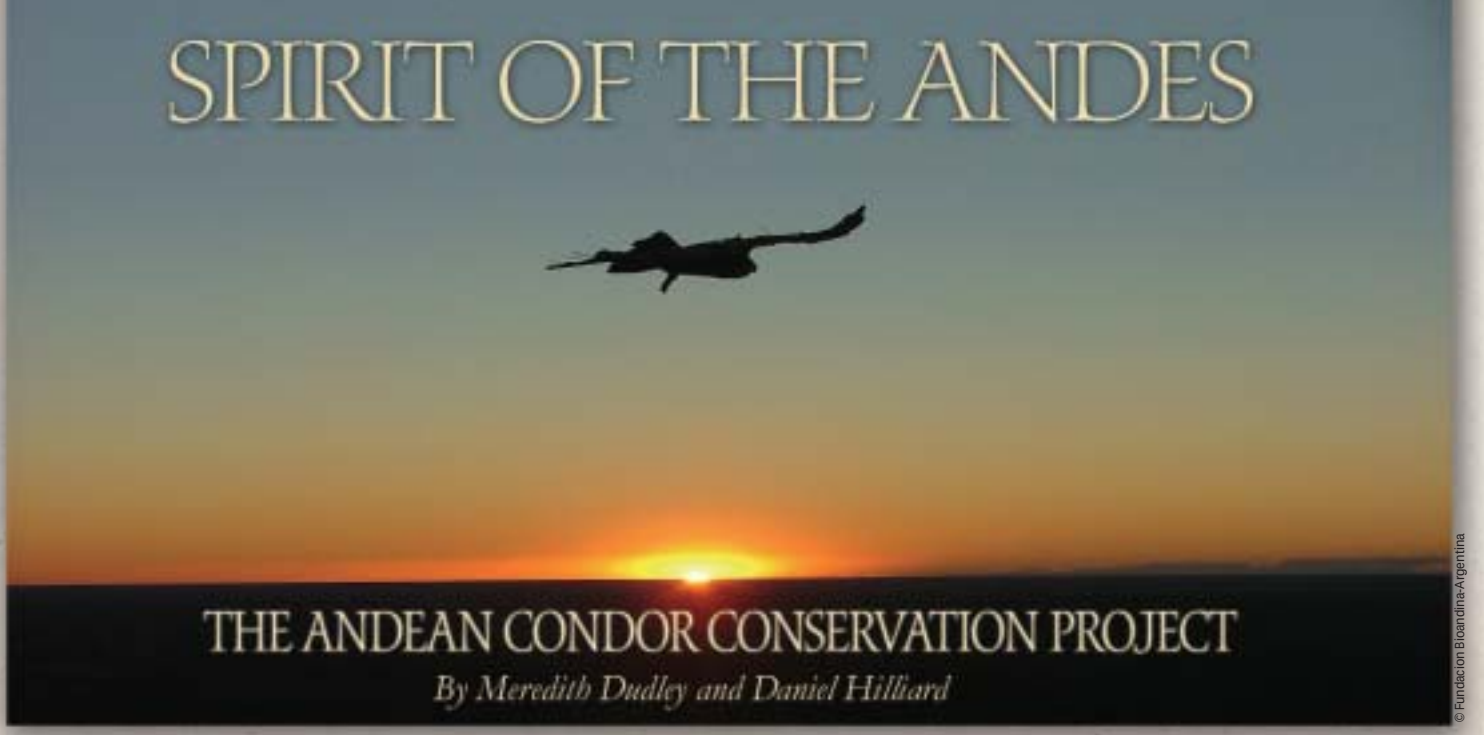

Perched atop a rocky plateau in Sierra Paileman, Argentina, a young Andean condor* (Vultur gryphus) *unfurls its large wings, takes a few tentative steps away from its liberation platform, and commences its first flight into the Patagonia wilderness.

The surrounding cliffs; flat, open expanses; and abundant marine life provide optimal conditions for Andean condors, which Charles Darwin found too numerous to count during his voyage around Patagonia in 1834. Unfortunately, the large populations admired by Darwin and the crew of the Beagle have since witnessed localized extinctions, reinforcing the scientific and symbolic importance of the newly released condor as it rises into the sky and out over the open ocean. The scene at Paileman on 26 January is an emotional one for all present, especially for the international team of scientists who have dedicated themselves to this mission for the past fourteen years.

The dream of returning the Andean condor to the Patagonian coast has been an important goal of the Andean Condor Conservation Project (Proyecto de Conservación Cóndor Andino PCCA) since its inception, and represents the culmination of over a decade of collaborative research conceived by Project Director, Luis Jácome and his colleagues at the Fundación Bioandina-Argentina (FBA) and the Buenos Aires Zoo. Eight condors have been released at this site since 2003, and two more are scheduled for later this year. Most of these condors have been artificially incubated and raised in captivity at the Buenos Aires Zoo. Injured, rescued, and confiscated birds – all rehabilitated at a PCCA Rescue and Rehabilitation Center at the Temaikén Zoo in Escobar, Argentina – have also been returned to their natural habitat. To date, the project has released 44 condors in Venezuela, Bolivia, Chile and Argentina – with the hope that these individuals will help ensure the species' continued presence throughout South America's mountain peaks and coastal plains.

Revered by native South Americans as the "Living Spirit of the Andes," the Andean condor remains an emblem of the region's natural and cultural heritage, as well as an important symbol of future conservation challenges. With a wingspan of over ten feet, the Andean condor is the largest flying bird in the world and a carrion eater that plays a crucial role in the ecological balance of the Andes. Yet due to human activities, this magnificent bird faces extinction throughout its extensive range – particularly in Venezuela, Colombia, and Ecuador. Reduced condor populations remain in Peru and Bolivia, while larger populations are still found in the southern Andean countries of Argentina and Chile, where localized extinctions have occurred.

Multiple factors have led to the drastic decline in Andean condor populations, including habitat loss, collision with high-tension cables, and hunting due to popular misconceptions that condors prey upon livestock and carry away small children. Accumulating toxins also threaten the welfare of this species, which remains vulnerable due to its position at the top of the food chain and need for large territories.

To address these needs, the Andean Condor Conservation Project (PCCA) was initiated in 1991 by members of the Buenos Aires Zoo. Since 2000, the project has also involved the Fundación Temaikén and Fundación Bioandina-Argentina as project co-organizers with additional support and financing from national and international institutions. The goal of this coalition is to improve the viability of wild condor populations by breeding and rearing captive specimens and rescuing and rehabilitating wild condors for eventual release back into their natural habitats. Given the challenges facing Andean condors throughout their broad geographic range, multinational cooperation is critical to the project's success.

The project involves collaboration between scientists and zoo professionals throughout South America, as well as international partnerships with North American and European institutions. For the past five years, the project has received important financial and material support from the Zoo Conservation Outreach Group (ZCOG), an AZA conservation partner, and its member institutions. These collaborative partnerships, at the root of ZCOG's own mission, have helped facilitate the project's accomplishments. So

has the broad scope of the project, which combines *in situ* and *ex situ* conservation strategies, and cares for the condors throughout their life cycle, from incubation and rearing to rehabilitation and release. Furthermore, the project strives to ensure the viability of the condors once they are released back into their natural environment through careful scientific monitoring and a proactive conservation education campaign, both of which are necessary components of long-term preservation.

The project's first initiative was to survey the reproductive status of Andean condors held in captivity throughout Latin America and the Caribbean Basin, resulting in the publication of the first Andean Condor Registry for Latin American zoos. In 1993, Jácome and his team began an ambitious captive breeding program at the Buenos Aires Zoo. The first of its kind in South America, the program aims to increase the number of condors in captivity for future release into the wild. Due to the low reproductive rates of condors – the long-lived birds mate for life yet only produce an egg every two or three years – the program utilizes the "multiple posture technique," whereby one egg is withdrawn from the female for artificial incubation, stimulating her to lay another egg. Collected eggs are then carefully incubated at the Artificial Incubation Center at the Buenos Aires Zoo. When a chick is ready to hatch, zoo technicians help the baby condor safely emerge from its shell.

The first artificially incubated condor egg in South America was successfully hatched during the center's first year. Once hatched, chicks are reared in isolation nurseries utilizing latex puppets that resemble adult condors. Drawing on successful techniques derived for the California Condor Recovery Program, these rearing practices enable chicks to recognize their peers and acquire natural condor behaviors, as well as encourage avoidance of humans.

As the birds grow older, they are moved to holding areas with adult condors that teach them survival behaviors. Individuals deemed suitable for release are fitted with vinyl wing bands for identification and radio telemetry and satellite transmitters for tracking, before being transferred to flight cages located at release and monitoring sites. Here, the birds are acclimated to the area in seclusion from humans before their scheduled departures into the wild. Solar-powered satellite transmitters allow PCCA researchers to monitor the birds' movements after release. A Tracking and Population Studies Center was created at the Buenos Aires Zoo to monitor and study condors released by the project. Traditional field tracking methods are complemented by satellite transmission data made available through the technical support of Microwave Telemetry and ARGOS Service. Fundación Bioandina-Argentina, as an Intergraph Registered Research Laboratory, developed a Geographic Information System (GIS) specific to the species, as well as a flight simulation system DECOSAT that enables visualization and analysis of released condor movements.

Analysis of flight patterns, habitat preference, home range areas, and roost locations has permitted refinement of PCCA conservation strategies. For instance, researchers discovered that the species' flight range capacity was 60,000 square kilometers, much larger than previously assumed; indicating that a conservation strategy focused exclusively on national parks is insufficient. PCCA scientists have also documented that captive raised and rehabilitated birds display distinctive flight pattern behaviors over time. Information derived from monitoring and GIS analysis has also led to the development of the Condor Sanctuaries Project, which helps protect important night roosting areas.

Beyond sanctuaries and protected areas, the long-term survival of Andean condor populations depends upon the attitudes and involvement of human communities. The project is committed to raising public consciousness about this charismatic species and its natural habitats. The Fundación Bioandina-Argentina conducts intensive education campaigns in surrounding communities before and after condor releases in order to build local support. An environmental education program, developed with the support of ZCOG and its partner institutions, also distributes educational materials to rural and urban schools in release areas. The primary message of this outreach campaign is care and respect for all life – a message that coincides with local indigenous beliefs. At the national level, two interpretative centers at the Buenos Aires Zoo and Temaikén Zoo disseminate information and carry this message to millions of visitors each year.

The multi-component and collaborative approach of the PCCA provides a successful model for combining *ex situ* and *in situ* conservation strategies. The project has also helped to pioneer international collaboration to conserve the Andean condor. As a result, the project has received international recognition in the form of press coverage, funding, and prestigious awards, including the Rolex Award for Enterprise granted to Luis Jácome for his directorship of this ambitious conservation project.

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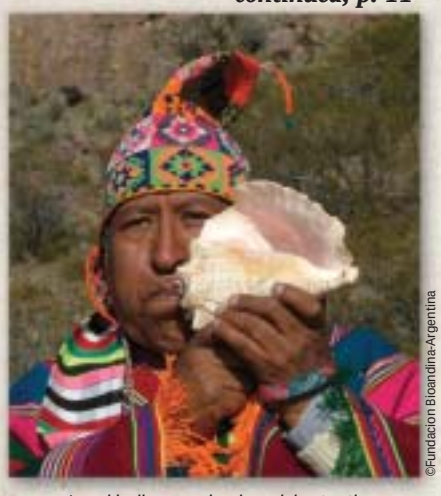
Latex puppets used during condor chick rearing.

An Andean condor awaits release.



Local indigenous leader celebrates the return of the Andean condor to the Patagonian coast.

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While overwhelmingly successful, the project has encountered challenges and setbacks. Three released condors have been killed by means representing the main causes of localized extinctions, including collision with high-tension wires, poisoning, and hunting. "It takes almost three years to prepare a condor for release, but it takes only a second to kill a released condor," laments project director Luis Jacomé. For this reason, the PCCA stresses the importance of improving the relationship between human and condor populations and involving indigenous communities. Understanding the important connection between culture and conservation is a key component of the project. Indigenous representatives from the region perform ceremonies at each condor release to send a message of hope so that the Spirit of the Andes will regain its rightful place in the region's ecosystems.

Members of the PCCA and the Zoo Conservation Outreach Group (ZCOG) are working together to meet that goal. Director Luis Jácome stresses that, "the project owes its success to the cooperation and contributions of a variety of national and international partners, including zoological institutions, universities, government agencies, and conservation NGOs. Moreover, it demonstrates that each of us has an important role to play in wildlife and habitat conservation; each one of us contributes to a larger goal as if we were feathers on a condor. There are white feathers and black feathers, big feathers and small feathers, yet regardless of color or form, each feather has a role to play in order to allow the condor to fly again." The Andean Condor Conservation Project demonstrates the success of collaborative approaches to wildlife conservation and shows us how, like feathers on a condor, we all have a role to play as partners in the survival of this magnificent species.

MEREDITH DUDLEY IS PROGRAM ASSISTANT AND DANIEL HILLIARD IS EXECUTIVE DIRECTOR FOR THE ZOO CONSERVATION OUTREACH GROUP.

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A PCCA technician at the Buenos Aires Zoo helps a condor chick emerge from it shell.

ANDEAN CONDORS

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For information on how your institution can help support the Andean Condor Conservation Program please contact Daniel Hilliard, Executive Director, Zoo Conservation Outreach Group at *dhilliard@audubooninstitute.org*.