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CREW PROGRESS REPORT
Lindner Center for Conservation and Research of Endangered Wildlife
Cincinnati Zoo & Botanical Garden • Spring 2022

A Living Legend

Sumatran Rhino "Andalas"a Grandsire at 21 Years of Age

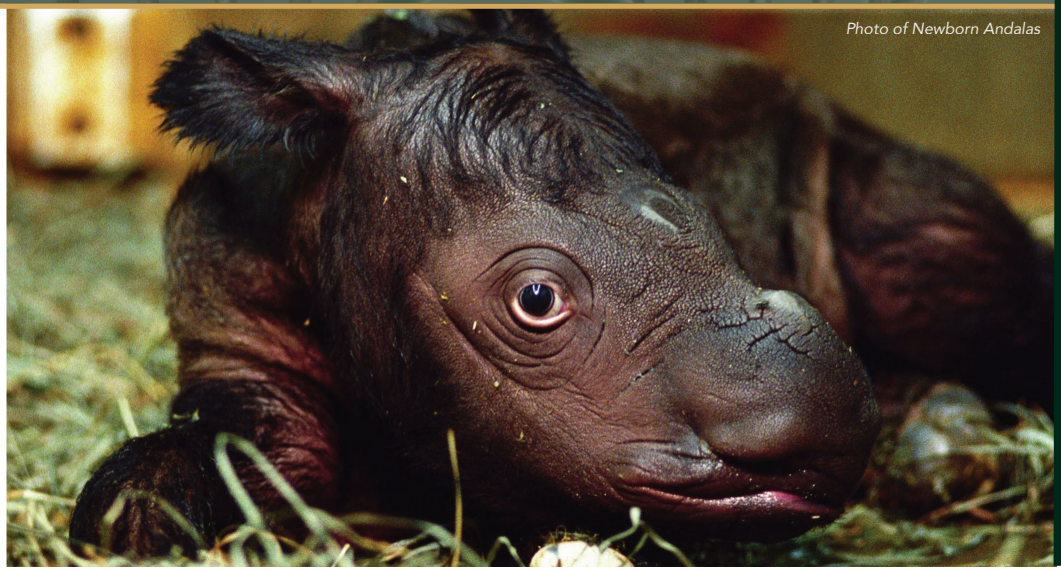

Photo of Newborn Andalas

The Cincinnati Zoo's first Sumatran rhino calf "Andalas" was headline news in 2001 when he became the first Sumatran rhino bred and born in a zoo in 112 years. His birth was the turning point for a breeding program that for years had failed. Andalas's contributions to his species' survival escalated after U.S. zoos made the difficult but right decision of sending him to Indonesia to transform Sumatra's struggling, unsuccessful breeding program. The staff at the Sumatran Rhino Sanctuary (SRS) had for years been trying to breed their rhinos, but their only male rhino appeared to be infertile. Andalas's arrival in 2007 was the catalyst they needed. In 2012, the SRS announced the first birth of a Sumatran rhino bred in South-East Asia. He was named Andatu to honor his sire, Andalas, and dam, Ratu. Fast-forward a decade, and little Andatu is now a father himself, making Andalas a grandsire at just 21 years of age, and augmenting the Cincinnati Zoo's legacy in the effort to save this critically imperiled species. However, the good news does not end there. The rhino "Rosa" that produced this new female calf has a remarkable story herself. Rosa was first discovered in 2004, frequenting villages in South Sumatra. A ranger followed her for a year, protecting her during her unusual antics until the tough decision was made to capture and move her to the SRS where she would be safe and could contribute to the breeding program. However, her aberrant love for people and fear of male rhinos made the breeding effort especially challenging. Finally, in 2016, Dr. Zulfi and the SRS team succeeded, initially by pairing her with Andalas. Unfortunately, the years had taken a toll on Rosa's fertility, and her uterus now contained a small tumor. Every time she conceived (8 times over four years!), the embryo tried and failed to implant next to that tumor. It appeared surgery would be necessary to restore her fertility, and in 2019 a plan was in place—then COVID hit. With surgical correction a distant hope, the SRS team continued breeding Rosa, switching mates to the recently mature Andatu, and in December of 2020, an embryo finally implanted in the tip of the uterine horn, far from the tumor. Dr. Zulfi immediately started Rosa on the same hormone supplement administered to Andalas's mother when she was pregnant with him here in Cincinnati. Rosa succeeded in carrying the pregnancy to term, delivering her first calf March 24, 2022. With fewer than 80 wild individuals remaining, the breeding program has become the focal point for saving the species from extinction. This recent birth represents the first third-generation calf born in managed care and rescues Rosa's new genetic contribution. Although the Sumatran rhino teeters on the brink of extinction, with each birth, hope is renewed. Who could have guessed that awkward little newborn at the Cincinnati Zoo in September 2001 would go on to make such a significant impact on the survival of his species?

1: Rosa as a young girl in the Indonesian village. 2: Newborn, Andatu. 3: Rosa & newborn. Photo courtesy of the Indonesian Ministry of Environment and Forestry.

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Applying Knowledge to Save,
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Arkansas Oak the Newest Cryo-Survivor

Although many people have not seen it, deep inside the CREW building is a forest. However, unlike its larger cousins, this forest is a miniature oak collection, housed in test tubes in CREW's incubator room. With funding from the International Oak Society, the Association of Zoological Horticulture, and the Cincinnati Wildflower Preservation Society, over the past few years CREW's Plant Division has been building a collection of tissue culture lines of oak shoots that has grown to 12 species. Four of these species are threatened, including the Hinckley's oak, Arkansas oak, maple-leaf oak, and Georgia oak. The goal is to use the cultures to develop shoot tip cryopreservation protocols for conserving oak tissues in CREW's CryoBioBank. Oaks are generally difficult and slow growing in culture and do not adapt well to freezing, but recently we have achieved the first survival and growth of the globally threatened Arkansas oak *(Quercus arkansana*) through cryopreservation. Native to the southeastern U.S., Arkansas oak joins the critically endangered Hinckley's oak, Virginia live oak, and two European oaks (cork oak and Dalechamps oak) as species that have been successfully cryopreserved at CREW. The ability to develop protocols for cryopreserving oak tissues is critical to conserving oak biodiversity, as it is thought that over 30% of the 500 oak species worldwide are threatened with extinction. As more oaks join the Arkansas oak in the "cryo-survivor club," the more secure the future will be for these iconic trees.

Helping to Conserve America's Last Ocelots—Deep in the Heart of Texas

The last 60–80 wild ocelots found in the United States live in isolated pockets of thorn scrub near the southern tip of Texas. With habitat loss and fragmentation, genetic exchange among Texas ocelots has greatly diminished, increasing their risk of inbreeding and extinction. A coalition of federal and state government agencies, universities, and conservation organizations, including CREW, are working together to stabilize the Texas ocelot population and explore new strategies to improve genetic diversity for future growth (www.recoverTexas-ocelots.org). One key to achieving this goal is based on 25 years of CREW reproductive research with ocelots. With guidance from CREW scientists, Dr. Ashley Reeves, a veterinarian pursuing her PhD at the University of Tennessee, has spent the past two years capturing wild male ocelots in South Texas for semen collection and cryopreservation. In 2021, these frozen samples were used for the first time to conduct three laparoscopic artificial insemination (AI) procedures with female ocelots housed in American zoos. All three females ovulated in response to ovarian synchronization treatment but, unfortunately, no pregnancies resulted from these initial attempts. Four additional AI procedures are planned for later in 2022, using frozen semen banked from other wild males over this past winter. With improved post-thaw semen quality, this AI approach has a high probability of success for establishing genetic exchange between isolated ocelot populations.