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EDGE

EVOLUTIONARILLY DISTINCT & GLOBALLY ENDANGERED

Survival Blueprint

Ashy Storm-Petrel*, Hydrobates homochroa*

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1. STATUS REVIEW

1.1 Taxonomy:

Class: Aves
Order: Procellariiformes
Family: Hydrobatidae
Subfamily: Hydrobatinae
Genus: Hydrobates
Species *Hydrobates homochroa*
Sub-species: No subspecies recognized
Species name author: Coues (1864)
Common names: Ashy Storm-Petrel, Petrel cenizo, Paíño cenizo.

The Ashy Storm- Petrel (*Hydrobates homochroa*) is a small bird from the Procellariiformes order, characterised by having nostrils-tubes on top of the bill, to filter the saltwater they ingest, an adaptation for marine species that spend most of their time at sea. The Ashy Storm petrel belongs to the Northern Storm Petrels (Hydrobatidae) and was previously in the genus *Oceanodroma* but given the non-monophyly of the genus it was grouped with another genus in *Hydrobates*. The name of the Ashy Storm-Petrel alludes to the ash greyish colour of its plumage.

1.2 Distribution and population status:

The Ashy Storm-Petrel distributes in waters of the California Current System, from the north of California Humboldt County, California in the US, to northern Baja California, Mexico. It is confirmed to breed in 33 sites although more are suspected. (Ainley et al., 2021, Parker 2016; Carter et al., 2016). Unlike other storm-petrel species in the area, Ashy Storm-Petrel does not migrate, after breeding season they just disperse from the breeding areas to waters off Central and northern California (Ainley et al., 2021).

Distribution of the Ashy Storm-Petrel. Breeding sites: 1-Todos Santos Archipelago, 2-Coronado Archipelago, 3-San Clemente, 4-Santa Barbara, 5-Anacapa, 6-Santa Cruz, 7- San Miguel 8-Norther Santa Barbara County Coast, 9-Monterey County Coast., 10- Año Nuevo, 11-South Farallon Islands, 12-Golden Gate Area, 13 to15-Point Reyes National Seashore 16- Rocks at Central Mendocino County Coast. 17- Rocks at Humboldt County Coast. At-sea distribution (in grey) modified from Ainley et al., 2021 and California Department of Fish and Wildlife through the California State Geoportal.

1.2.1 Global distribution:

Country	Population estimate (plus references)	Distribution	Population trend (plus references)	Notes
Mexico	75 breeding pairs	Baja California Pacific Islands (Todos Santos islands are the southernmost distribution site of the species)	Unknown	There are no previous population estimations to have a trend
United States of America	4678-4779 breeding pairs	Islands off the California Coast. The upper limit of the distribution are shore rocks off the Humboldt County coast.	Decreasing Nur et al 2019 Carter et. al 2016 Parker et al 2016	Based on trends estimated for its main colonies

1.2.2 Local distribution*:

Country	Region / province	Site	Level of Protection	Population size	Reference(s)	Notes
Mexico	Baja California	Islas Todos Santos	Under protection by the Islas de la Península de Baja California Biosphere Reserve	75 breeding individuals	Bedolla-Guzmán et al 2019	Managed by the National Commission of Protected Areas (CONANP). Population estimations using nest search, estimation by mist netting is in process
Mexico	Baja California	Islas Coronado	These islands are part of the Islas de la Península de Baja California Biosphere Reserve	Unknown	Carter et al., 2018 Bedolla-Guzmán et al 2019	Managed by CONANP.Probable breeder by historical records but no nests have been recorded
United States of America	California	San Clemente Island	Managed by the United States Navy	35-40	Parker et al. 2016	Managed by the United States Navy

				Although suspected hundreds on offshore rocks (Ainley et al. 2021).	Carter and Henderson, 2015	
United States of America	California	Santa Barbara Island	Channel Island National Park	731	Carter et al 1992, Parker, 2016	
United States of America	California	Anacapa	Channel Island National Park	≤50 breeding pairs	Harvey et al., 2016	Nests are suspected in inaccessible areas. One nest recorded 10 years after rat eradication.
United States of America	California	Santa Cruz Island	Channel Island National Park.	348	Carter et al., 2018	Data from 1991-1998. Managed mainly by the Nature Conservancy shared with the National Park Service.
United States of America	California	San Miguel Island	Channel Island National Park	677	Carter et al 1992, Parker, 2016	Managed by the United States Navy and the U. S. National Park Service
United States of America	California	Norther Santa Barbara County Coast	Islets are in front of a designated Protected Marine Reserve on the coast.	Probable breeding, but no nests confirmed	Brown et al, 2003	Shoreline managed by the Vandenberg Air Force Base and California Department Fish and Game
United States of America	California	Monterey County Coast	Within the California Coastal National Monument	Around 30	McChensey et al 2000	Nest search on 3 sites
United States of America	California	South Farallon Islands	Farallon National Wildlife Refuge	2884	(Nur et al., 2013)	Managed by USFWS and Blue Point Conservation Science

						monitoring activities
United States of America	California	Año Nuevo Island	Protected as part of Año Nuevo State Reserve	Probable breeding, but no nests confirmed	Bathrick et al, 2021	Individuals captured during mist netting sessions
United States of America	California	Golden Gate Area	Includes Alcatraz Island a national park (as cultural historic site)	Probable breeding, but no nests confirmed	Parker et al. 2016	
United States of America	California	Point Reyes National Seashore (3 sites)	Protected park (Point Reyes National Seashore)	15-25	Baker et al. 2016	Mainland sites managed by the U. S. National Park Service
United States of America	California	Central Mendocino County Coast	Within the California Coastal National Monument	Around 50	Carter et al. 2015	Estimation based on four nearshore rocks. Managed by the U.S. Department of the interior Bureau of Land Management
United States of America	California	Humboldt County Coast	Within the South Cape Mendocino State Marine Reserve	Evidence of breeding, not estimated.	Carter et al. 2015	Nearshore rocks. Managed by California Department of Fish and Wildlife

*Modified from Parker 2016

1.3 Extinction risk and protection status:

The Ashy Storm-Petrel is listed as Endangered by the IUCN Red List under the criteria A2ce+3ce (Birdlife International, 2022). It is based on the limited distribution of the species (a small group of islands in the U.S. and Mexico) and the significant decline in its population in the last 20 years (Nur, et al., 2019; Carter et. al., 2016). The number of breeding pairs in its most important sites has been decreasing quickly. The main threats to the species conservation are predation by native and/or exotic species, pollutants and disturbance generated by human presence.
Nowadays all its breeding sites are under some type of legal protection. In Mexico, the two sites with confirmed presence of the species are part of the “Islas de la Península de Baja California Biosphere Reserve” managed by CONANP (National Commission of Protected Areas). Meanwhile in the U.S. the breeding sites are under several designations (National Park, National Wildlife Refuge, Coastal National Monument, Protected park), all of them managed by government agencies, including United States Navy and the U. S. National Park Service, among others, some of them comanaged with NGO´s.
Ashy Storm-Petrel is protected by Mexican Law in the NOM-059-2010 (SEMARNAT, 2010). In the U.S. it is considered a Bird Species of Special Concern by the USFWS (USFWS, 2002), this designation focuses on species at high extinction risk and stimulates conservation actions aimed at them. It precedes the California Endangered Species Act, an environmental act law for the protection of endangered species.

1.4 Ecology, behaviour and habitat requirements:

The Ashy Storm-Petrel is a seabird endemic to the California Current System within waters off California, U.S.A., and Baja California, Mexico. It is a medium storm-petrel (19 cm long) with ashy-grey plumage. The Ashy Storm-Petrel spends most of the time at sea and has nocturnal habits when visiting the colonies. Monogamous, reach the reproductive stage at 5 years. ASSP uses rocky islands to breed, and nests in small rocky cavities, sometimes on very steep slopes. It mainly visits the colonies from February to October. The pre-egg laying period takes around (2-3 months), longer than other storm-petrels. Lays one egg that both parents incubate for around 44 days. Chicks are fed by parents until they fledge, around 84 days. After the breeding season, individuals disperse offshore waters along the central California coast. Different from other storm-petrels in the region, it does not migrate. This pelagic species feeds on small crustaceans, fish, and squid that are taken from the sea surface. As other Procellariiformes, the Ashy-Storm Petrel has a well-developed olfactory system that is used to find food and locate their burrows.

1.5 Threat analysis:

Threat	**Description of how this threat impacts the species**	**Intensity of threat** *(low, medium, high, critical or unknown)*	**IUCN threat category**
Predation by the presence or potential reintroduction of exotic mammal species	Potential predation by invasive mammals due to the reintroduction of these species on breeding grounds. Presence of house mice on one of the main breeding sites (SE Farallon Island) is causing indirect impacts (see below) and occasional predation on chicks. On Coronado Sur Island there is also the presence of house mice, but impacts have not been evaluated. There are black rats and feral cats on San Clemente Island and black rats on San Miguel. Some other sites are near sources of alien species. On the Mexican islands, there is no systematic implementation of biosecurity measures.	High	8.1 Invasive Non-Native/ Alien Species/ Diseases
Predation by native species (mammals and avian)	Predation by burrowing and barn owls (proximate) as an indirect impact caused by the presence of house mice (ultimate) on Farallon, the site with around 50% of the ASSP population. Important predation by western gull, common raven and owls has been recorded in some sites (Parker et al. 2016). Native mammal predation is poorly documented.	High. Mostly unknown for the rest of the sites	8.2 Problematic Native Species/Diseases
Disturbance at nest sites	Some breeding sites are human settlements, including military bases. In some islands besides facilities, they have some sites for military exercises.	Low	1.2 Commercial & Industrial Areas/ 6.2 War, civil unrest & military exercises
	Recreational activities on most of the breeding sites are limited or controlled. However, kayakers and other groups of island users may be unaware of the breeding habitat and cause disturbance.	Low	6.1 Recreational Activities

	ASSP is a sensitive species. Disturbing its nests with constant research activities, especially during the incubation period, can reduce reproductive success.	Low	6.3 Work & other activities
Light pollution	ASSP is sensitive to artificial lights from human settlements, vessels, platforms, aquaculture farms, etc. Artificial lights cause disorientation and collisions making individuals vulnerable to predation or causing injuries. Some breeding sites are closely exposed to artificial lights used in economic activities.	Unknown	9.6.1 Light Pollution
Sea chemical pollution	In the 1970´s organochlorine chemicals were detected in ASSP eggs. Barrels with DDT (dichlorodiphenyltrichloroethane) may still be present on the Southern California coast. Studies about chemical pollution have not been carried out recently.	Unknown	9.1.2 Run-off
Oil pollution	Important oil spills have been documented off the California coast.	Unknown	9.2.1 Oil Spills
Habitat loss	Breeding habitat loss at low areas by the increase of sea level and stronger waves washes driven by Global Climate Changes.	Unknown Have been documented but not evaluated	11.1 Habitat Shifting & Alteration

1.6 Stakeholder analysis:

Country	**Stakeholder**	**Stakeholder's interest in the species' conservation**	**Current activities**	**Impact** *(positive, negative or both)*	**Intensity of impact** *(low, medium, high or critical)*
Mexico	CONANP	CONANP manages the protected areas Todos Santos Islands and Coronado Islands. It is part of their role to ensure the protection of all the species of the reserves.	CONANP authorise and regulate most of the activities conducted at Todos Santos Islands and facilitate the contact between all the stakeholders. They also provide financial support to local users to carry out conservation actions on the island.	Positive	Critical
	Mexican Navy (SEMAR)	Operates on the islands with the presence of ASSP.	Surveillance of the Mexican territory through a naval station on Coronado Islands and maintenance of lighthouse keepers on Todos Santos.	Positive	Low
	NGOs (Grupo de Ecología y Conservación de Islas, A.C.)	Restoration and conservation of Mexican islands. Special interest in seabirds, including the ASSP.	Ongoing monitoring, restoration and protection actions associated with the ASSP.	Positive	Critical
	Local universities and research groups (UABC, IIO)	Although not directly involved with the ASSP, they are interested in researching and conserving the island's biodiversity.	Research activities in other knowledge areas (marine mammals, zooplankton, sea pollution, etc.)	Positive	Low

	Aquaculture Companies (Pacific Aquaculture, Baja Aqua-farms)	Solidify image as socially responsible companies that carry out good practices to conserve the island.	Operates their economic activities on Todos Santos Islands with constant movements from the mainland to the island increasing the risk of introduction of invasive species. They use artificial lights for security reasons. There is an interest to participate in activities to protect the island. On Coronado the activities are around the islands, however, there could be an impact by the lights of the boats.	Both	High
	Tourists (Surfers, kayakers, sailors, scuba divers)	There is no direct interest in the species. However, some are interested in environmental conservation.	Occasional visits to Todos Santos Islands. Some land on the islands without supervision or permits.	Both	Low
United States of America	U.S Fish and Wildlife Service	Manages the conservation and recovery of priority species. Evaluate and design species under Endangered Species Act (ESA). Has designated ASSP as a species of Special Concern.	Fund federal programs related to migratory birds and endangered species.	Positive	Critical

	National Park Service	It is responsible for protecting national parks in the United States, including some of the islands and mainland sites where ASSP nests.	Preserves the natural and cultural resources and values of the National Park System	Positive	Critical
	United States Navy	Manages some of the islands where ASSP breeds.	Military bases operate in those sites. Carry out restoration activities on these sites.	Both	High
	U.S. Geological Survey	Researching and conserving the ASSP	Responsible for the monitoring on San Miguel Island		
	Bureau of Land Management	Provides national leadership to promote restoration, enhancement, and protection of wildlife including threatened, endangered, “at risk”, migratory, and game species.	Conserve, protect, enhance and manage public lands and areas	Positive	High
	Bureau of Ocean Energy Management		Manage the development of the energy and mineral resources of the US Outer Continental Shelf in an environmentally and economically responsible manner	Positive	High
	NOAA	Monitoring of changes in the environment help to study the habitat of the ASSP	Monitor global weather and climate to understand and predict change in climate, weather,	Positive	High

			oceans and coasts to conserve and manage coastal and marine ecosystems and resources.		
	NGOs (Point Blue Conservation Science, California Institute of Environmental Studies, The Nature Conservancy , National Audubon Society)	Wildlife conservation, included island ecosystems and their species. ASSP is one of the focus species.	Ongoing monitoring, research, restoration and protection actions with the ASSP.	Positive	Critical

1.7 Context and background information that will affect the success of any conservation action for this species:

	Description	Barriers to conservation	Opportunities for conservation
Socio-cultural effects and cultural attitudes	The islands where ASSP breeds are uninhabited, but in some there are human settlements or are visited by tourists (surfers, kayakers). The ASSP is a cryptic species that is difficult to be seen and it is not known by most people. As this species is not present in people's minds they do not worry about the species when conducting their activities.	For the general public, it is a species poorly known and difficult to see. Also, its appearance is not as charismatic as other species.	Environmental education and social media as tools to reach the general public. Education (formal and informal) and research in marine ecosystems. Cultural well-being as creative inspiration. For example, the storm-petrel meaning (from the appearance to walk on the surface of the sea) is similar to surfing, which is a popular recreational activity in the Baja California and California coasts.
Economic implications	Although the species has no direct monetary value, it supports, directly and indirectly, several ecosystem services used by humans; but it is not recognized by the economic sector. Seabirds influence marine resources, increasing primary productivity through the deposition of nitrogen and potassium. They also function as	The protection of ASSP does not have a direct economic impact. The species protection might create restrictions or changes to some activities of aquaculture companies (e.g. changes in types of lights, implement biosecurity measures)	Protection of the species is very important for the region since it is restricted to the California Current system, which is highly productive and supports an important ocean economy. In Mexico, it is very important for species protection due to it being its southernmost breeding site.

	indicators of oceanographic changes, being important in fisheries management.		Besides, protecting this species also offers protection to other seabird species nesting on the islands, it translates to maintaining good conditions for marine resources. Companies and fisheries could reinforce their products as environmentally friendly.
Existing conservation measures	There is an action plan for the species that includes conservation actions, however there are limited resources for its implementation. Most of the breeding grounds are protected legally but in some sites there are limitations to implement actions.	In all its distribution range there are limited financial resources to implement conservation actions. In Mexico, there is a lack of a legal management plan for the islands such as the Biosphere Reserve, and limited personnel from government agencies to enforce the law.	The continued communication with the ASSP working group aids to share information about the needs for the conservation of the species and join efforts. The inclusion of the ASSP as priority species for the USFWS and Mexico represents opportunities to get binational resources.
Administrative/ political set-up	In Mexico CONANP directly administers the area but depends on other federal agencies to operate. In both cases, there may be changes in the staff responsible for the area in each government administration. If the activities are within an institutional	The Biosphere reserve decree is published, but has no management plan to protect the legal framework through the time. A change in public administration can change the activities allowed on the islands.	Encourage the publication of the management plan and the administrative rules to be applied on the islands.

	framework it is secured to be conducted.		
Local expertise and interest	ASSP is a focal species with a group of people interested in its conservation along its distribution. There is a solid group of scientists from NGOs, government institutions and academic institutions.	ASSP is an elusive species difficult to study. There is low knowledge about the biological aspects and habitat needs (breeding and foraging) of the species.	There have been groups studying the species in their main breeding sites for several years. They can serve as sources of information about the status and needs of the species to address conservation actions on each site.
Resources	Federal authorities in Mexico and the US offer grants to carry out conservation and restoration actions for endangered species and its habitats. Currently, there is group of experts that are working with the species spread along the breeding distribution of the species	Grants are limited on time and according to the business plan of the authorities.	There is constant communication through the ASSP working group. It allows sharing information obtained about the species, methods, threats, limitations as well as sharing experiences and resources reducing costs. Also facilitating opportunities to obtain funds.

2. ACTION PROGRAMME

Vision (30-50 years)	
The population of ASSP is stable through reducing the threats to the species conservation	
Goal(s) (5-10 years)	
Prevent the decline of the ASSP in all the breeding sites by mitigating the population size limiting factors	
Objectives	**Prioritisation** *(low, medium, high or critical)*
1. Reduce the predation of ASSP by invasive mammals in breeding sites.	Critical
2. Prevent the introduction or reintroduction of invasive mammals to breeding sites.	High
3. Reduce the predation by native species that became problematic.	High
4. Reduce the human disturbance in breeding sites.	Medium
5. Assess at-sea threats.	Medium
6. Prevent the damage of ASSP caused by oil spills.	Low
7. Increase suitable habitat for the species.	High
8. Evaluate population trends along its range-wide distribution.	Critical
9. Fill information gaps that aid in conservation management.	Low

Activities	Country / region	Priority *(low, medium, high or critical)*	Associated costs (currency)	Time scale	Responsible stakeholders	Indicators	Risks	Activity type
Objective 1. Reduce the predation of ASSP by invasive mammals in breeding sites.								
Eradication or control of invasive mammals in breeding sites in the US.	California, US	Critical	Feasibility studies (in some cases), operative phase, absence confirmation (Uncertain costs)	10 years	U.S Fish and Wildlife Service, National Park Service, NGOs	Absence of invasive animal	Opposition by animal rights groups.	Invasive/ problematic species control
Eradication of house mouse on Coronado Sur Island	Baja California, Mexico	Low	Feasibility study, operative phase, absence confirmation ($30,000.00 GBP/year)	5 years	CONANP, SEMARNAT, SEMAR, NGO´s (GECI)	Absence of mouse house	Bad weather conditions. Opposition by animal rights groups.	Invasive/ problematic species control

Objective 2. Prevent the introduction or reintroduction of invasive mammals to breeding sites.								
Reinforcement of binational synergies with the integration of Mexican authorities	Baja California and California	Medium	Workshops, facilitators (4,500.00 GBP/year)	10 years	CONANP and Biosecurity Working Group (U.S government institutions, private organisations and Mexican and U.S NGO´s)	Number of workshops. Number of agreements signed.	Difficulties matching agenda among the participants.	Alliance & Partnership Development
Integration of Coronado into a local protocol with Todos Santos biosecurity protocol	Baja California, Mexico	High	Workshops, integration of information, design (9,000 GBP)	1 year	CONANP, SEMAR NGOs, Universities	Number of workshops. An integrated biosecurity protocol for northern islands of the Reserve IPPBC	People are not interested in participating in the activities and difficulties matching agenda among the participants.	Compliance and enforcement / Invasive/ problematic species control
An outreach campaign to share biosecurity measures with stakeholders	Baja California, Mexico	Medium	A graphical designer, social communicator (17,000 GBP/year)	Permanent	NGO´s, CONANP, local universities, island users.	Number of posts in social media. Number of outreach talks.	People are not interested in participating in the activities.	Awareness & communications
Integration of biosecurity protocols in the	Baja California, Mexico	Critical	Workshops, training, salary for a	Permanent	CONANP, Biosecurity Network	Number of biosecurity	Limited financial resources for	Conservation Finance /

working plan of the natural protected areas.			park ranger in charge of biosecurity activities (18,000 GBP/year)			measures implemented. Number of people reached.	biosecurity personnel in the long term. Changes of personnel or administration.	Compliance and enforcement
Objective 3. Reduce the predation by native species that became problematic.								
Evaluation of the impact of predation by native species	Baja California and California	Medium/ High (California)	Monitoring, diet analysis (15,000.00 GBP/year*)	2 years	Universities, NGOs, environmental government institutions	Reports. Peer reviewed publications	Permits not released at time. Restrictions to get samples due to any contagious disease.	Improving Knowledge
Control or translocation of native species that became problematic	California	High	Monitoring, operative costs (Uncertain cost)	10 years	NGOs, U.S Fish and Wildlife Service, National Park Service	Number of individuals controlled or translocated. Reduction of index predation.	Limited financial resources in the long term.	Species Management
Objective 4. Reduce the human disturbance in breeding sites.								
An outreach campaign to prevent the human disturbance	Baja California, Mexico	Medium	A graphical designer, social communicator (17,000 GBP/year)	5 year	Universities, local schools, NGOs	Number of posts in social media. Number of talks imparted. Number of people reached Number of material designed	People are not interested in participating in the activities.	Awareness & communications

Objective 5. Assess at-sea threats.								
Monitoring the effect of artificial lights in the mortality of ASSP	Baja California and California	High	Training, observers, operative cost (9,000 GBP/year*)	2 year	Universities, NGOs, environmental government institutions, aquaculture and oil companies	Number of boats/platforms surveyed. Number of nights monitored. Number of birds collisioned by the effect of lights.	Companies do not allow monitoring. Evaluation might create restrictions.	Improving Knowledge
Tracking at-sea movements and interaction with fisheries	Baja California and California	Medium	GPS, GLS devices, monitoring (80, 000 GBP/year*)	2 years	Universities, NGOs, government institutions.	Number of tracks, maps with trajectories, hotspots of interactions.	Difficulties in installing/ recovering devices.	Improving Knowledge
Monitoring impacts of DDT contaminants in the species	Baja California and California	Medium	Sampling, lab analysis (4,000 GBP / year*)	2 years	Universities, NGOs, government institutions.	Number of samples analysed. Concentration of DDT values in samples.	Permits not released at time. Restrictions to get samples due to any contagious disease.	Improving Knowledge
Objective 6. Prevent the damage of ASSP caused by oil spills.								
Reinforcement of the binational contingency plan.	Baja California and California	Low	Workshops (4,500 GBP/ year)	10 year	Universities, NGOs, government institutions, private companies.	Number of meetings. List of the attendees.	Difficulties matching agenda among the participants.	Compliance and enforcement

Objective 7. Increase suitable habitat for the species.								
Improvement and maintenance of artificial burrows.	Baja California and California	High	Artificial burrows construction, monitoring (3,500.00 GBP/year*)	10 year	Ashy Storm-Petrel working group (U.S government institutions and Mexican and U.S NGO´s.)	Number of artificial burrows. Number breeding pairs using artificial habitat.	The individuals do not use the artificial burrows. Find the ideal model design. Artificial habitat destroyed by climatic events.	Site/area management
Objective 8. Evaluate population trends along its range-wide distribution.								
Implementation of the monitoring program	Baja California and California	Critical	Monitoring: acoustics, mist-netting , search and monitoring nests (80,000.00 GBP/ year)	Permanent	Ashy Storm-Petrel working group (U.S government institutions and Mexican and U.S NGO´s.)	CPUE Vocalisation rates Reproductive success	Limited financial resources in the long term. Bad weather conditions.	Improving Knowledge
Objective 9. Fill information gaps that aid in conservation management.								
Population genetic studies to determine genetic variability and connectivity between colonies	Baja California and California	Low	Sampling, genetic analysis (15,000 GBP /year)	1 year	Universities, NGO´s	Reports. Peer reviewed publications.	Permits not released at time. Restrictions to get samples due to any contagious disease.	Improving Knowledge
Feeding studies	Baja California and California	Low	Sampling, genetic analysis	1 year	Universities, NGO´s	Reports. Peer reviewed publications.	Permits not released at time. Restrictions to get samples due to any contagious disease.	Improving Knowledge

			(21,000 GBP/year)					
Disease studies	Baja California and California	Low	Sampling, genetic analysis (17,000 GBP/year)	1 year	Universities, NGO´s	Reports. Peer reviewed publications.	Permits not released at time. Restrictions to get samples due to any contagious disease.	Improving Knowledge

*Costs estimated for Mexican sites. Uncertain costs for the U.S. sites.

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