



2017 ANNUAL REPORT
ASSURING A FUTURE
FOR WILDLIFE



CONSERVATION
CENTERS
FOR SPECIES
SURVIVAL

LETTER FROM THE CEO

Dear Friends of C2S2,

Your tenacious spirit and support have assisted C2S2 in making major strides that would not have been possible without you. 2017 was C2S2's second full year as a 501(c)(3) based at Fossil Rim Wildlife Center. As you will see highlighted in this report, it was a year of tremendous growth. Our activities in collaboration with Conservation Centers, private landowners, and Affiliate zoos are growing populations and space, optimizing reproduction and genetic diversity, and returning species to the wild when possible. We are taking a One Plan Approach (as defined by the IUCN Conservation Planning Specialist Group) linking *ex situ* breeding/management populations to *in situ* populations to improve the sustainability of species wherever they exist.



Highlights of the year include:

NEW MEMBERS

This year, C2S2 was proud to welcome the following new members:

- **Full Member Conservation Center**
 - African Lion Safari in Ontario, Canada
- **Affiliate Member**
 - Monarto Zoo in South Australia
 - Endangered Wolf Center in Missouri
 - Nashville Zoo in Tennessee

NEW PARTNERS

C2S2 signed a memorandum of understanding (MoU) with the Sahara Conservation Fund (SCF) and provided financial support to help preserve imperiled Saharan species. Official partnerships were also established with the Association of American Zookeepers (AAZK), the International Rhino Foundation (IRF), and the Zoological Association of America (ZAA).

GROWING ENDANGERED SPECIES POPULATIONS

• **Cheetah Sustainability Program (CSP).** The Breeding Centers Coalition (BCC) achieved a record 91 births in 28 different litters in 2017. This record represents an overall increase of 103% in cub production.

• **Source Population Alliance (SPA).** Metapopulation numbers of our initial four target species grew 22.5% in 2017 and participants increased by 12%. In October 2017, the program added six more species to its portfolio—Arabian oryx, bongo, roan antelope, Grevy's zebra, banteng, and anoa.

• **Native Species.** Building on the success of the loggerhead shrike program, C2S2 launched a songbirds portfolio taking a One Plan Approach to supporting these birds in the wild through strategic *ex situ* research, education, and conservation breeding.

FINANCIAL SUPPORT

Major gifts were received from the Mark Paul Terk Charitable Trust, as well as a major consulting contract supported by Matias Rojas to promote conservation in the Peruvian Amazon. We greatly appreciate the financial and in-kind support from each of our members and supporters. A very special thank you goes to Fossil Rim Wildlife Center for hosting our team on site throughout 2017!

NEW STAFF

Due to this additional support, we were able to increase the size of our staff including the addition of SPA Manager Gavin Livingston to the C2S2 team in August 2017, who has brought his experience in endangered species management with the private and public sectors.

CAPACITY BUILDING

C2S2 hosted and participated in several workshops that brought key stakeholders together to develop strategies for linking *in situ* and *ex situ* efforts, including: North American songbirds at Smithsonian Conservation Biology Institute; Australian native species at the Zoo and Aquarium Association meeting in Gold Coast, AU; Amazonian native species through Amazon Forever; and North American red wolves at White Oak Conservation.

Many thanks to each and every one of you, and here's to even greater success in 2018!

Onwards and upwards,


Katy Palfrey

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Cover Photo Credit: Fossil Rim Wildlife Center



Photo Credit: Taronga Conservation Society Australia

Thank you for an exceptional year.

FULL MEMBER CONSERVATION CENTERS

African Lion Safari
Austin Savanna
Fossil Rim Wildlife Center
Omaha's Henry Doorly Zoo
Smithsonian Conservation Biology Institute
The Wilds
White Oak Conservation



AFFILIATE MEMBERS

Disney's Animal Kingdom
Endangered Wolf Center
Monarto Zoo
Nashville Zoo
National Research Foundation/National Zoological Gardens of South Africa
Taronga Conservation Society Australia
Zoo Tampa at Lowry Park



Photo Credit: Fossil Rim Wildlife Center



2017 NEW MEMBERS

FULL MEMBER CONSERVATION CENTERS



African Lion Safari | Ontario, Canada | LionSafari.com

African Lion Safari® is a drive through Wildlife Park dedicated to the conservation of declining wildlife species. It is home to over 1,000 exotic birds and animals that roam freely throughout seven distinct drive through Game Reserves.

AFFILIATE MEMBERS



Endangered Wolf Center | Eureka, MO | EndangeredWolfCenter.org

The mission of the Endangered Wolf Center is to preserve and protect mexican wolves, red wolves and other wild canid species through carefully managed breeding, reintroduction and inspiring education programs.



Monarto Zoo | Monarto, South Australia | MonartoZoo.com.au

Zoos SA is a not-for-profit conservation charity that exists to save species from extinction and connect people with nature. A part of this network, the Monarto Zoo is Australia's largest open range zoo.



Nashville Zoo | Nashville, TN | NashvilleZoo.org

The mission of Nashville Zoo is to inspire a culture of understanding and discovery of our natural world through conservation, innovation and leadership. Since opening its doors in 1991, the Zoo has grown from a small, private operation to an Association of Zoos and Aquariums (AZA) accredited facility with international conservation involvement.





Photo Credit: Sahara Conservation Fund

2017 NEW PARTNERS



American Association of Zoo Keepers (AAZK) | Tucson, AZ | AAZK.org

The mission of The American Association of Zoo Keepers is to advance excellence in the animal keeping profession, foster effective communication beneficial to animal care, support deserving conservation projects, and promote the preservation of our natural resources and animal life.



International Rhino Foundation | Fort Worth, TX | Rhino.org

The International Rhino Foundation is dedicated to the survival of the world's rhino species through conservation and research. At the heart of IRF's vision is the belief that these magnificent species should endure for future generations, and that protecting rhinos ensures that many other species that share their habitat also survive, including people.



Sahara Conservation Fund | St. Louis, MO | SaharaConservation.org

The mission of the Sahara Conservation Fund is to conserve the wildlife habitats and other natural resources of the Sahara and its bordering Sahelian grasslands.

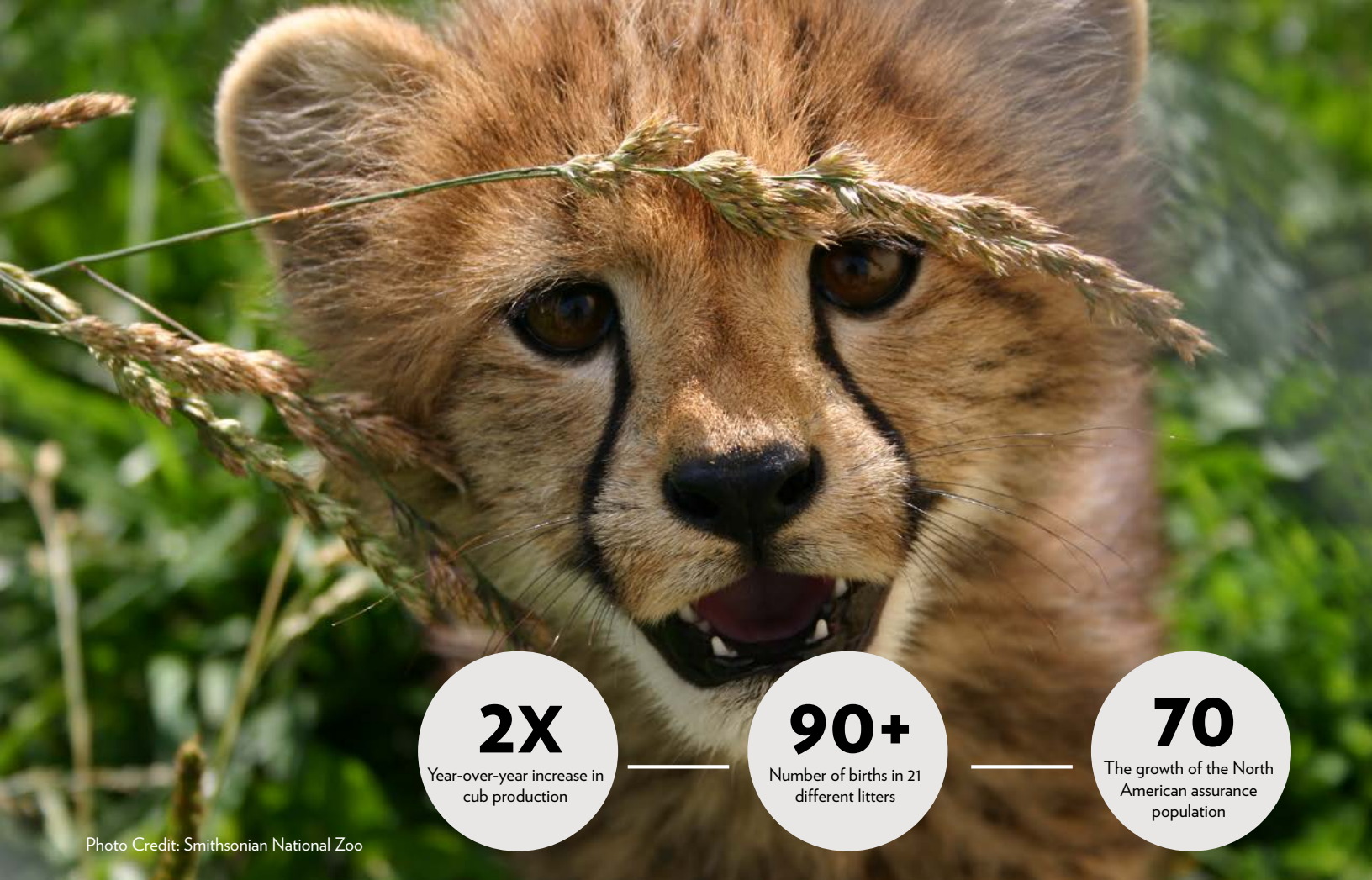


Photo Credit: Smithsonian National Zoo

2X

Year-over-year increase in cub production

90+

Number of births in 21 different litters

70

The growth of the North American assurance population

CHEETAH SUSTAINABILITY PROGRAM



CHEETAH SUSTAINABILITY PROGRAM

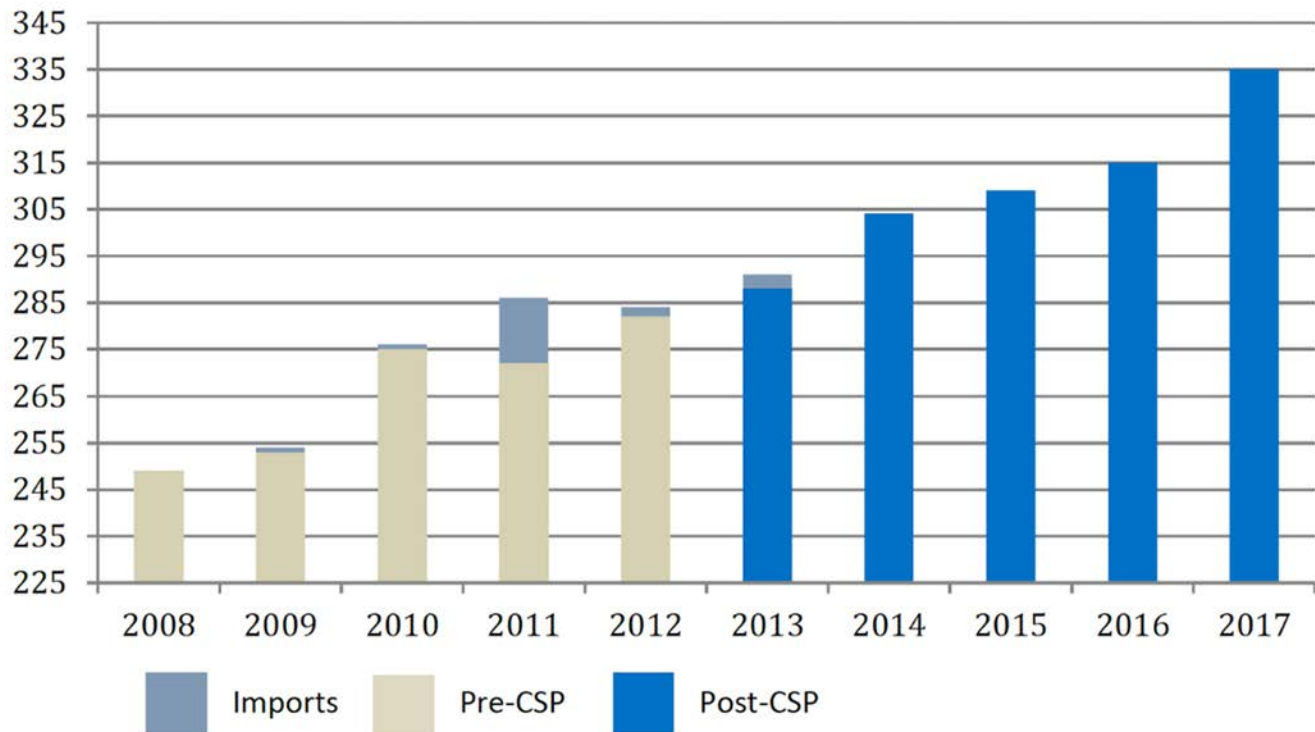
The Cheetah Sustainability Program (CSP) grows and optimizes the North American cheetah population as an assurance of survival, while supporting conservation of cheetahs in the wild. Cheetahs are experiencing a remarkable decline in their native range due to habitat loss, human-wildlife conflict, and poaching. Populations have declined from an estimated 25,000 in the early 1980s to no more than 7,100 individuals today found living on only 23% of the species historic range. With no end in sight to the threats facing cheetahs in the wild, a healthy and genetically diverse population secured today in North America may be the the species' best chance for long-term survival. C2S2 is taking a

One Plan Approach with a goal of linking captive breeding/management to *in situ* conservation, including through a variety of range country activities.

In 2017, the Breeding Centers Coalition (BCC) achieved a record 91 births in 28 different litters, representing an overall increase of 103% in cub production over the year prior to the program. The cheetah population has grown 17% to a total of 338 cats, reversing the previous downward trend. This success is a direct result of the time, expertise, and space made available for these efforts by the breeding centers. The results were made possible by the connectivity and determination of the breeding centers staff who meet regularly on the telephone to work through challenges and expand their skill sets. C2S2 has provided GoPro cameras and mounts to each of the breeding centers to facilitate knowledge sharing and training on procedures, behavioral and health issues, and to capture footage of cubs for communications materials.

Number of Individuals in the Association of Zoos and Aquariums (AZA) Cheetah Species Survival Plan (SSP) Population

(Five Years Pre- and Post- Start of the Cheetah Sustainability Program)



The growth of the North American population is reducing imports and providing new opportunities for the global cheetah population. C2S2 has begun working with cheetah holders and organizations across the globe to grow connectivity between populations. Together with member and partner institutions such as African Lion Safari, Monarto Zoo, and Taronga Conservation Society Australia, the CSP is moving forward with exchanging studbooks internationally. C2S2 is also using genomics to optimize population management, with future plans to transport animals between the U.S., Australia, and Canada to grow genetic diversity across the global One Plan population.

Through its grant fund, the CSP targeted high priority projects. The CSP funded three two-year grants totalling \$36,660 for cheetah conservation and research projects led by Action for Cheetahs in Kenya, Smithsonian Conservation Biology Institute, and the University of Oxford.

- The Action for Cheetahs in Kenya project, led by Dr. Mary Wykstra, is a range-wide cheetah survey using dogs trained to detect cheetah scat to track movement and prey selection of wild cats.
- Dr. Amy Dickman at the University of Oxford leads a project researching population trends and distribution of cheetahs in Tanzania's Ruaha landscape and is working to collect the first data on the specific threat posed by bushmeat snaring.

- Dr. Adrienne Crosier, Ph.D of the Smithsonian Conservation Biology Institute has been determining genetic variability, kinship, and uniqueness in the North American and free-ranging Namibian cheetah populations. Samples from 30 wild, free-ranging Namibian cheetahs and from over 120 cheetahs in the North American population have been collected.

PARTICIPATING INSTITUTIONS

CHEETAH BREEDING CENTERS



CHEETAH CONSERVATION PARTNERS



SOURCE POPULATION ALLIANCE

2017 was a transformative year for the Source Population Alliance (SPA), which has positioned the program to expand conservation efforts to new heights in 2018.

SPA signed a memorandum of understanding (MoU) with the Sahara Conservation Fund (SCF) to help preserve imperiled Saharan species and support their reintroduction. SCF leads the world in successful reintroduction of scimitar-horned oryx into Chad. C2S2 members and SPA participants are providing advice on release/population management scenarios – and eventually – our expertise in genomics. Additionally, this partnership enables SPA to move toward a One Plan Approach for our target species where *ex situ* and *in situ* efforts are linked to create a truly sustainable global population. Through the support of our participant facilities, SPA was also able to contribute financially to the important *in situ* work being done by SCF.

SPA's participant base has grown considerably over the past year both in number and diversity. Some of the participants that were welcomed to the program in 2017 included Camp Creek Wildlife, Ten Triple X Ranch, The Wilds, African Lion Safari, and Tanganyika Wildlife Park.

In October of 2017, the SPA Executive Committee decided that it was an opportune time to expand the program's species portfolio to include the Arabian oryx, bongo, roan antelope, anoa, banteng, and Grevy's zebra.

PARTICIPATING INSTITUTIONS

4-F Exotics	Natural Bridge Wildlife Ranch
8 Bar 8 Ranch	Red Wire Wildlife Ranch
African Lion Safari	Rough Hollow Preserve
Austin Savanna	S03 Ranch
Bamberger Ranch	Safari Enterprises
Bear Creek Exotics	Smithsonian Conservation
Camp Creek Wildlife	Biology Institute
Cross Bar C Ranch	Stewards of Wildlife Conservation
Fossil Rim Wildlife Center	Tanganyika Wildlife Park
Game Creek Ranch	Ten Triple X Ranch
Griffin Point Ranch	The Wilds
Hatada Ranch	Tres Changos Ranch
Hemker Park Zoo	Triple C Ranch
Lion Country Safari	White Oak Conservation
Micanopy Zoological Preserve	



SOURCE POPULATION
ALLIANCE

22.5%

Metapopulation growth

12%

Participating organization
growth

6

New program species

NATIVE SPECIES INITIATIVES

C2S2 helps to facilitate and grow new and existing native species conservation breeding, reintroduction efforts, and regional biodiversity initiatives led by the Conservation Centers & Affiliates. Landowner engagement also distinguishes these initiatives. Initial efforts for the Native Species Initiatives are 1. The North America Songbirds Initiative, and programs supporting 2. Red Wolves, and 3. Whooping Cranes.

NORTH AMERICAN SONGBIRDS

In February 2017, C2S2 launched the North American Songbirds Initiative at the Strategies for Saving Songbirds by Linking *In Situ* and *Ex Situ* Conservation Workshop (further discussed under Workshops) at the the Smithsonian Conservation Biology Institute, where we successfully laid the groundwork for an effort to target critical needs of North American songbirds through a One Plan Approach. The initiative builds on the model of the loggerhead shrike recovery efforts of African Lion Safari, Nashville Zoo, Smithsonian Conservation Biology Institute, and others, as well as White Oak Conservation's successes in conservation breeding of the Florida grasshopper sparrow.

Many next steps identified at the workshop were completed throughout the remainder of the year:

- **Portfolio Development.** Songbirds Champion Sara Hallager (Smithsonian's National Zoo) and Jessica Steiner (Wildlife Preservation Canada) led a scientific process with *ex situ* and *in situ* sub-groups to determine a portfolio of priority songbirds for the initiative. By the end of the year, C2S2 rolled out its initial portfolio of songbirds species, which includes the bobolink, common yellowthroat, eastern meadowlark, grasshopper sparrow, loggerhead shrike, and wood thrush.
- **Communications.**
 - *White Paper.* A white paper entitled Saving North American Songbirds, through Zoo Driven Programs was drafted and circulated to the AZA listserv to encourage zoos to participate in actions to save North American songbirds.
 - *Presentations.* Hallager and Steiner presented at the 2017 American Ornithology Society Conference on behalf of C2S2 about the initiative.
 - *Materials.* C2S2 is working with Wildlife Preservation Canada to make regional versions of their existing Landowners Guide for Loggerhead Shrike, which will be distributed through partner networks to landowners in the species range.



Photo Credit: Wildlife Preservation Canada

- **Shrike Force Expansion.** Loggerhead Shrike Champion Amy Chabot (African Lion Safari) and Shrike Force Founder Tessa Chenoa (Fossil Rim Wildlife Center) presented the case for expanding the Shrike Force statewide at the Texas Master Naturalist Annual Meeting in October 2017. During this visit to Texas, Chabot visited several SPA participant ranches and presented about the Shrike Force at the Dallas Zoo.
- **Motus Towers.** As a result of the workshop at Smithsonian, facilities including Columbus Zoo and The Wilds have successfully sought funding to put up Motus Towers that track the migratory patterns of native birds.

PARTICIPATING FACILITIES



and plan actions that would facilitate achievement of that vision (further discussed under Workshops). The C2S2 Annual Meeting also featured a breakout session focused on red wolf conservation, resulting in action steps for moving the program forward, including production of a film dispelling some of the prominent myths about the species.

- **USFWS Connectivity.** Three representatives from USFWS participated in the workshop at White Oak where they confirmed their commitment to red wolf conservation. The USFWS has added staff dedicated exclusively to the program and indicated that some funds may be available to support program expansion. In response, C2S2 submitted a proposal for program expansion and funding to the USFWS.

C2S2, the Smithsonian Conservation Biology Institute, and the Endangered Wolf Center are moving forward with initial planning for a 2018 red wolf research workshop to bring together experts in conservation breeding and management, ecology, habitat conservation, reintroduction biology, and human factors to identify and prioritize the most critical research needed to support recovery of the species. The workshop will take place at the Smithsonian Conservation Biology Institute in August 2018.

PARTICIPATING FACILITIES



RED WOLVES

Saving the red wolf from extinction and enhancing the success of future reintroduction efforts in multiple states will require a larger captive population than currently exists (growing from 225 to approximately 400 individuals), a spectrum of management intensity (some with near-wild management in large and secure habitats), refinements in husbandry and medical care (including disease surveillance), a concerted public education effort (that includes landowners), and sustained financial support.

Key activities for the red wolf in 2017 included:

- **Space Expansion.** C2S2 surveyed resources available to support expansion of the captive population. In response, nine facilities tentatively agreed to build as many as 40 new enclosures to accommodate up to 252 additional red wolves.
- **Workshop and Working Group.** C2S2 led a workshop prior to the Red Wolf SSP meeting at White Oak Conservation to develop a collective vision for the species



Photo Credit: Endangered Wolf Center



Photo Credit: Megan Brown, Patuxent Wildlife Research Center

WHOOPING CRANES

Having rebounded from near-extinction, the whooping crane is truly representative of a species saved as a result of collaborative conservation. The whooping crane has been called the ‘giant panda of the bird world’ and, at one time, had decreased to only 16 individuals. C2S2 is working within the Whooping Crane Species Survival Plan (SSP) and the U.S. Fish and Wildlife Service (USFWS) to accommodate reproducing pairs now ‘orphaned’ as a result of severe budget cuts - and elimination of the entire breeding program at the Patuxent Wildlife Research Center. C2S2 Conservation Centers White Oak Conservation, Smithsonian Conservation Biology Institute, African Lion Safari, and the Lee G. Simmons Conservation Park and Wildlife Safari swooped in to the rescue when Patuxent Wildlife Research Center had to find new locations for 75 whooping cranes as a result of the funding cuts. Birds from Patuxent will be transferred to these conservation centers where research, breeding, and eventually reintroductions will continue.

PARTICIPATING FACILITIES



Photo Credit: Klaus Nigge, U.S. Fish and Wildlife Service

SOUTHERN BLACK RHINO

C2S2 is partnering with the International Rhino Foundation (IRF) to establish a self-sustaining, globally-managed Southern black rhinoceros population that focuses on breeding, research, exhibition, and (if possible and appropriate) the ultimate reintroduction of animals to the wild.

Working closely with IRF, C2S2 has the expertise to create a new management paradigm to bring diverse partners together, including identifying much needed new space. Together, IRF and C2S2 will continue to capitalize on strengths, including technical expertise to assist with *ex situ* facility design, animal management and husbandry.

The three-year objectives of the SBRSP as developed by IRF with C2S2 are to:

- Develop a long-term, global *ex situ* management plan and its linkage potential to the species living in nature.
- Continue supporting on-the-ground conservation and protection of wild populations.
- Recruit global partners to hold or breed animals.
- Continue to advance husbandry and knowledge of the species.





Photo Credit: Amazon Forever

CAPACITY BUILDING

AMAZON FOREVER

Amazon Forever is a nonprofit organization in Iquitos, Peru that aims to promote conservation of the Amazon through environmental education, positive contact with nature, wildlife rescue, and research. Over the past year, C2S2 has provided consultation and advisory support to Amazon Forever with support from conservation leaders and scientists at the conservation centers and affiliates across the relevant disciplines, including environmental education, business modelling, collection planning, and veterinary health. In June, a 4 person team from Fossil Rim, Smithsonian Conservation Biology Institute and C2S2 visited the 25.4-acre white sand forest (only 0.01% of the Amazon) location - a beautiful and highly rare ecosystem in Iquitos, Peru - where the future Amazon Forever biopark is to be located. C2S2 is developing a business plan for the organization to expand on-site activities at the biopark,

scientific research of species endemic to the white-sand forest, and ecotourism to support the organization's financial sustainability.



Photo Credit: Amazon Forever

ANNUAL MEETING



Photo Credit: Fossil Rim Wildlife Center



At the 2017 C2S2 Annual Meeting at Fossil Rim Wildlife Center, we had our greatest attendance yet, up 55% from 2016. Over 85 representatives from 41 conservation and zoological organizations were in attendance. The goal of the meeting was to bring together stakeholders from a wide range of groups to talk about some of the biggest challenges in conservation today and how our resources can be more effectively applied through unprecedented collaborations. Representatives from the scientific community, private ranches, zoos, and other conservation groups spent the two-day meeting communicating, strategizing, and networking.

Grow-Optimize-Return Sessions. C2S2's survival assurance models each follow a process of growing populations and space; optimizing health, management, and reproduction; and returning animals to the wild. For this reason, the presentations from C2S2 members were organized in sessions categorized as Grow, Optimize, and Return.

GROW sessions focused on leveraging private lands for species conservation and growing capacity for loggerhead shrike and red wolves.

OPTIMIZE sessions included presentations on population modelling, a group composition and movement study, biodiversity at Conservation Centers, and updates on the Southern Black Rhino Sustainability Program (SBRSP) and the Action Indonesia Partnership.

RETURN sessions included presentations on the return of the scimitar-horned oryx to Chad and the behavioral effects of GPS collars on that species; native species projects at Taronga Conservation Society Australia and the Wilds; and whole-ecosystem efforts including plant biotechnology, biodiversity, and land stewardship.

WORKSHOPS

C2S2 conducted several workshops with key stakeholder groups and partners throughout 2017.



Strategies for Saving Songbirds by Linking *In Situ* and *Ex Situ* Conservation. In February, thirty experts and stakeholders in conservation breeding and management, songbird ecology, and habitat stewardship collaborated during a multi-day workshop at Smithsonian Conservation Biology Institute in Front Royal, VA. Peter Marra, director of the Smithsonian Migratory Bird Center, provided the context for the workshop with a presentation on the *In Situ* Status of North American Songbirds, including their decline and status, open questions, needs, and challenges. Key topics of the workshop included identifying the most pressing needs of the North American songbirds that could be addressed through *ex situ* activities, refining criteria for choosing focal species, and creating an action plan using the IUCN Guidelines on the Use of *Ex Situ* Management for Species to develop the action plan for implementation of the initiative.



New Paradigms for Creating Sustainable Populations. In May, C2S2 CEO Katy Palfrey and Director of Animal Management Dan Beetem of The Wilds traveled to Australia to lead a workshop attended by 25 professionals at the Zoo and Aquariums Association meeting, coordinated by Taronga Conservation Society Australia. The workshop focused on the approaches C2S2 is taking to create sustainable populations of native and non-native species *ex situ* linked to their wild counterparts and discussion of whether similar approaches could benefit species sustainability efforts in Australia. The workshop and the conversations at Taronga and ZAA opened up new opportunities for connectivity and collaboration, and produced a new member in Monarto Zoo.



Partnering to Build Capacity for the American Red Wolf. In July, twenty representatives from the USFWS, Conservation Centers, private sector partners, NGOs, and zoos interested in building capacity for the recovery of red wolves participated in a one day workshop at White Oak Conservation. The workshop was comprised of presentations, analytical exercises, and discussions designed to assess the current situation, explore desired outcomes, and chart pathways to achieve common goals for the red wolf. The analytical frameworks used included a SWOT analysis (Strengths, Weaknesses, Opportunities & Threats), PEST analysis (Political, Economic, Social, and Technological factors), and a visioning exercise creating an ideal future for the red wolf and working backwards. The workshop concluded with a Q&A session with USFWS and identification of priority action steps.

FINANCIAL REPORT

REVENUE

Annual Meeting - Registration Fees	\$15,932
Donations & Grants	\$203,382
Membership Dues	\$207,888
Consulting Services	\$30,150
Program Income	\$28,400
Other Revenue	\$3,082

TOTAL REVENUE \$488,834

EXPENDITURES

Charitable Contributions	\$ (5,212)
Program Costs	\$ (42,407)
General & Administrative	\$ (43,466)
Salary & Benefits	\$ (270,345)
Travel	\$ (40,993)

TOTAL EXPENDITURES \$ (440,723)

NET REVENUE \$49,612



Photo Credit: Sean Palfrey at Austin Savanna

BUILDING HEALTHY, ADAPTABLE POPULATIONS FOR THE SURVIVAL OF SPECIES



Photo Credit: Jason Ahistus at Fossil Rim Wildlife Center



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FOR SPECIES
SURVIVAL

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