

## Biodiversity

The site is within the Caatinga biome, a semi-arid Brazilian ecoregion of high-biodiversity value. The area is characterized by shrub and grass vegetation, with few trees reaching 15 metres. There are no protected areas or key biodiversity areas in proximity, as indicated by the Integrated Biodiversity Assessment Tool (IBAT) and other sources.

Prior to Largo's presence, much of the operational area had been deforested for agriculture and cattle raising, with a few large areas of original vegetation conserved. Several farms still operate around us, as can be seen by the light grey areas in the image.

Near the mine, Brazilian law protects 30-metre swathes along the margins of natural drainage. Adding our efforts to protect natural drainage and following our environmental permit, we installed two artificial surface-drainage basins to contain any overflow water in the area of the mine and prevent it from reaching any natural drainage systems.

### São Conrado Legal Reserve

During the phase of the mine implementation between 2011 and 2013, we actively rescued wild fauna, flora and seeds: we preserved cuttings, saplings and seeds for future planting and reforestation. We captured animals that could not leave the area by their own natural means. We established the São Conrado Legal Reserve—a 1,088 ha fenced reserve, five km west of the mine—as a controlled preserve for environmental monitoring and a refuge for wild animals captured near our mine or exploration activities.

Access to the Legal Reserve is limited to authorized persons, and signage prohibits hunting, fishing or seed collection. It is inspected weekly by the Largo team. The reserve is home to a rich variety of plant, amphibian, reptile, bird and mammal species, with new species still being identified over time.

## Biodiversity Management Plan

As part of Largo's permitting process, we began baseline studies and formal environmental and biodiversity risk assessments in 2008. These assessments analysed the proposed activities and the potential impacts on biodiversity (local environment, animals, protected areas, and endangered species), and actions for prevention and mitigation of their effects. The main biodiversity impact identified was habitat conversion and the related loss of flora and fauna. Based on these risk assessments and including legal requirements, we developed a Biodiversity Management Plan (BMP) to prevent and mitigate our impacts. As per our BMP, we:

- minimize the amount of land that is converted to industrial use. Permits are required before any vegetation can be removed;
- conduct a fauna and flora rescue program prior to any vegetation removal;
- established the São Conrado Legal Reserve to protect flora and fauna and to host rescued specimens;
- implemented monitoring programs for flora and fauna (see table) for the duration of the operations and closure;
- create vegetation corridors where feasible;
- monitor noise, dust and air emissions;
- store and reuse any organic layers affected by vegetation removal;
- operate a nursery to protect endemic plant species and generate seedlings for land reclamation;
- practice progressive reclamation; and
- maintain and update a closure plan on a regular basis.

We also conduct local information campaigns on the importance of the environment and communicate our compliance with environmental permits and conditions. This is important because the destruction of habitat by stray cattle from nearby farms and the hunting for food by the local population contribute to reduced populations and numbers of native species.

Prior to any vegetation removal, we conduct a flora-and-fauna rescue, manually capturing and releasing species in our Legal Reserve. We use manual cutting in the first phase of removal, which allows time for animals to leave the area by their own means if they can. And only then we use heavy machinery. This methodology reduces the mortality rate from an average of 20%-to-50% (international studies) to around 3%.

### Monitoring Programs

Type of Monitoring	Frequency	Number of Sampling Spots	Number of Species Monitored
Fauna	3 months	3 transects with 4 spots each (see map)	Amphibians, birds, mammals and reptiles
Aquatic Biota	6 months	15 planned spots, but only sampled when there is water flowing.	4 communities: Planktonic, Benthic Macroinvertebrates, Nekton/Ichthyofauna, Aquatic Macrophyte
Biomonitoring of air quality using impact on vegetation	4 months	3 allotments close to the operation	4 species
Flora-phenological monitoring (seasonal changes)	Monthly	9 allotments close to the operation and one control in the Legal Reserve	8 species

## Fauna Monitoring

Three transects (see map) are used for the fauna monitoring. Transect 3 (Legal Reserve) and Transect 1 (closer to the operations) are in areas of denser vegetation. Transect 2 is located in an area of less dense vegetation. These differences are taken into account when planning the work.

The field work is conducted following standard international methodology, such as directly and indirectly observing and listening for animals and their behaviour in situ; looking for signs of animals (e.g., tracks, dung); capture/mark/release of animals using traps, mist nets, camera traps, pitfall traps; or attaching monitoring devices (e.g., leg bands). Data analysis includes analysis of the taxons observed, as well as statistical analysis of the data, creating rarefaction curves and other graphs.

We monitor birds through the use of leg bands showing the campaign number and year when they were first

banded. When we recapture banded birds, we can conclude that local conditions have not deteriorated since they were banded. Throughout our monitoring campaigns, we have recaptured birds after very long periods—3-to-5 years and even as long as 8 years—showing that our operations have not impacted them.

To evaluate any possible intensification of impact by Largo operations, we track any differences between the biodiversity in the areas near the mine (Transects 1 and 2), which are considered to be more impacted by noise in particular, and in the Legal Reserve (Transect 3), which serves as a control area. This modification of the method BACI (Before-After-Control-Impact design) has an advantage. It allows any potential alterations in the biological communities that are not related to our operations to be identified, too, as these would show up in both locations.



## Bioindicators

These are species so dependent on their particular environmental conditions that any changes in them are quickly and directly reflected in the presence, abundance, distribution or status of the bioindicator itself. A good bioindicator should be easily sampled (observed). Birds that have a specialized diet, such as carnivores, are considered excellent bioindicators. As a top-of-the-food-chain species, they require large areas to obtain the necessary resources to maintain their populations. So in a general way, a richer population of birds of prey can only occur in areas that are not fragments and have good environmental conditions.

Past fauna monitoring campaigns have revealed some noteworthy surprises in the mammal category, including the presence of the rock cavy (*Kerodon rupestris*) and capybara (*Hydrochoerus hydrochaeris*), the latter identified through tracks.



The rock cavy (*Kerodon rupestris*)



Capybara (*Hydrochoerus hydrochaeris*) tracks



## Interpretation of Results

Biodiversity monitoring is carried out across two DIAs and the LRA. Through a series of 46 campaigns conducted between 2013 and 2024, the results below were evaluated using standard ecological indices: Shannon, Simpson, and Pielou.

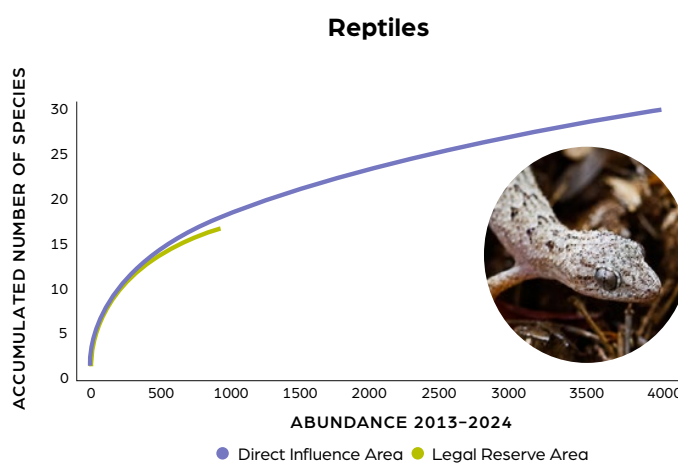
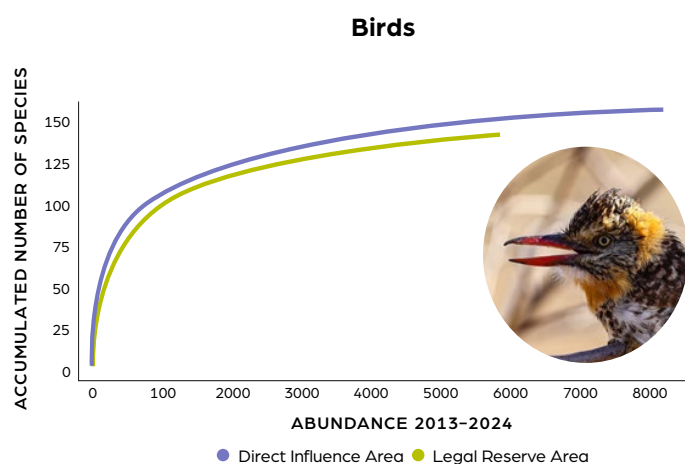
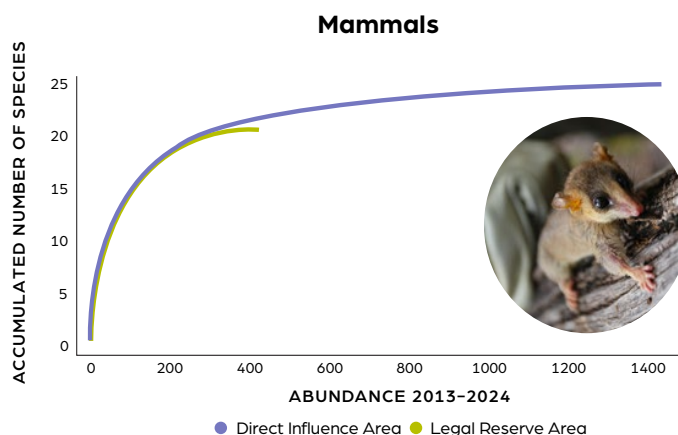
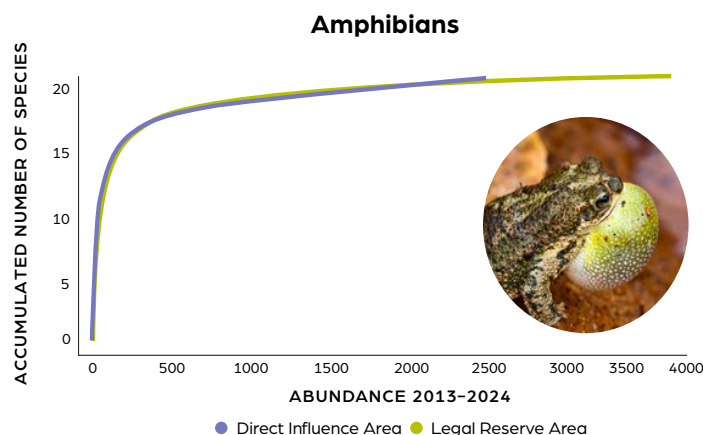
Overall, all three transects demonstrate high levels of biological diversity across all indices.

While both areas are ecologically rich and well-balanced, the directly influenced areas show slightly higher biodiversity. This may be because the protected area is more stable and predictable, while the directly influenced areas have more variations that can potentially support a wider range of species interactions.

GROUP	SHANNON (H') <sup>1</sup>	SIMPSON (1-D) <sup>2</sup>	PIELOU (J') <sup>3</sup>
Direct Influence Area – DIA (T1, T2)	2.27	0.86	0.94
Legal Reserve Area – LRA (T3)	2.14	0.83	0.94

## Near the Mine and Legal Reserve: Amphibians, Reptiles, Birds and Mammals

### Rarefaction Curves



1. Shannon Index: In the Shannon Index, zero indicates low diversity and values greater than 3 represent high diversity. The values for both the DIA (2.27) and LRA (2.14) are closer to the higher end of that range, suggesting relatively high diversity.
2. Simpson Index: The Simpson Index ranges from 0 to 1, where 0 represents no diversity and 1 represents maximum diversity. Both areas have Simpson Index values close to 1 (DIA: 0.86, LRA: 0.83), which signifies high diversity.
3. Pielou Index: This index ranges from 0 to 1, where a value of 0 indicates low diversity and evenness, and a value of 1 indicates high diversity and evenness. Both areas show very high evenness, with a value of 0.94 for both. This indicates that the species are distributed relatively evenly, contributing to the high diversity.

## IUCN Red List and National Conservation Lists

The IUCN Red List, including national conservation lists, is presented in our Annual Sustainability Report.

A family of *Penelope Jacucaca* was observed during the fauna monitoring in February 2022. This bird is a vulnerable species as it is the size of a chicken and therefore hunted for food by the local population.

The fact that it was observed in our operational area mean that we are helping to protect it, as they can live in our fenced Legal Reserve.

