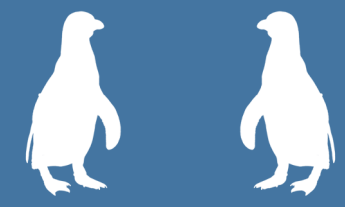


MAKE WAY FOR PENGUINS



*A Suitability Analysis of Potential Release Sites For
Rehabilitated African Penguins Off The Coast Of South Africa*



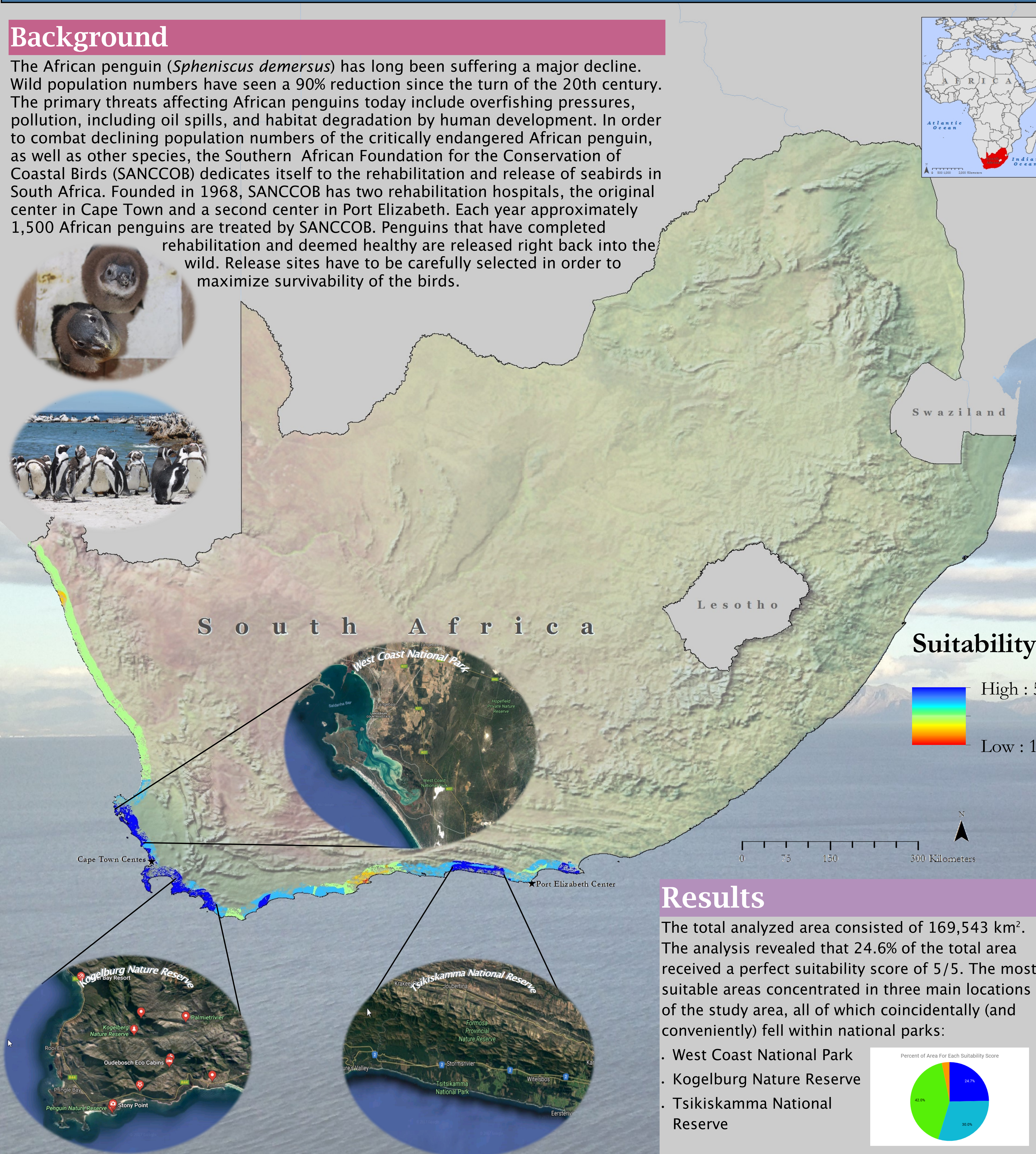
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MCM Fall 2017
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Background

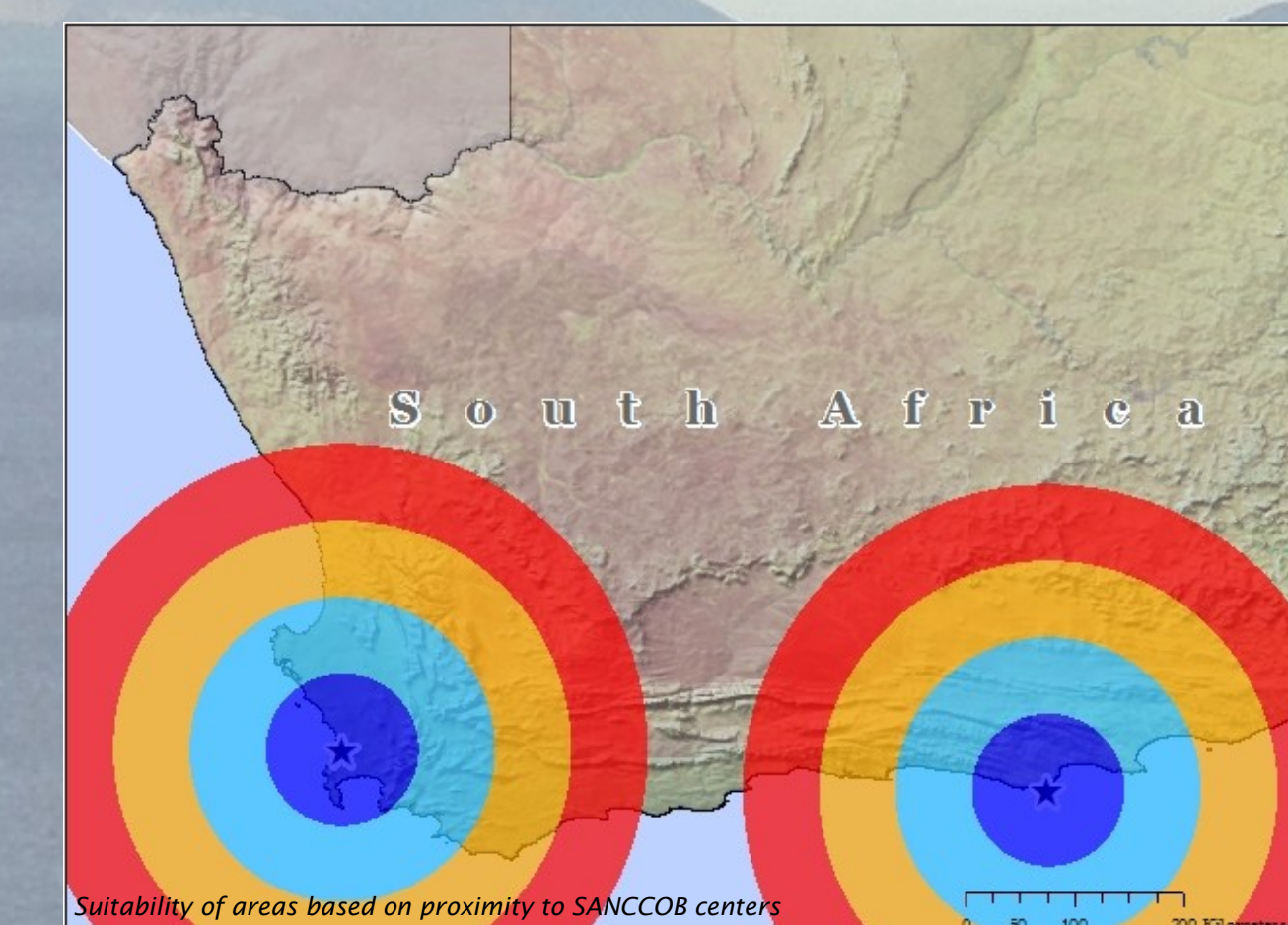
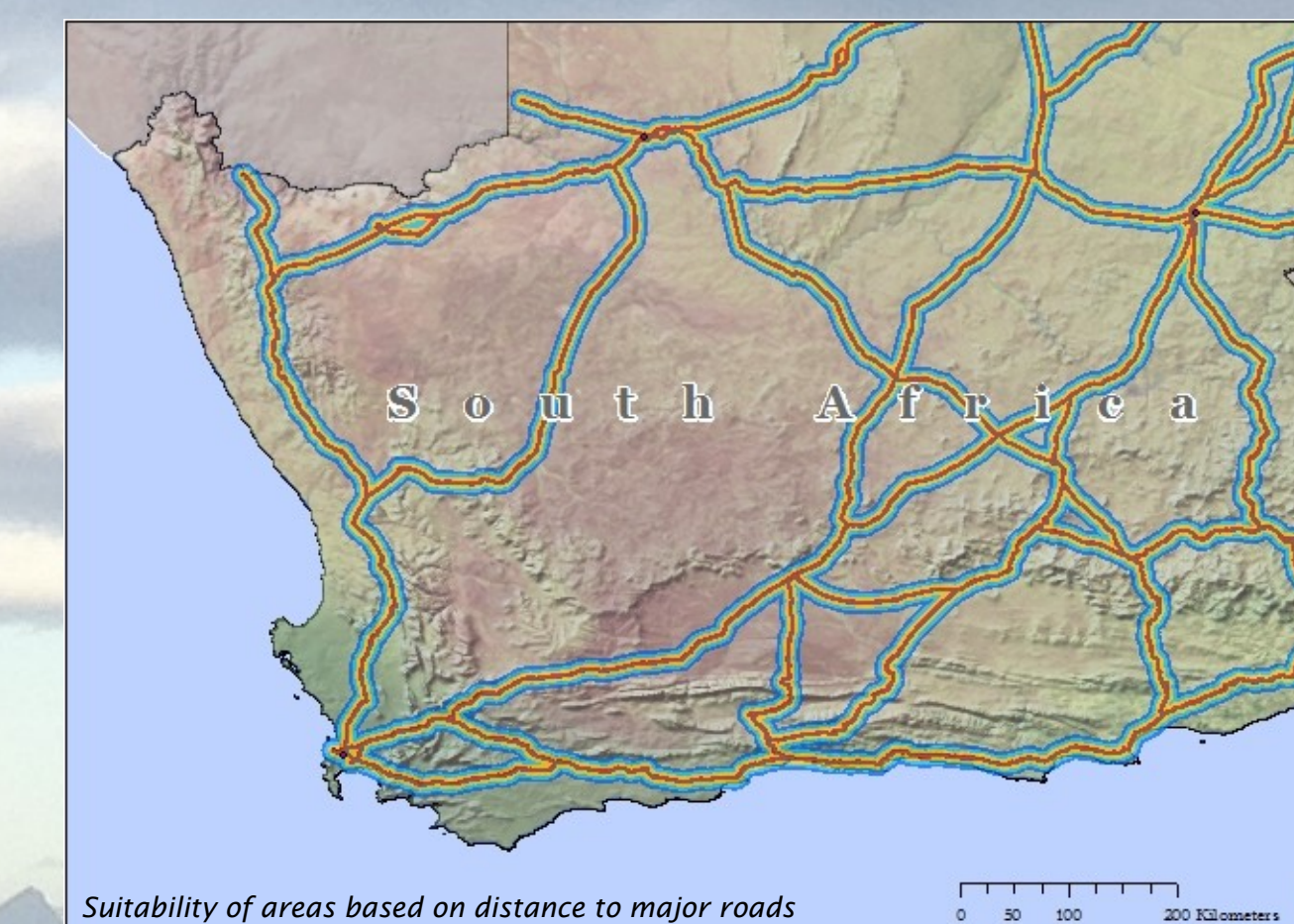
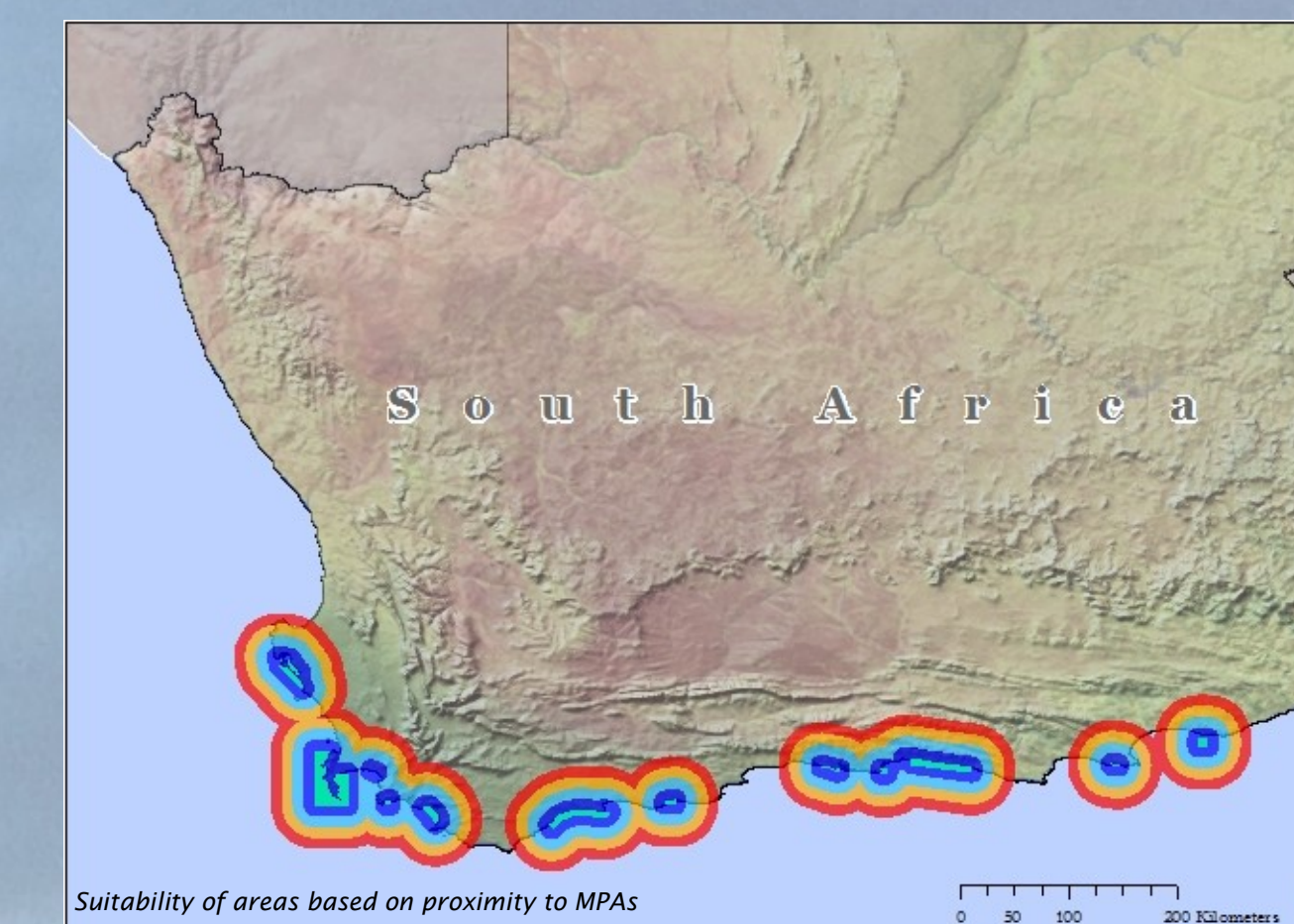
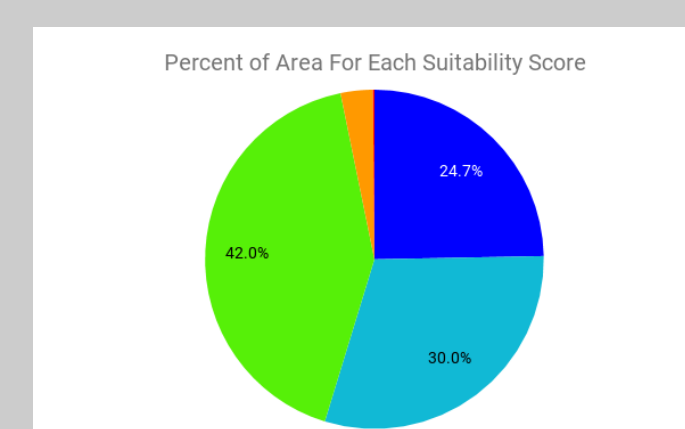
The African penguin (*Spheniscus demersus*) has long been suffering a major decline. Wild population numbers have seen a 90% reduction since the turn of the 20th century. The primary threats affecting African penguins today include overfishing pressures, pollution, including oil spills, and habitat degradation by human development. In order to combat declining population numbers of the critically endangered African penguin, as well as other species, the Southern African Foundation for the Conservation of Coastal Birds (SANCCOB) dedicates itself to the rehabilitation and release of seabirds in South Africa. Founded in 1968, SANCCOB has two rehabilitation hospitals, the original center in Cape Town and a second center in Port Elizabeth. Each year approximately 1,500 African penguins are treated by SANCCOB. Penguins that have completed rehabilitation and deemed healthy are released right back into the wild. Release sites have to be carefully selected in order to maximize survivability of the birds.



Results

The total analyzed area consisted of 169,543 km². The analysis revealed that 24.6% of the total area received a perfect suitability score of 5/5. The most suitable areas concentrated in three main locations of the study area, all of which coincidentally (and conveniently) fell within national parks:

- West Coast National Park
- Kogelburg Nature Reserve
- Tsikiskamma National Reserve



Methods

This suitability analysis scored areas based on criteria that affect African penguin success in the wild. The following factors were taken into consideration:

- **Distance to Cape fur seal colonies**—many penguins released by SANCCOB are juveniles entering the wild for the first time, not yet practiced in avoiding predation
- **Proximity to no-take MPAs**—Experimental closures of fisheries have shown that proximity to no-take areas has a significant positive effect on African penguin colonies
- **Distance to major roads**—automobile traffic and other vehicles have adverse effects on penguins
- **Proximity to either SANCCOB rehab hospital**—releases take place on a weekly basis and therefore sites must be within a certain driving distance for efficacy

These factors were input into the Euclidean distance tool and then reclassified into categories on a 1–5 scale. The scores were then entered into a final weighted analysis using the raster calculator:

- Distance to seal colonies: 15%
- Proximity to MPAs: 35%
- Distance to roads: 15%
- Proximity to centers: 35%

The final suitability analysis also only included areas that fell within the African penguin habitat range and within 15 km of the coastline. Areas of agricultural or developed land cover were excluded.

	1 (Bad)	2	3	4	5 (Good)
Proximity to MPAs (km)	40+	30–40	20–30	20–10	0–10
Distance to seals (km)	0–5	5–10	10–15	15–20	20+
Distance to roads (km)	0–2	2–5	5–8	8–11	11+
Proximity to centers (km)	280+	210–280	140–210	70–140	0–70

Date: 12/14/2017

Data Sources:

GADM

Protected Planet

IUCN

South Africa Department of Environmental Affairs

Projection: Africa Albers Equal Area Conic

