PsittaScene

Magazine of the World Parrot Trust

Winter 2021

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World Parrot Trust

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ABOUT THE WPT

Capture for the live-bird trade, habitat loss and other factors put wild parrots at risk. Nearly 30% of all parrot species are considered by IUCN to be at risk of global extinction.

As an international leader in parrot conservation and welfare, the World Parrot Trust works with researchers, in-country organisations, communities and governments to encourage effective solutions that save parrots.

Since 1989 the WPT has grown to become a global force that moves quickly to address urgent issues and support long-term projects. Over that time WPT has led or aided conservation and welfare projects in 43 countries for more than 80 species of parrot.

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ON THE COVER

Photo © **Mats Lindberg** / Alamy Stock Photo

The **Red-lored Amazon** *(Amazona autumnalis)* has a range that extends from Mexico south through Honduras to Colombia and Venezuela. It is threatened by habitat loss and illegal trade in Mexico and Venezuela. In Belize, where trapping also occurs, one rescue centre has made a pledge to save as many from trade as possible.

Learn more in ***Finding Calm Amid the Chaos,*** Page 5.

a message from...

the Editor

A great deal of our conservation work involves tackling the illegal trafficking of wild parrots. It's a complicated effort that the WPT has been at for decades, involving everything from supporting the recovery of confiscated birds to campaigning for laws to protect them.

It's a moving target, constantly changing. A new and worrying trend has seen these parrots being secretly traded online. This may sound straightforward to monitor and police but it's not, as you'll find out with the article, *"Caught in the Web: Untangling Social Media and the Illegal Parrot Trade."* The dealers have become more clever but fortunately we've been evolving with them by using what they use: social media and in our case, a lot of ingenuity.

Our field collaborators involved with rescuing these birds have been busy, in some cases swamped: partner Belize Bird Rescue typically has hundreds of parrots and other avifauna that they need to care for every year, as you'll see. And we've helped out with more Grey Parrot confiscations in Democratic Republic of the Congo alongside a number of dedicated in-country and international partners.

To wrap up this issue, we dig deep into a busy Amazon breeding season on Bonaire and learn about parrot demography, which helps scientists determine the health of a parrot population by monitoring births, deaths and other characteristics of a specific group over time.

The ways to help parrots are as varied as the birds themselves. As long as there are parrots in need the WPT will continue to explore and trial new ways to help save them. It's in our nature and in the best interests of these remarkable birds.

Desi Milpacher,
PsittaScene Editor

Black-cheeked Lovebird, Zambia © Denja1, Getty Images

Finding Calm Amid The CHAOS

Article and photos by Nikki Buxton, co-founder and Managing Director of Belize Bird Rescue

I am often asked how the pandemic has affected Belize Bird Rescue. My mind returns to the quote *"in the middle of my chaos, there was you.*"*

The birds don't know. And I intend to keep it that way.

**Paullina Simons, The Bronze Horseman*

We've been blessed with some extraordinary support from our donors over the last 18 months. Our small on-site guest house closed along with so many others in March of 2020, and since then we have relied entirely on those donations. In April of 2021, we were overjoyed when we reached funding levels that enabled us to re-employ our loyal staff and return to a kind of operational normality. We constantly repeat how grateful we are, but words fall far short of the depth of feeling.

Our rehab year follows a predictable pattern. Belize's breeding season starts as early as March through late August. In April and May, we can expect hatchlings and nestlings confiscated from poachers or homes, or those 'rescued' from captivity by members of the public (we don't ask!), plus the occasional genuine tree-felling incident. As the season progresses, we hear from those who have chicks, but through inappropriate care the birds are now sick or injured and the owners wish to give them up.

Hundreds of birds of various ages, species and health status are cared for at the centre each year.

Thankfully, we balance our frustrations with these circumstances with the sheer joy of the new babies appearing around the centre, hatched in the wild by our released rehabilitated parrots, often with wild partners.

Around September we start getting the many calls to 'fetch Polly' who used to be a sweet little nestling and is now biting and no longer cute. If we're lucky, the parrot is of a healthy size and weight and his wings are intact.

We are seldom lucky.

Throughout the year we receive surrenders and Forest Department confiscations of any of the nine local species, any age, and any condition. We're often called to capture an escaped pet that has randomly turned up at a home or public building. These rescues bring the best stories as many are chatty, confident birds causing chaos. One of my favourites is that of a Red-lored Amazon *(Amazona autumnalis)* we named Pepperoni, who spent a happy few hours in a Belize City school mobbing the children and stealing their pizza.

Our biggest rehab challenge is poor feather condition and wing clipping, as it's at least a year before they are able to join their rehab flock. These compromised birds naturally lack confidence and are often bullied by flighted birds, damaging growing feathers and causing psychological harm in the process. Recently we have recognised the necessity to confine them to small groups of birds with restricted movement in order to protect the delicate regrowth. As more feathers grow in we combine the groups, increasing the enclosure size until they have the confidence and ability to enter the large flight aviary with the rest of the flock.

Making this strategy effective required considerable expansion of our enclosures, and over the last 12 months, thanks largely to the amazing generosity of World Parrot Trust supporters, we have carried out major refurbishments, perfecting the predator exclusion and refining enrichment opportunities for the less able birds.

Another condition we encounter all too regularly is sour crop, usually caused by a 'masa' diet: the local corn flour used to make tortillas. The flour is moistened, rolled into tiny balls and tossed down the throat of the begging babies. Needless to say, this rarely ends well for the parrot. My crop-washing and treatment skills have been honed over the years thanks to some fabulous training from visiting avian vets.

Amazon parrots are some of the most frequently rescued and rehabbed birds.

Our worst-ever cases of such a diet arrived this year. What we thought were week-old hatchling White-fronted Amazons *(Amazona albifrons)* were actually nestlings over a month old which had barely developed. The youngest baby did not survive, despite our best efforts, but thankfully the older two did. As anyone who has taken in a rescue bird will know, improvements can be swift and dramatic given the right conditions. Their poor start may have stunted their growth, but not their spirit. These little guys have attitude to spare and are always first in line at feeding time.

One of my frustrations this year has been with Candy, a 6-year old Red-lored Amazon. She came to us as a fledgling with the worst *Candida albicans* fungal infection we have ever seen. She was practically starved to death with her mouth so full of lesions we could barely get the tube in to feed her: another victim of the flour-based diet. After several months of treatment, the yeast deposits fell away leaving a large hole in the roof of her mouth. Every year, this open passage to her sinuses re-infects. She approaches us in the aviary when she needs help, we bring her inside to treat her and she takes her meds like a small child. She has totally stolen my heart.

This year we have discovered a resistance to the medications, and 5 months later are still battling her condition. It's cases like Candy's that make me even more determined to stamp out this local trade in wild-caught birds. Of course, there's criticism: 'People all over the world have pet parrots, why can't Belizeans? Many Belizeans rely on the local parrot trade to fund their children's schooling or put food on the table, why would you take that away from them?' They are valid arguments. But then I think about birds like Candy, and I say "It's not about you. Not this time."

When we started Belize Bird Rescue in 2004, we were up against a deeply ingrained culture of parrot poaching and keeping, and a total lack of enforcement of the wildlife laws. Over time, relentlessly pushing education and awareness and enabling enforcement, we have seen a decline in illegal activity to the point where reports of captive parrots are rare rather than commonplace.

We can't know how long these extraordinary times will last, but my mind turns to yet another quote, "all great changes are preceded by chaos." (Deepak Chopra). At Belize Bird Rescue, we recognise that a change in attitude and behaviour is pivotal to stopping the local trade in wild-caught parrots.

Every rescue and every release sends a vital message to the public, and moreover, makes a world of difference to that individual bird. We can't save them all, but we are determined to save most of them.

Learn more about the work being done at Belize Bird Rescue by visiting their website:
www.belizebirdrescue.org

Congo Journey:
Working together to give Grey Parrots a second chance in the DRC

by Rowan Martin, PhD, WPT Africa Programme Director

On the 6th of September 2021, 60 African Grey Parrots *(Psittacus erithacus)* were far from their home of the lush African forests; instead, they sat on a dusty runway in the remote town of Lodja in Sankuru province, Democratic Republic of Congo (DRC).

The once wild parrots were going to be flown to Kinshasa, the capital of the DRC, from where they would have been illegally exported to the Middle East and sold as pets or "breeders" on the international pet market.

Unfortunately, this is an all too familiar tale. The practice of capturing wild African Grey Parrots and exporting them to sell on the international market has meant that hundreds of thousands of them have had to endure a similarly harrowing experience.

Sadly, this archaic practice was until recently permitted under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) with DRC a leading exporter of wild African Greys. Although international trade is no longer permitted, traffickers still attempt to get wild parrots out of the country by exploiting weaknesses in permitting systems and border controls.


© Conserv Congo

Fortunately, investigators working with Conserv Congo were quick to act, working with local law enforcement to rescue the parrots from their gloomy future and arrest the perpetrators. The shipment was accompanied by a confusing array of papers, including falsified CITES permits for another species, Jardine's or Red-fronted Parrot *Poicephalus gulielmi*, which can still be legally trapped and exported.

The laundering of Grey Parrots as Jardine's has been highlighted previously[1] by the World Parrot Trust. As a result quotas for this species were reduced, but incidences such as this reinforce the need to immediately end the legal trade in all wild parrots from the region[2].

Thanks to our *FlyFree* programme, which helps parrots seized from trade, we were swiftly able to get vital funds and practical advice to the people on the ground to help stabilise the birds. As is typical for African Greys, the wing feathers had been cut so they couldn't fly away – this meant a long-term plan was needed. We began working with regional partners to find a way to get the parrots to a safe environment where they could receive the care they need. It will take several months before they can be rehabilitated and returned to the wild.


© Conserv Congo


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The nearest rescue centre with the capacity to care for these birds was hundreds of kilometres away.

An impressive team effort to get the parrots to their new home commenced involving the Institut Congolais pour la Conservation de la Nature (ICCN), Lwiro Primate Rehabilitation Centre (CRPL), Frankfurt Zoological Society (FZS), Conserv Congo and the World Parrot Trust, with everyone rising to the occasion and going above and beyond.

But tragically, on their second night in Lodja, the compound where the parrots were housed was broken into and around half of the parrots were stolen. It was clear that the parrots were not safe and needed to be moved to a secure location as quickly as possible. The 28 remaining parrots were placed into purpose-built transport containers on the back of three motorbikes and sent on a tough 400km journey. A journey by motorbike was the only option due to the extremely poor state of the roads. It took the team three days of careful riding, navigating fallen trees, checkpoints and river crossings to reach Kindu.


© ICCN

Once in Kindu, the parrots were handed over to the ICCN and Frankfurt Zoological Society where they joined another group of 14 Grey Parrots and a lone baby chimpanzee, also recently seized from traffickers.

The parrots were then transferred by plane to Goma where they were met by CRPL and embarked on a ferry trip the length of Lake Kivu before finally settling in a quarantine facility at Lwiro. Despite all else, the 28 parrots that left Lodja all survived the perilous journey, a clear testament to the commitment of everyone involved.

The parrots will now undergo individual health checks and begin their rehabilitation for eventual release to the wild. WPT would like to say an enormous thank you to the many people involved in these efforts who always put the parrots first.

1. Tricks of the Trade—legal trade used to conceal Endangered African grey parrots on commercial flights**: tinyurl.com/njchptyw**

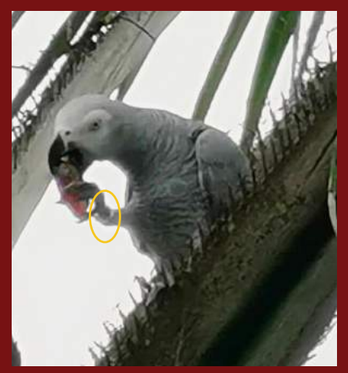
2. WPT Blog: Good news for Red-fronted Parrots**: tinyurl.com/vkve4t2**

Previously released Grey Parrots now being spotted by locals

Update: In November 2020, 39 Grey Parrots seized from traffickers and rehabilitated with the support of the World Parrot Trust flew free over the forests of Kahuzi-Biéga National Park in eastern Democratic Republic of Congo (DRC).

This was the first soft release of Grey Parrots in the DRC and had high levels of support being attended by the Deputy Governor of South Kivu Province and the Provincial Director of the ICCN. For several months following the release, food continued to be placed at feeding stations adjoining the aviary while the parrots were given an opportunity to explore the surrounding forest. These parrots had been trapped from the wild and still maintained their wild instincts and knowledge of how to survive. Gradually over time the parrots visited the feeding station less and less frequently and after several months supplementary feeding was stopped altogether. Rangers in the park occasionally encountered the cheerful whistles of the parrots but the rugged landscape, thick forest and security issues prevented systematic monitoring of the released birds. All of the released parrots had been marked with a small steel leg ring so that they could be identified. The release was accompanied by a radio campaign on the local media to raise awareness about the release, foster local pride and communicate messages that these birds belonged in the wild. Local residents were on the lookout to spot these parrot celebrities.

This strategy has paid off and in October 2021 a local hotel owner in the nearby town of Bukavu proudly sent a photo taken of one of the released parrots that had found its way to their garden to feed on the palm fruit. Bukavu is close to 20km from the release site. Flying such a distance is not unusual for Grey Parrots, but information like this is vital for understanding how these parrots have adapted to their new landscape. It's also good to know that these parrots have friends looking out for them as they experience life in the wild again.



THE BIRDS AND THE BEES:

MONITORING THE YELLOW-SHOULDERED AMAZON 2021 BREEDING SEASON

Article and photos by Sara Remmes

I exhaled as we reached the top of the cliff face at Roi Sangu. We still had several hundred meters until the nest, but at least our ascent would no longer be a straight vertical climb. I leaned down to pull out the cactus paddle that had inserted itself into my calf when I heard my field partner Wewe who was ahead of me exclaim, 'Mira, beas!' ('Look, bees!').

Our conversational interactions consisted of a combination of Papiamentu, the native language on Bonaire, and Spanish. Usually, the translation would take a moment in my head to process, but this statement required no such pause. I glanced up to the sight of a colony at least 1000 bees strong swarming in a giant ball advancing quickly towards us.

He had already dropped to the ground, but I urgently signaled that we needed to get lower, and pulled him into a deep indent in the limestone next to me, barely fitting with our backpacks full of gear that we had no time to strip off. When bee colonies require a new location for the hive, they often swarm in large numbers to search for an adequate cavity, the behaviour exhibited that we were most likely experiencing now.

The air that was usually filled with the harsh calls of thrashers and loras was now completely dominated by the sound of thousands of wing beats. Both of our eyes tracked the vibrating mass as it approached within inches of our heads, at the last moment taking a sharp right turn down over the cliff ledge into the valley. Exhaling slowly, I laid my head back against the rough limestone slab behind me, "Roi Sangu", I said out loud as Wewe wiped the sand from his arms laughing, "it's always Roi Sangu".

The Yellow-Shouldered Amazon *(Amazona barbadensis)* is a charismatic species found on the island of Bonaire that has been classified as Vulnerable to the threat of extinction by the IUCN (Birdlife International, 2017.) The resilience of their current population relies on the availability of cavities in old trees and limestone cliffs for nesting. Despite the climatic challenges, the Yellow-Shouldered Amazon has found a way to adapt and thrive in the harsh terrain of Bonaire's unique dry-forest habitat. Studying the reproductive biology of this species is a job that requires immense amounts of patience, endurance, and a skill for removing cactus spines from all of one's available extremities. Our main objectives upon entering the 2021 Yellow-shouldered Amazon breeding season included determining the number and location of active nests, quantifying nest success, and evaluating the current level of poaching activity impacting the population.

The breeding season initiated within the expected timeframe, with the onset of egg laying taking place at the start of May. Every monitoring session included the discovery of at least one new active nest, while prospecting pairs were documented investigating cavities for utilization in the following seasons to come.

The tenacity and vicious territoriality of the species was almost admirable. You didn't have to *hear* their vocalizations to understand what was being communicated, the fanning of their bright, yellow-tipped tails could be seen across the valley. More than once, I observed individuals locking claws in the air and crashing down through the canopy, unwilling to let go.

Twenty-five nests confirmed as active were distributed between seven breeding sites, with clutches ranging from 2-5 eggs. Field work was conducted twice a day during the periods of sunrise (05:00-09:00) and sunset (16:00-19:00), five days a week. Cavity inspections were performed with high levels of caution until the eggs hatched, and the behaviour of the individual breeding pairs was better understood. Twenty trail cameras were placed at nests identified as being at high risk of poaching, and opportunistic behavioral observations were continued in order to locate additional hidden nesting cavities.

Nest failures did not begin until the early-nestling stage was reached (1-2 weeks of age). The threat of the growing feral cat population became evident at this point when during consecutive depredation events, two nests lost both the young and the incubating females. Incidentally, nests that contained four nestlings were observed to persist without the presence of brood reduction, or loss of chicks, indicating that food resources were not a limiting factor for the breeding pairs. Once the chicks reached the appropriate age and level of development (three weeks), they were banded and health inspections were performed. However, the number of chicks banded did not reflect the number of chicks fledged due to the complexity and inaccessibility of many of the cavities. Many of the nest cavities extended deeper than nine feet (> 3 meters), resulting in the nestlings never being located. Their existence and date of fledging were determined through the use of trail cameras set up at the entrance.

The onset of poaching activity corresponded with the period directly prior to fledging in mid-July. Addressing this new challenge brought a level of complexity to the field work that I'm not sure anyone was prepared for. It had been over a decade since the level of poaching activity had been comprehensively assessed, and I was told with confidence that no person would raid the nests at our closest field sites, the locations that I traversed almost daily. We were immediately proven wrong. Poaching activity was detected at five of the seven nesting sites and resulted in at least four chicks confirmed removed from the wild population.

Images of men traversing the cliffs in search of chicks were constantly filling the SD cards I analyzed each night. Revealing the faces and subsequent identities of those who had once gone unseen. Whispers travelled across the small community in the bars at night and across family dinner tables, speaking caution to men who considered poaching through the bush. Despite the current lack of police enforcement, the prospect of being caught was still an uncomfortable thought, enough to cause the most confident of individuals to act vigilant while weaving through the never-ending stands of cacti.

Fledging began in the middle of July, with the remaining chicks gradually leaving their nests over the course of the next month.

Below: *Examining a healthy, well-fed nestling.*
Opposite page, top: *A youngster is weighed during an inspection.*
Opposite page, bottom: *Two bright-eyed chicks in full feather.*

Of the fifty-six nestlings that hatched, forty-three survived to successfully fledge. The average number of chicks fledged per nest was 1.72, with the success rate averaging at 72% for the total population.

One unexpected milestone achieved during the season included the successful transfer of a rejected nestling to a new breeding pair. This challenge involved five days of intensive fluid therapy and force feeding to bring the emaciated nestling back to an acceptable weight. Once the chick was stable, then came determining the nesting cavity with the highest possibility of success based on the following factors: breeding pair behavior, clutch size, and level of chick development.

I could barely feel my exhaustion with the level of adrenaline I experienced the day I rappelled down the cliff to transfer the nestling, its soft begging call audible through the cloth bag hanging around my neck where it was safely tucked inside. I remember taking a final glance after the transfer while slowly pulling my hand out of the cavity - its new sibling was hardly enthusiastic about the introduction of an additional mouth to share food with. The risk was calculated and luckily paid off, with the new breeding pair not only accepting the transferred nestling but fledging both chicks successfully.

Despite the positive findings from our fieldwork, there remains large uncertainties as to how the Yellow-shouldered Amazon will fare with the continued threats of poaching, deforestation and increasing invasive mammal populations. The 2021 season gave our team a glimpse of what influences the survival and overall success of the breeding pairs that utilize the vast limestone cliffs that shape the island of Bonaire. With all of the ambiguities, only one factor is certain: the diverse cacti communities will continue to flourish within this landscape, and behind those cacti, there will be bees.

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About the Author:
Sara Remmes, BSc, MSc is a conservation biologist who has specialised in studying the reproductive biology of critically endangered parrot species.

She has led field research in countries including Costa Rica, Puerto Rico, and Bonaire. When Sara isn't hanging from a tree, she immerses herself in the beautiful ecosystems she calls home.

A DEMOGRAPHER'S ADVENTURES IN THE FIELD

The challenge of missing data in parrot demography

Article and photos by Tamora James

It was a running joke in the group in which I was a PhD student that as demographic modellers, we never strayed far from our computers and would be very unlikely to be found "in the field". Nevertheless, the idea that it was a good thing to see your study species in its natural setting was occasionally mooted, and it took root at the back of my mind.

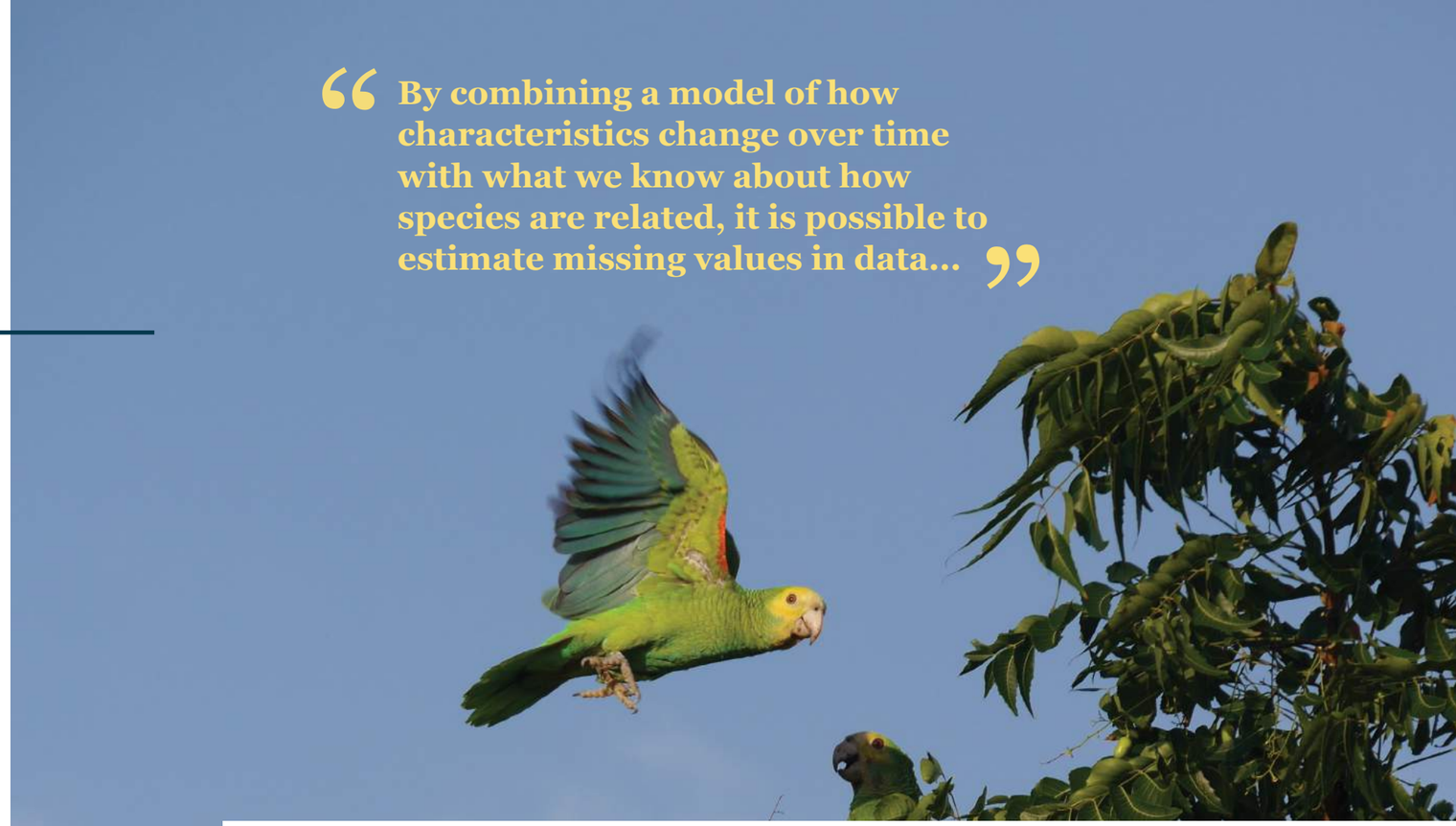
Demographic modelling is concerned with representing the size and structure of a population through the processes of births and deaths. This approach provides a link between individuals and populations and has many applications in conservation decision-making, from guiding population management to informing estimates of species' conservation status.

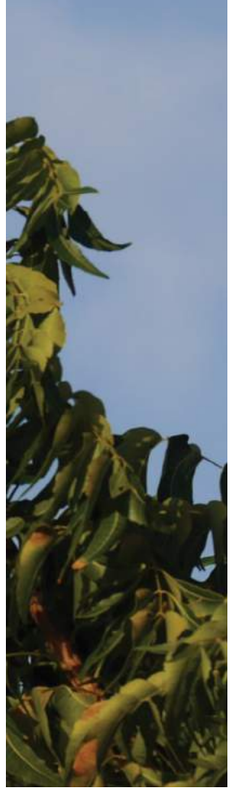
However, it is dependent on the availability of reliable data on who is reproducing, when they reproduce, how many offspring they have and when they die. When these data are missing, incomplete, or biased, as is often the case for species of conservation concern, demographic modelling outputs become less certain and our predictions less precise.

I had begun my PhD at the University of Sheffield in 2015, supported by the World Parrot Trust, with the aim of investigating the demography of the Yellow-shouldered Amazon *(Amazona barbadensis)* and exploring how the patterns of births and deaths of this species influence its vulnerability to threats such as poaching and habitat loss. It quickly became apparent that this study would be hampered by the lack of data at many stages of the species' life cycle, despite the valuable collection of data on the breeding biology of Yellow-shouldered Amazons on Bonaire gathered by previous doctoral researchers Dr. Sam Williams and Dr. Rowan Martin.

The focus of my research rather naturally turned to negotiating the challenges associated with these sparse data. Were there different ways of obtaining information about a species' population size and structure, such as drawing parallels between species with similar

"By combining a model of how characteristics change over time with what we know about how species are related, it is possible to estimate missing values in data..."





life histories or refining estimates of demographic parameters by looking at data for other species? I began to think about Yellow-shouldered Amazons not as parrots but as long-lived, slow-maturing, strongly pair-bonded birds, with similarities not only to other large parrots but also to other birds with similar characteristics, such as seabirds.

In the midst of all this theoretical musing, what had seemed a remote prospect – actually seeing the birds – suddenly became a reality: in January 2018 I found myself on a plane heading for Bonaire, a week ahead of the annual roost count on the island. I had been invited to visit the Echo Bonaire project and take part in the annual census of Yellow-shouldered Amazons. I jumped at this chance to meet the parrots and to contribute in a small way to the understanding of their fortunes. Who says demographers can't go to the field?

My first stop on reaching Bonaire was the Echo Bonaire headquarters at Dos Pos, where I talked to project manager Quirijn Coolen about the data the project held, what they were able to collect, and the challenges they faced in putting their data to use in terms of people power and expertise. The story was a familiar one to conservation projects: with limited staff and a workforce of volunteers, there was little opportunity for the methodical data gathering required for scientific analysis. Resources were targeted towards practical interventions: nest-site monitoring, public awareness and education, and native reforestation. The annual census was one of the only opportunities for measuring the project's success.

The annual roost count survey aims to provide an estimate of the size of the Yellow-shouldered Amazon population on the island. Volunteers stationed at previously identified communal roost sites count the number of birds leaving the roosts at dawn. This provides a lower bound on the population size, allowing the Echo Bonaire conservation team to assess the status of the population.

While numbers naturally fluctuate, a generally increasing trend over recent years is suggestive that measures that have been carried out since the project was founded in 2010 have been effective in increasing the population size, which was as low as an estimated 300 birds in the late 1990s.

However, even with this data set, there is uncertainty over population numbers which arises due to the shifting spatial location of the parrot roosts and biases associated with different observers.

What this annual time series data also lacks is information about the structure of the population. It can't tell you how many male and female birds make up the population or the balance of non-breeding juveniles to adults. This information is "cryptic" in the case of the Yellow-shouldered Amazon, because both sexes look alike, as do adult and juvenile birds. However, in a long-lived and late maturing species such as this, information about these features of

Rincón is surrounded by a network of paths and fields known as *kunuku* which are good foraging areas for parrots.

population structure can be vital to understanding long term population trends and planning long term management. Furthermore, calculations that underlie measures of conservation threat status, particularly the IUCN's Red List of Threatened Species, rely on estimates of adult population size and the rate of population turnover (i.e. generation time) to measure a species' vulnerability to extinction.

This knowledge gap is where demographic modelling can play a part. With accurate estimates of rates of reproduction and mortality and the schedule on which individuals mature to the breeding population, demographic model outputs can produce estimates of the split between different life stages in the population. Demographic modelling techniques can also be used to explore how the ratio of males to females in a population might affect its rate of increase.

Once again this brings us back to missing data. While we have information about rates of reproduction and pre-fledging survival in Yellow-shouldered Amazons, our knowledge of survival of the species in the wild is pretty much non-existent due to the difficulty of tracking individuals throughout their lifetime. In other long-lived birds such as seabirds this is done by placing non-invasive markers (rings) on individuals and recording when the individual is re-sighted throughout its life (or death).

Parrots can be difficult to mark in this way since their beaks are the perfect tool for removing such accessories!

This problem motivated me to investigate how we could obtain survival estimates for species such as the Yellow-shouldered Amazon using data gathered for other more well-studied species. This approach is often used in an ad-hoc way, with missing data being replaced by an estimate for a related species. I wanted to formalise this process by applying what we know about how species evolve over time to produce better founded estimates of missing demographic data such as survival rates.

As species diversify over evolutionary time, biological characteristics which started off identical become more and more distinct due to random changes in genetic material. The result is huge diversity across the tree of life, from morphological characteristics such as body size or wingspan to demographic characteristics such as survival and reproduction rates. Relationships among species can be established by analysing molecular differences in genetic material and other cues such as the fossil record to estimate the time since species diverged. Such a representation is known as a phylogeny. By combining a model of how characteristics change over time with what we know about how species are related, it is possible to estimate missing values in data such as body size. I wanted to determine if this method, known as phylogenetic imputation, would work for demographic characteristics such as survival rates.

First, I gathered demographic data for birds published in the scientific literature, which produced a sample covering a wide range of avian species including seabirds, raptors and songbirds. I combined the demographic data with additional data related to demographic characteristics, such as body size. To establish patterns of relatedness among the species in my sample, I used a comprehensive avian phylogeny based on molecular and fossil record data.

With this combined data set, I tested whether demographic information missing from the data could be reconstructed by phylogenetic imputation. The results were promising: with knowledge of phylogenetic relationships between species, estimates of adult survival could be recreated fairly accurately. This finding indicates that phylogenetic imputation could be a means of producing survival estimates for use in demographic models. While the procedure itself relies on accurate demographic data, data for species which are better studied and more tractable to long-term monitoring can be used to bridge gaps in our knowledge for species of conservation concern such as the Yellow-shouldered Amazon.

Back on Bonaire, I joined in efforts to identify additional parrot roosts in advance of the annual count, which prompted me to explore the network of paths and fields around the village of Rincón trying to spot parrots as they moved through the landscape. On one memorable evening a group of around thirty Yellow-shouldered Amazons flew into a tree alongside the path where I was walking and I spent a happy twenty minutes watching them feed before they flew off to roost. At the pre-roost count meeting I met fellow volunteers Peter, Tommy and Monica with whom I would look out for parrots on the day of the count. Frustratingly, I had not been able to identify a roost on the outskirts on Rincón so on the morning of the count we positioned ourselves on high ground east of the village to give ourselves the best chance to see any parrot movements.

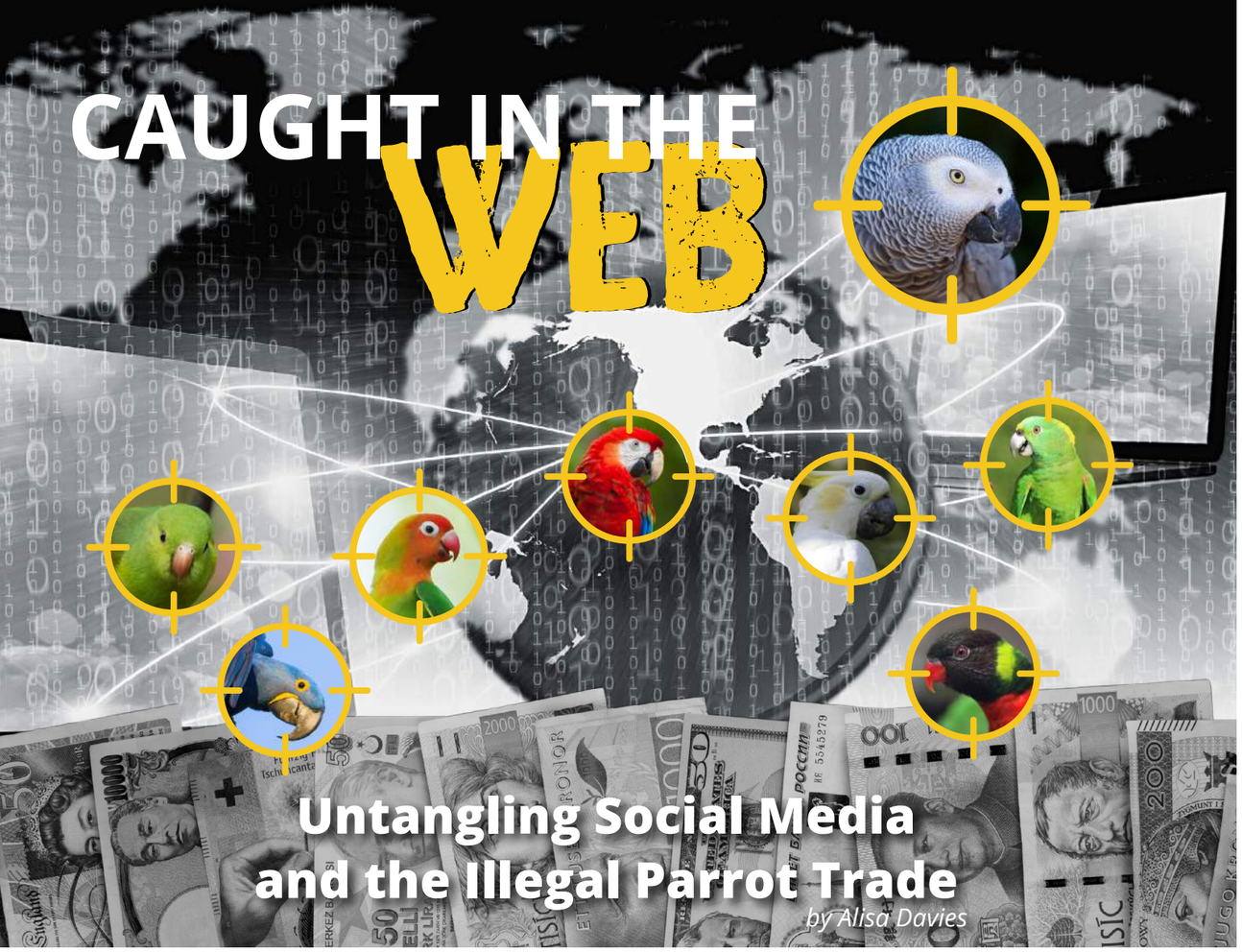
While the others looked out across the fields towards Rincón, I scrambled up to the ridge and looked north towards Onima. Just when it seemed that there was no hope of seeing anything I spotted movement below me. A group of twenty or so parrots appeared from trees alongside the road, flying in the direction of Rincón. It was a fantastic way to end my week on Bonaire as a demographer in the field.

James, T.D., Salguero-Gómez, R., Jones, O.R., Childs, D.Z. and Beckerman, A.P. (2021), Bridging gaps in demographic analysis with phylogenetic imputation. *Conservation Biology*, 35: 1210-1221. https://doi.org/10.1111/cobi.13658

About the Author

Tamora James

Tamora James is a software developer and researcher with an interest in using demographic methods for conservation. She currently works as a Software Development Scientist at the Centre for Environmental Modelling and Computation, University of Leeds where she supports researchers with their research software outputs.



Untangling Social Media and the Illegal Parrot Trade

by Alisa Davies

When I began working for the World Parrot Trust in Autumn 2020 I had no idea what the next year would bring. In that time, we have expanded WPT's trade programme in new directions, met with government officials and engaged directly with international import authorities. Nor did I know of the shocking reality of social media platforms, which I had used so heavily growing up, when seen through the lens of wildlife trade.

West African Birds and Where They're Going

My journey began with my Masters dissertation, which was supervised by Dr. Rowan Martin, Director of WPT's Africa Conservation Programme, Dr. Ana Nuno, at the University of Exeter and Dr. Amy Hinsley at the University of Oxford. Following on from previous research by WPT, our objective was to investigate the international trade in birds from West Africa using social media. Platforms such as Facebook, Instagram and Whatsapp mean that it now takes only minutes to advertise wildlife for sale and connect with consumers and other traders all around the world.

While the pandemic completely changed many of my friends' projects, social media was still available to me from home. Over spring and summer, I recorded over 400 posts by traders in Mali, Guinea, and Senegal. All together, we identified 83 species, including African Grey Parrots *(Psittacus erithacus),* Timneh Parrots (*Psittacus timneh*) and Senegal Parrots (*Poicephalus senegalus*). Multiple species were often kept together in crowded enclosures, posing both welfare and disease concerns. By analysing comments, we were also able to identify that interest in trade was coming largely from the Indian subcontinent and the Middle East.

While collecting data, we noticed something curious. Many posts only showed photos or videos with no obvious 'for sale' advertisement. This was concerning. Many studies looking at wildlife trade on social media tend to search for key words, such as 'parrot', 'ivory' or 'for sale'. What if current monitoring approaches were missing these posts? And how else could someone identify a wildlife trade post? To explore these questions, we analysed each post for information that could be used to infer wildlife trade. For example, did the page's name mention wildlife import/export? We found that in our sample, only 19.7% of posts advertised a sale and only 23.8% included species or taxa names. In order to detect this 'hidden' content, researchers and companies need to work with experts to triangulate different types of information in the post and from other posts by the same user. These findings and recommendations for researchers, platforms and regulators were recently published in the journal *Conservation Biology*.

Tracking Online Trade

Following on from this project, I took on a larger role supporting WPT's work on the international parrot trade. One of the first major projects was to analyse how trade in wild African Greys has changed over time. Previous investigations by WPT and World Animal Protection identified illegal trade routes and led to action by airlines and CITES Parties to address illegal trade. Reports from the field indicate trapping and trade has been much reduced since international commercial trade in wild Grey Parrots was prohibited by CITES in 2017, and we wanted to find out if online activity could shed further light on the situation. The study revealed a dramatic reduction in the volume of publicly visible trade activity promoting wild Grey Parrots, especially since 2018. Between 2018 and 2020, there was no activity at all from former exporters. However, a small number of importers remained active, particularly in Libya and Iraq – information which is helping to direct ongoing efforts. These results are very encouraging and highlight how stronger regulation of international trade can be critical for the conservation of parrots in the wild.

Sadly, we were still witnessing hundreds of wild parrots of a diverse range of species being offered for sale in distress and poor condition. Accurately determining whether a post involves illegal trade can be very challenging but fortunately, members of our team have years of experience in aviculture dealing with both captive and wild birds. Together, we have been finding new trading pages and groups and gathering evidence of ongoing illegal trafficking. We are currently exploring opportunities for supporters of WPT to help us identify harmful and illegal trade on social media, so keep your eyes open!

From Virtual Insight to Real-World Action

Of course, we wanted to take action with this knowledge. In the last 12 months, we have been actively involved in multiple collaborations aimed at disrupting the illegal parrot trade using information gathered online.

Engaging with Platforms – Equipped with knowledge of trade happening on their sites, we approached and formed relationships with social media and classified ad platforms. As a result, we now have a direct line of communication with Facebook's wildlife trade team and are able to report posts, accounts and groups featuring harmful wildlife trade that violates Facebook's community standards. We have also engaged with multiple classified ad sites selling wildlife in Africa, including Africa's largest tech company Jumia, following a report into the parrot trade on Africa-based platforms produced by WPT and GITOC (Global Initiative against Transnational Organised Crime). Jumia and other platforms have taken action to remove thousands of ads for parrots we detected, and implemented moderation practices to prevent their platforms from being abused by traffickers, and is currently working with WPT and GITOC to develop a new wildlife trade policy.

Before I visited the Kiwa Centre, I had never realised that wild African Grey Parrots were such wonderful whistlers. It was a warm, sunny day in September when I visited the centre and met the 200 or so rowdy, rescued macaws and Grey Parrots for the first time. I had seen plenty of Greys in the previous months while scrolling through Facebook. However, they were usually either tame and mimicking, or wild-caught and screeching. Seeing for the first time how they might behave in the wild, even just a glimpse, was a deeply moving experience that put the last year's work in perspective.

Informing Authorities – In partnership with GITOC and ACCO (Alliance to Counter Crime Online), we aggregated what we had learnt and created a *typology* of the online parrot trade. A typology breaks down an issue into types or categories. Ours describes the ways social media is involved in the Grey Parrot trade throughout the trade chain, from trappers through to middlemen, wholesalers and retailers, and highlights opportunities for disruption. This typology can be provided to authorities and financial institutions to assist them in taking action on illegal trafficking.

Illegal Offline, Illegal Online

All of our investigations over the last year have highlighted a larger problem. It is one that the Alliance to Counter Crime Online (ACCO) have made it their mission to address: social media companies are not taking responsibility for illegal and harmful content on their platforms. This was made shockingly clear in October with the major leak of internal company research and policies. While I was superficially aware of this in the past, being actively involved with ACCO has been truly eye-opening. In a report published in 2020 about wildlife trade, they found hundreds of groups and pages openly advertising wildlife trade in endangered species. Many did this openly and could easily be detected and removed. Instead, many posts remained public for years. Finally, Facebook's 'Related Pages' feature pointed them to 29% of the pages that they identified. The scale of wildlife trade on social media is massive but simple fixes might go a long way to addressing the problem if the will is there. In May the findings of WPT's investigations featured in testimony by Gretchen Peters (Executive Director of ACCO) to the US House hearing in Wildlife trafficking and the growing online marketplace.

A month later, while the G7 gathered on the coasts of Cornwall, Rowan and I seized a unique opportunity to advocate for this issue. George Eustice, Secretary of State for Environment, Food and Rural Affairs, and Carrie Johnson (the wife of the UK Prime Minister and an animal welfare campaigner) visited World Parrot Trust HQ at Paradise Park and wanted to know what could be done to help parrots. This was timely as the UK was in the process of drafting an Online Safety Bill: world-leading legislation that would make tech companies legally responsible for illegal and harmful content on their platforms. In a presentation to Mr. Eustace, we highlighted the role of online platforms in the illegal wildlife trade and the steps needed to fix the problem. We emphasised that taking a stance and a leadership position on cruel, harmful, and illegal wildlife trade would align with the UK government's recent Action Plan for Animal Welfare. It was fantastic to highlight this issue at the highest level of UK political influence and we are closely monitoring the path of this legislation alongside ACCO.

Autumn Reflections

Autumn is a time associated with reflection as the year begins to draw to a close, but it is also a time for looking to new projects (it's back-to-school season, after all). Over the last year, we have put many plans into motion, gathering evidence and making connections. Those projects are now coming to bear fruit, in ways that will meaningfully disrupt illegal trade and alleviate pressure on parrots in the wild. In the year to come, we will continue to develop our strategy and work with others to bring about impactful changes in social media and conservation policy. My memories of the whistling Grey Parrots I met at the Kiwa Centre remain a constant reminder of why this work is so vital.

ABOUT THE AUTHOR

Alisa Davies, WPT Wildlife Trade Specialist

Alisa's work with the World Parrot Trust supports efforts to end the trade in wild parrots, particularly online, through research to understand patterns in trafficking and trade, advocacy for better regulation and engagement with corporations. She also assists WPT's in-country partners in developing impactful behaviour change campaigns to end parrot trade.

Photos, top and bottom: Illegally trapped wild Grey Parrots

SPOTLIGHT

Zoo Conservation Partner

Fort Wayne Children's Zoo

Connecting kids and animals, strengthening families and inspiring people to care.

An exciting place since 1965 for people of all ages, the Fort Wayne Children's Zoo has connected more than 22 million children and their families to 1,000 incredible animals that call the zoo home.

"When guests visit, they have the opportunity to immerse themselves in an Indonesian rainforest, wander through the Outback with kangaroos and Tasmanian Devils, hear and see a group of African Grey Parrots, and feed and touch a stingray," shares Shelley Scherer, Fort Wayne Children's Zoo Area Curator. "All season long, we have over 90 keeper chats scheduled each week where guests can learn about the animals and how they can play a role in conserving their wild counterparts and their habitats."

In addition to an Adopt-an-Animal program that allows supporters to symbolically adopt a favourite species, the Zoo also has an Annual Exhibit Sponsorship program that enables supporters to symbolically underwrite the cost of care for the exhibit of their choice. "Some of our sponsored exhibits include our African Grey Parrots, Galahs, Australian Aviary, and more." says Scherer.

Fort Wayne Children's Zoo truly walks the talk when it comes to their commitment to conservation. Despite being one of only a few zoos in the US that does not receive tax support — their mission only made possible with funds generated through admissions, memberships, on-grounds activities and donations — the Zoo has made a total investment of over $380,000 to 36 local, regional and global conservation partners, including the World Parrot Trust, and participates in more than 60 cooperative species survival plans. The Zoo has also recently purchased and constructed six Motus wildlife tracking towers in Northeastern Indiana, the first of its kind in the region. These towers use coordinated automated radio telemetry to help to facilitate research, education and the conservation of species that migrate through the area.

"A portion of every admission goes towards funding our conservation partners and the great work they are doing," says Scherer. "By visiting the Fort Wayne Children's Zoo, not only are guests given the opportunity to see amazing animals from all over the world, but they are also helping to save wild animals and their habitats."

fort wayne children's ZOO

Ft Wayne Children's Zoo: 3411 Sherman Blvd. Fort Wayne, IN 46808 USA
Visit their website at: **www.kidszoo.org** or find them on Facebook.

News

New research: Scientists' warning to humanity on illegal or unsustainable wildlife trade

Illegal or unsustainable wildlife trade continues to threaten many species and promote the spread of disease and invasive species.

WPT's Wildlife Trade Specialist Alisa Davies took part in a collaborative study building on the manifesto 'World Scientists' Warning to Humanity', issued by the Alliance of World Scientists. The group of concerned researchers highlight and review illegal or unsustainable wildlife trade and how these can negatively impact species, ecosystems, and society. They also issue an appeal for urgent action to close key knowledge gaps and stricter wildlife regulation.

Read the paper:
tinyurl.com/39hy65rb

New research: Nature calls: intelligence and natural foraging style predict poor welfare in captive parrots

According to ground-breaking research at the University of Guelph in Canada the smarter the parrot, the more unique welfare needs it has in captivity. The results may be applicable to other animals such as great apes, elephants and whales, according to the study's lead author, Dr. Georgia Mason.

"This study provides the first empirical evidence that intelligent animals can struggle in captivity," says Dr. Mason, a professor in the Department of Integrative Biology. She adds, "Some species seem to adapt well to captivity, but maybe some should not be kept unless you have lots of time and creativity."

Read the article:
tinyurl.com/4sxz8ccf

Chile's Patagonian Conure marks 35 years of a slow but successful recovery

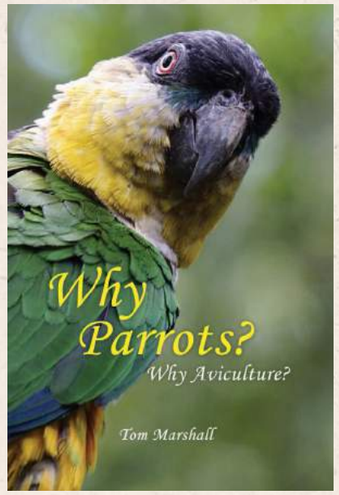
The Patagonian Conure's Chilean subspecies, *Cyanoliseus patagonus bloxami,* was once on the brink of extinction with its small populations scattered throughout the country. Conservation actions that included the protection of key habitat were put in place over three decades ago, resulting in numbers increasing from a low of 217 to almost 4500 today.

Read more:
tinyurl.com/d39f3ztw

Book Review

Why Parrots? Why Aviculture?
By Tom Marshall
ISBN 9781637640449

Reviewed by: WPT Staff



Author Tom Marshall takes the reader on a wide ranging and personal tour of the last half century of avicultural history. He covers a lot of ground in 143 pages with a combination of reviewing information from other sources, his personal experience with the topic, and opinion pieces. Some chapters address the conservation of a particular species, others cover particular aspects of aviculture, and still others focus on his experience breeding select species. All in all, the book conveys his life-long passion and depth of knowledge about all things parrot in an accessible way. Readers may lament the lack of colour photographs, but that's the only negative here.

ACCESS PAST ISSUES AT: PSITTASCENE.ORG

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PARROTS IN THE WILD:

Scarlet Macaw

(Ara macao)

In Costa Rica a group of Scarlet Macaws feasts on an abundance of palm fruits. These large, vivid birds are threatened by trapping for the wildlife trade.