOW IT IS LINKED TO THIS GEF PROJECT
Project Management Cost co-financing	2017-2020	$300,000	Conservation International	CI as the IA for this GEF 6 project will also be contributing to ensuring the project's success.
Other proposed complementary invasive alien species projects not considered co-financing at this time				
Construction and operation of marine terminal for cargo to the Galapagos Islands	2017-2019		GoE (GGC)	This project will construct a wharf, cargo handling and biosecurity facilities in Guayaquil (mainland Ecuador) for consolidating cargo destined for the Galapagos Islands.
MoAG's Bio-agriculture project for Galapagos (2014) and MoAG's annual operations	annual until 2019		GoE (MoAG)	The Galapagos bio-agriculture project will increase the quantity and quality of local agricultural production, shorten supply chains and promote consumption of fresh local produce. This will reduce importations of organic products and therefore reduce risks of importing invasive alien species.
Action Plan to Reduce Invasion Risk of Marine Species in the Galapagos Marine Reserve	2015-?		Undefined at this time	Project being developed as a result of the 1st Tropical Island Marine Bioinvasions Workshop held in Galapagos in February 2015.

Annex 7.

IUCN Red Listed (Threatened) Species Native to Floreana Island – Projections of Status with Eradication Scenario[113]

Name	Species	Current Status on Floreana	Current IUCN Status[114]	Projected population status
Vertebrates: Common name				
1. Galapagos petrel	*Pterodroma phaeopygia*	Present	CR	↑ PrE; PI; DI
2. Medium tree finch	*Camarhynchus pauper*	Present	CR	↑ PrE; PI; DI; DRR
3. Floreana mockingbird	*Mimus trifasciatus*	Extirpated	CR	↑ RP; PI; DI
4. Green sea turtle	*Chelonia mydas*	Present	EN	= PrE
5. Galapagos sea lion	*Zalophus wollebaeki*	Present	EN	= DRR

[113] Citations supporting projected population status threats available upon request. Threatened plants are provided here, but impacts of rodents at a species level are poorly studied. No significant direct impacts from cats on plants are known. In general, endemic vegetation is recovering on Floreana Island after feral goat, donkey, and cattle eradications. Although rodent eradication would likely have a net positive effect, it is unlikely for most plant species to reverse the trend of population recovery. Further, vegetation trends are strongly regulated in the Galapagos Islands by rainfall (e.g., ENSO events), providing additional complicating factors to providing species specific trends with any certainty.

[114] Vertebrates: IUCN 2015, Jiménez-Uzcátegui et al. 2007; Invertebrates: Roque-Albelo 2007; Plants: Tye 2007. Roque-Albelo 2007 and Tye 2007 use IUCN criteria and provide more recent assessments than the IUCN Red List which suggests updating of these taxa. Jiménez-Uzcátegui et al. 2007 provides assessments for two vertebrate species not assessed by IUCN Red List and are indicated by ‡.

Name	Species	Current Status on Floreana	Current IUCN Status[114]	Projected population status
6. Galapagos penguin	*Spheniscus mendiculus*	Present	EN	↑ PrE; PI; DI; DRR
7. Galapagos martin	*Progne modesta*	Present	EN	↑ PrE; PI
8. Galapagos racer	*Alsophis biserialis*	Extirpated	EN‡	↑ RP; PI; DI
9. Floreana lava lizard	*Microlophus grayii*	Present	VU‡	↑ PrE; PI
10. Marine iguana	*Amblyrhynchus cristatus*	Present	VU	↑ PrE; PI; DI
11. Floreana giant tortoise	*Chelonoidis elephantopus*	Extirpated	VU	↑ PrE; PI; DI
12. Galapagos rail	*Laterallus spilonotus*	Extirpated	VU	↑ RP; PI; DI
13. Lava gull	*Larus fuliginosus*	Extirpated	VU	↑ RP; PI; DI
14. Galapagos hawk	*Buteo galapagoensis*	Extirpated	VU	↑ RP; PI; DI
Invertebrates: Class: Order				
15. Gastropoda: Stylommatophora	*Naesiotus galapaganus*	Present	CR	↑ PrE; PI; DI
16. Gastropoda: Stylommatophora	*Naesiotus eschariferus*	Present	CR	↑ PrE; PI; DI
17. Gastropoda: Stylommatophora	*Naesiotus jacobi*	Present	CR	↑ PrE; PI; DI
18. Gastropoda: Stylommatophora	*Naesiotus cinerarius*	Present	EN	↑ PrE; PI; DI
19. Gastropoda: Stylommatophora	*Naesiotus cucullinus*	Present	EN	↑ PrE; PI; DI
20. Gastropoda: Stylommatophora	*Naesiotus nux*	Present	EN	↑ PrE; PI; DI
21. Gastropoda: Stylommatophora	*Naesiotus perspectivus*	Present	EN	↑ PrE; PI; DI
22. Gastropoda: Stylommatophora	*Naesiotus planospira*	Present	EN	↑ PrE; PI; DI
23. Gastropoda: Stylommatophora	*Naesiotus rugulosus*	Present	EN	↑ PrE; PI; DI
24. Gastropoda: Stylommatophora	*Naesiotus calvus*	Present	VU	↑ PrE; PI; DI
25. Gastropoda: Stylommatophora	*Naesiotus unifasciatus*	Present	VU	↑ PrE; PI; DI
26. Gastropoda: Stylommatophora	*Naesiotus ustulatus*	Present	VU	↑ PrE; PI; DI
27. Insecta: Lepidoptera	*Eupithecia perryvriesi*	Present	VU	↑ PrE; PI; DI
28. Insecta: Lepidoptera	*Tyrintheina umbrosa*	Present	VU	↑ PrE; PI; DI
Plants: Family				
29. Asteraceae	*Lecocarpus pinnatifidus*	Present	CR	Populations increase[115]
30. Linacea	*Linum cratericola*	Present	CR	
31. Verbenaceae	*Lippia salicifolia*	Present	CR	
32. Amaranthaceae	*Lithophila subscaposa*	Present	CR	
33. Rubiaceae	*Psychotria angustata*	Present	CR	
34. Amaranthaceae	*Alternanthera nesiotes*	Present	EN	
35. Asteraceae	*Baccharis steetzii*	Present	EN	
36. Rubiaceae	*Galium galapagoense*	Present	EN	

[115] Populations of all listed plant species are anticipated to improve but not necessarily to the degree that IUCN Red List status will change. Specific changes in plant populations are extremely difficult to project.

Name	Species	Current Status on Floreana	Current IUCN Status[114]	Projected population status
37. Amaranthaceae	*Lithophila radicata*	Present	EN	
38. Cactaceae	*Opuntia megasperma var. megasperma*	Present	EN	
39. Lamiaceae	*Salvia prostrata*	Present	EN	
40. Lamiaceae	*Salvia pseudoserotina*	Present	EN	
41. Asteraceae	*Scalesia pedunculata*	Present	EN	
42. Asteraceae	*Acmella darwinii*	Present	VU	
43. Amaranthaceae	*Alternanthera galapagensis*	Present	VU	
44. Amaranthaceae	*Alternanthera galapagensis*	Present	VU	
45. Rubiaceae	*Borreria dispersa*	Present	VU	
46. Euphorbiaceae	*Chamaesyce nummularia var. glabra*	Present	VU	
47. Euphorbiaceae	*Chamaesyce nummularia var. nummularia*	Present	VU	
48. Solanaceae	*Iochroma ellipticum*	Present	VU	
49. Cactaceae	*Jasminocereus thouarsii var. thouarsii*	Present	VU	
50. Molluginaceae	*Mollugo flavescens ssp. insularis*	Present	VU	
51. Molluginaceae	*Mollugo floriana ssp. floriana*	Present	VU	
52. Nolanaceae	*Nolana galapagensis*	Present	VU	
53. Poaceae	*Paspalum redundans*	Present	VU	
54. Plantaginaceae	*Plantago galapagensis*	Present	VU	
55. Polygalaceae	*Polygala galapageia var. insularis*	Present	VU	
56. Polygalaceae	*Polygala sancti-georgii var. sancti-georgii*	Present	VU	
57. Myrtaceae	*Psidium galapageium*	Present	VU	
58. Rubiaceae	*Psychotria rufipes*	Present	VU	
59. Asteraceae	*Scalesia affinis*	Present	VU	
60. Asteraceae	*Scalesia villosa*	Present	VU	
61. Boraginaceae	*Tournefortia rufoserica*	Present	VU	

IUCN Status: CR Critically Endangered, EN Endangered, VU Vulnerable
〓 No change; 🡻 Decline; 🡹 Increase
Predation (reducing fecundity) by rodents or cats at one or more life stages eliminated = PrE; Disease Risks Reduced = DRR; Reintroduction Proposed = RP; Population Increase = PI; Distribution Increase = DI;

Annex 8.

Other Ecuador GEF Projects Contributing to the Knowledge Base and Design of this GEF 6 Project

Ecuador Project	Relationship to Proposed GEF 6 Project
Monitoring System for the Galapagos Islands (GEF ID 601; 1999-2002)	Since project termination, several of the systems developed within this project have subsequently been adopted with modifications and institutionalized within the GNPD and GBA (e.g. monitoring of invasive species, endemic species, tourism and effectiveness of biosecurity). Reporting data from these monitoring systems is now being published annually in publically available accountability reports by GNPD and GBA. Data from these sources has been used as baseline information, analyzing alternative scenarios, determining strategic actions and is proposed to inform specific indicators for this project.
Control of Invasive Species in the Galapagos Archipelago (GEF ID 763; 2001-2010)	The GEF 6 project will benefit from this previous GEF 3 invasive alien species project (ECU/00/G31) through: 1) lessons learned regarding project design and administration; 2) lessons learned during the vertebrate eradication activities; 3) strengthened institutional relationships and capacity; and 4) creation of the GBA, Total Control Plan, and FEIG as GEF 3 project outputs.
National Protected Areas System (GEF ID 945; 2002-2007)	This GEF project increased the capacity of Fondo Ambiental Nacional (FAN) to manage endowement funds. FAN is currently being restructured to increase its efficacy of financial management.
Renewable Energy for Electricity Generation and Renewable Electrification of the Galapagos Islands (GEF ID 1135; 2006-2011)	The reduction in fossil fuel (especially diesel) use for power generation as a result of this GEF project will reduce transportation needs from the mainland to supply fuel. This reduction in boat traffic simultaneously decreases risk of invasive terrestrial and marine species arriving, and the demand on the already stretched resources of the GBA who conduct onboard boat and hull inspections. Floreana Island is one of the alternative energy sites, and this project builds upon the social acceptance of positive change that has been built by that project and others.
with Partner Countries	
Mainstreaming Biodiversity Conservation into Tourism through the Development and Dissimination of Best Practices (GEF ID 2681; 2005-2008)	Tourism (ecotourism in particular) is facilitated through the recovery of native species and ecosystems. When landscapes become less aesthetically pleasing and endemic species decline, there are fewer opportunities to build the tourist economy. The GEF 6 project will, thus, securing previous investments in tourism, especially ecotourism.
Building Partnerships to Assist Developing Countries to Reduce the Transfer of Harmful Aquatic Organisms in Ship's Ballast Water (GloBallast Partnerships) (GEF ID 2261; 2007-2012)	Ballast water is one of the primary sources of biological invasion in marine environments. Although the proposed GEF 6 project will not directly address ballast water, it builds on the previous project by improving methods for preventing biological invasion into marine systems through better detection of invasive alien species in cargo being trasported by marine vessels.
Communities of Conservation: Safeguarding the World's Most Threatened Species (GEF ID 3790; 2009-2013)	Actions taken to prevent the introduction of invasive alien species and recover ecosystems will help safeguard the investments made in this project by enabling the future repatriation and recovery of at least five species extirpated from Floreana Island, as well as the downlisting of many other species that are threatened in the Galapagos archipelago.

Annex 9.

Other GEF Invasive Alien Species Projects Contributing the Knowledge Base

and Design of this GEF 6 Project

Projects in Other Countries	Relationship to Proposed GEF 6 Project
Mitigating the Threats of Invasive Alien Species in the Insular Caribbean (GEF ID 3183; 2009-2014)	The GEF 6 project proposed herein has benefited from some of the lessons learned during the Mid-term and Terminal Evaluations: 1) focus on a limited number of catalytic activities, 2) invest in highly motivated project coordination staff, 3) fully engage local peoples in eradication/control activities, 4) make improvements in biosecurity a priority, and 5) institutionalize project leadership and outputs.
PAS: Prevention, Control and Management of Invasive Alien Species in the Pacific Islands (GEF ID 3664; 2011–2016)	The GEF 6 project proposed herein has benefited from some of the lessons learned during the Mid-term Evaluation: 1) focus on a limited number of catalytic activities, 2) invest in highly motivated project coordination staff, 4) make improvements in biosecurity a priority, and 5) evaluate the feasibility of field-based activities prior to project initiation.
Removing Barriers to Invasive Species Management in Production and Protection Forests in SE Asia (GEF ID 3957; 2012–2015)	The GEF 6 project proposed herein has benefited from some of the lessons learned in the first half of project implementation: 1) focus on a limited number of catalytic activities, 2) invest in highly motivated project coordination staff, 3) evaluate the feasibility of field-based activities prior to project initiation.