

Spix macaw
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Contacts

Pedro Develey

Director of Conservation
SAVE Brasil
São Paulo, Brazil
Tel: +(55 11) 3815-2862
pedro.develey@savebrasil.org.br

Gleuza Jesué

Manager
Environmental Department
Vale
Rio de Janeiro, Brazil
Tel: +(55 21) 3814-4360
imprensarj@vale.com

Camile Lugarini

Coordinator of plan to
preserve the Spix macaw
ICMBio office
Florianópolis, Brazil
Tel: +(55 48) 3282-2163
camile.lugarini@icmbio.gov.br

Cristina Miyaki

Biologist
University of São Paulo
São Paulo, Brazil
Tel: +(55 11) 3091-8055
cymiyaki@usp.br

Carlos Yamashita

Ornithologist
Ibama
São Paulo, Brazil
Tel: +(55 11) 3066-2646
carlos.yamashita@ibama.gov.br

private researchers and other collaborators, began drafting a reintroduction plan in 2010 and started implementing it two years later. “If we can reintroduce this macaw into the Bahian savannah we can also help safeguard one of the least protected ecosystems in Brazil,” says Camile Lugarini, coordinator of the effort.

Pedro Develey, conservation director of the Society for Conservation of Brazilian Birds (SAVE Brasil), a unit of BirdLife International—a partner in the effort—agrees. Says Develey: “Besides protecting this ecosystem, [the reintroduction] will show you can reverse biodiversity loss even when the challenges are great.”

Though ICMBio is trying to preserve four other critically endangered bird species, the plan to save the Spix macaw is perhaps Brazil’s best organized and highest profile such effort. It also is among the best funded, thanks in part to support from Brazil-based Vale, among the world’s leading iron-ore producers.

The biggest conservation challenge ICMBio faces is how to turn the growing number of captive birds, now some 110 macaws, into a larger, more stable population. That’s because inbreeding within a small genetic pool causes a low reproductive rate. Only 10% of the eggs laid ultimately are viable and hatch, even though once hatched, the survival rate is high.

Population boost

ICMBio’s plan involves increasing the current captive population to 150 birds by 2017 via natural and artificial insemination. Doing so will create the stable population which, through test releases, can support reintroduction of small flocks into natural habitat in 2021. Three private breeding centers have agreed to provide Spix macaws for the releases. The first, NEST, a bird-reproduction and research facility in Brazil, shelters 12 of the macaws. Association for the Conservation of Threatened Parrots (ACTP), a German nonprofit, also houses a dozen. The third, Al Wabra Wildlife Preservation (AWWP), a center in Qatar, has 86 of the birds, most bought from European collectors.

AWWP was started by a Qatari sheik who invested heavily to build shelters and acquire breeding expertise, hiring ornithologists and veterinarian pioneers of artificial-insemination techniques. NEST, AWWP and ACTP exchange birds to form the couples deemed most likely to reproduce based on DNA blood tests. To help reduce inbreeding, the tests determine which macaws differ most genetically.

“One of the biggest challenges is cutting through red tape so genetically paired birds can be transferred among breeding centers on three continents,” says biologist Cristina Miyaki of the University of São Paulo, who helps

conduct the DNA tests.

ICMBio’s effort to save the Spix macaw also involves creating and protecting the necessary habitat. The agency plans to take a 440-square-kilometer (170-sq-mile) swath of Bahian gallery forest where the last Spix macaw was sighted and establish it by 2017 as a protected area for the reintroduction, slated to begin in 2021. SAVE Brasil has mapped the limits of the reserve and conducted technical studies to determine whether sufficient nesting cavities exist there. The group also is educating the 300 families living in the area not to capture the birds illegally once they are released, and to notify field agents about any poachers.

The government will either buy the private land for the reserve from these families or create a so-called sustainable development reserve, where the land remains under private ownership but is subject to land-use restrictions designed to protect reintroduced macaws.

Roofless cages

In 2021, when the ICMBio begins test-releasing small flocks of Spix macaws in the protected area, they will leave large, topless cages occupied as well by a similar-sized species of captured blue-winged macaw called Illiger’s macaw (*Primolius maracana*). These blue-winged macaws were chosen as a behavioral model because they are endemic to the same Bahian savannahs from which the Spix macaws became extinct and have the same diet of fruits, nuts and seeds; the same nesting habits; and the same predators, mainly hawks.

The closely monitored cages will be replenished with food and water so that Spix macaws can return to them if they have a hard time coping with their new environment. But the hope is that the Spix macaws will, through behavioral training, learn survival skills from the wild macaws released with them. All the freed birds will have GPS transmitting devices so they can be tracked in the wild.

“There’s a good chance these captive Spix macaws can be reintroduced into their native habitat because this has happened with other birds, from the California condor, no longer extinct in the wild, to the Puerto Rican parrot, a critically endangered bird whose population in the wild has rebounded,” says ornithologist Carlos Yamashita, an authority on the Spix macaw and among the last people to sight one in the wild. “But the ICMBio program must manage the protected area well to ensure cyclical droughts in the region don’t deplete the macaw’s fruit and nesting trees. [Otherwise], new trees will have to be planted.”

—Michael Kepp