THE Flyer

IAATE
International Association of Avian Trainers and Educators

Fall 2025

Adopting Choice and Control in Behavior Programs – Where Do We Start?
By Cassie Malina, CPBT-KA, CPBC, Page 4

Building an Animal Welfare Assessment Program for Your Birds
By Kirya Marchand, Page 14

Buses, Birds, and Big Ideas
By Dr. Robyn Miller. Page 27

Volume 32, Number 4

LETTER FROM THE PRESIDENT

By Lacey Zeno

Hello IAATE members.

I'm so happy it's summer. Shows and programs in full swing and the promise of warm days. My favorite time of year.

I hope this issue of The Flyer finds you, your birds and your facilities in good spirits. The changes we have all been seeing in the news can at times feel so overwhelming and heartbreaking. I hope you are finding comfort in the kindness of the visitors we serve and in the birds we care for.

I find myself so much more grateful for the communities I've surrounded myself with as this year continues on its path. The people we get to work alongside and the birds we get the privilege to care for are what keeps me going.

Take time this year to really sit and appreciate all the ways you are living your dreams. I've worked with animals for the last 20 years and have seen a lot of wonderful changes affect our industry for the better. I have faith that we will continue on and come out with a better sense of purpose and inclusivity in our industry. This year has got me thinking a lot about ways we can continue to improve our programming without getting more staff or more money! These are the moments we find out what we are made of. With the prevalence of social media and the continual divides it tries to put between all types of people groups, how can we use the platforms for good? How can we continue to reach the unreached? How can we continue to change hearts and minds? These are the questions I hope our industry digs into this year and gets creative with.

Give yourself the freedom this year to show your passion, not your ability to memorize facts, your passion for the planet. We need to affect hearts and we need to show people why it really matters. There is so much beauty in the world. Let's make sure people walk away from our programs seeing a little more beauty and feeling a little more hopeful. Have fun this summer. We're living our dreams and helping others realize theirs.

The IAATE Flyer is the Newsletter of the:
International Association of Avian Trainers and Educators

416 S Governor Street
Iowa City, IA 52240

Visit us online at iaate.org

EMAIL: secretary@iaate.org

Editors: Helen Dishaw/Cassie Malina
Editor-in-Chief: Lacey Zeno
Graphic Design: Helen Dishaw

Newsletter Committee:
Amy Fennell
Megan Geddes
Mary Ewers Joyner
Kit Lacy
Cassie Malina
Nicky Plaskitt
Balinda Strosnider

Contributors:
Chad Crittle
Kit Ellsworth
Adam Geltz
Naomi Johns
Elena Ramella Levis
Cassie Malina
Robyn Miller
Anna Morris
Kirya Marchand
Federico Romani
John Simcox

Cover Photo: Patagonian Burrowing Parrot, *Cyanoliseus patagonus*, by Jackie Kozlowski

To submit articles and/or photos to the IAATE Flyer:

Email: helen_dishaw@yahoo.com

Printed on recycled paper containing a minimum of 50% recycled fibers with a minimum of 15% post-consumer materials. Please reuse this newsletter by passing it along to a colleague or friend or recycle it with your local paper program.

Meet Your Board Members

Anna Morris

Company you work for: Vermont Institute of Natural Science (VINS)

Job Title: Director, Wildlife Ambassador Programs

Years of Service: 15 years in the field

Describe your responsibilities: I am a new General Board Member and have been involved with the Education Committee for seven years, helping distribute our Education Grant funds..

Current Goals/Objectives: I am super excited to contribute to the annual conference, helping members feel confident building connections with their peers, sharing insights, and cheering each other's successes. I'm also looking forward to growing our member resources, to make our many fantastic webinars, articles, and forum conversations more accessible.

Biggest Challenge in your Career: All of us who free fly birds have had to deal with a fly-off, and my biggest challenge came from our female Harris's Hawk (*Parabuteo unicinctus*). She got badly spooked and was gone for 20 days. Fortunately, VINS has a strong relationship with the community, and a member of the public spotted her and called us. She made it home safe. The experience taught me so much not only about working with birds, but also about working with people.

Most interesting/enjoyable experience working with birds: While completing my master's thesis, I had the incredible fortune to study (what I insist is) the most interesting raptor in the world, the Striated Caracara (*Phalcoboenus australis*) in the Falkland Islands. These wild-living birds spilled my coffee, untied my shoelaces, and broke my experimental equipment. I miss them every day.

Favorite animal: Caracaras, of course! But my other top favorites--hawks, falcons, and vultures—I get to work with every day. Whenever I'm asked, "Which bird is your favorite?" I have to say it's whichever one is in front of me! That said, I also love tortoises, most of all my rescue red-foot, Dwayne.

Other interests/What People Don't Know About Me: I love to write! From short stories, to essays, to D&D campaigns, not to mention a few pieces for *The Flyer,* I'm drawn to storytelling, and frequently inspired by conversations with colleagues and IAATE members.

Your Message to IAATE Members: The generosity of this community is astounding. I haven't yet encountered another group of professionals who are so ready (and delighted!) to share their expertise and resources with others. I'd say don't be shy! Reach out with that question that's been bouncing around in your head, start a conversation with someone you look up to, and offer that same hospitality back to new members of the IAATE family!

Adopting Choice and Control in Behavior Programs – Where Do We Start?

Cassie Malina CPBT-KA, CPBC
Awesome Animal Solutions

In the ever-evolving field of professional animal care, the concepts of "choice" and "control" are increasingly at the forefront of discussions. Over recent decades, the detrimental effects of excessive stress on animals have become more apparent, prompting a shift toward more humane and effective methods of animal management. At the core of this shift is Positive Reinforcement training, which has long been recognized for its efficacy. Today, we understand that 'control' is a primary reinforcer for all animals, just as crucial as food and water. From the moment animals arrive in our care, they strive to control their surroundings and outcomes. So how do we begin to integrate choice and control into our behavior programs?

Understanding the Animal's Perspective

The first step in adopting choice and control is to view the environment from the animal's perspective. Consider how an animal spends their day, the variety of stimuli they encounter, and how much time they spend engaging in species-specific behaviors. This approach provides insights into how we can enhance their environment and offer more choices.

The next step is to teach our animals to take advantage of these options to control their environment and outcomes. When we teach them the significance of their options, we allow them to maximize their physical and mental health in ways that are valuable and enriching for the animals, staff, and guests. When our animals trust us to give them space and allow them to control their outcomes, and we provide choices and positive consequences for desirable choices and behaviors, animals exhibit more species-specific behaviors and better utilize their habitats.

Building Positive, Trusting Relationships

Training for choice and control involves moving at the animal's pace and employing the most positive, least intrusive effective strategies. The goal is to build a trusting relationship where animals feel secure and are motivated to participate voluntarily. This relationship is foundational; animals that trust their caregivers are more confident and they experience less stress.

For example, imagine the resources required to clean a bird enclosure. In a traditional setup, this task often requires significant time and effort, with staff working around the birds or waiting until they are out of the space to minimize their stress. However, if birds are trained to voluntarily enter a designated area (a shift space) and wait comfortably, cleaning and maintenance tasks can be completed more efficiently with less stress. As a bonus, the birds' health and wellness can be more accurately evaluated and maintained. Training animals for cooperative shifting might require an initial investment of 10 minutes a day, but the long-term benefits include faster completion of tasks, better health monitoring, and the ability to involve newer staff and volunteers more safely and effectively, thus freeing up time for additional training projects.

Investing time in building trust is crucial. Positive reinforcement—whether through food, social interaction, or mental stimulation—helps animals associate their participation with rewarding outcomes. Over time, this approach leads to faster learning and greater cooperation. Animals that trust their caregivers are more resilient and eager to engage in new learning opportunities.

Observing and Adapting to Body Language

To effectively implement choice and control, caregivers must be adept at interpreting and responding to subtle shifts in animal body language. For instance, understanding the difference between 'escape' behavior and 'approach' behavior is key.

Take parrots as an example. Escape behavior might involve feathers slicked tight to the body, an upright posture, eye pinning, tail flaring, and quick movements, possibly escalating to lunging or biting if the bird feels threatened or that they cannot escape the aversive stimulus. In contrast, approach behavior is characterized by softer, fluffed head, neck, and body feathers, relaxed body posture, and calm slow movement towards the caregiver.

Caregivers should focus on modifying their strategy to encourage 'approach' rather than 'escape' responses from



Empowered ambassador birds in action. Above left and right and below courtesy of Tracy Aviary. Above center courtesy of Southwick's Zoo

their animals. By rewarding desirable behaviors with high-value reinforcers, such as tasty treats and engaging social interactions, and giving our animals more space when they show subtle escape behaviors, caregivers can gradually shift the animal's response from escape to approach. This not only strengthens the bond between caregiver and animal but also promotes a more relaxed and cooperative interaction.

The Role of High-Value Reinforcers

In behavior training, high-value reinforcers play a pivotal role in motivating animals. While food rewards are often used, the social and mental enrichment that comes along with formal training sessions has proven to be rewarding as well. Animals that experience training with the most positive, least intrusive effective strategies are likely to become more engaged and eager to learn.

Caregivers should be prepared for the enthusiasm that comes with effective training. When animals find their training sessions enjoyable and rewarding, they are more likely to participate reliably and consistently. This increased motivation can lead to significant progress in a relatively short amount of time, transforming behavior programs into dynamic and productive experiences.

Future Directions and Inspiration

The field of animal care is continually advancing, and the next generation of caregivers is driving this progress. They bring creativity, passion, and energy to the field, pushing the boundaries of what is possible in animal welfare. These emerging professionals are exploring innovative ways to implement choice and control, making significant contributions to the overall well-being of animals in their care.

As we look to the future, it is essential to support and encourage these advancements. By fostering an environment where new ideas can flourish and where the principles of choice and control are integrated into behavior programs, we can continue to improve the welfare of animals and enhance the quality of care provided by our institutions.

Adopting choice and control in behavior programs is not just a trend but a fundamental shift toward more humane and effective animal care. By understanding the animal's perspective, building positive relationships, interpreting body language, using high-value reinforcers, and supporting innovative approaches, caregivers can create environments where animals thrive.

Voluntary foot-check on Double-crested Cormorant and voluntary nail-trim on Red-tailed Hawk. Courtesy Wildlife Center of the North Coast

This approach not only benefits the animals but also improves the efficiency of care and the satisfaction of caregivers and zoo patrons. As we continue to embrace these principles, we pave the way for a future where animals are not only well cared for but also empowered to exercise choice and control in their lives. The possibilities are endless! Let's explore them together.

For some great examples of choice and control in action, visit these links.

Pongo, Red-legged Seriema (*Cariama cristata*), Southwick's Zoo: https://youtu.be/ebaL-6QYx60

Chanel, Hyacinth Macaw (*Anodorhynchus hyacinthinus*) Devaki Khimji - https://youtu.be/iVIYwDgmEZk

Voluntary towel behavior with Hyacinth Macaw. Credit Devaki Khimji

Nell, Red-tailed Hawk (*Buteo jamaicensis)*, Wildlife Center of the North Coast - https://youtu.be/BdW11M-EuBU

Cormie, Double-crested Cormorant (*Nannopterum auritum)*, Wildlife Center of the North Coast https://youtu.be/EL9w0Ba1cFQ

To learn more about training your animals with the most positive, least intrusive, effective, contemporary methods, reach out to collaborate today! AwesomeAnimalsolutions-CassieMalina.com/

The Barking Owl: Spotlight on the Most Dynamic Owl Around

Chad Crittle, Assistant Curator, Carnivores and Ungulates, Adelaide Zoo, ZAA Bird TAG Co-convenor

Photos courtesy of the author

I've been lucky enough to free fly birds as a part of my job for 15 years now. While there have been many times, I have been jealous of species that our colleagues get to work with in different parts of the world, there is one species that always attracts envy from people working outside of Australia, the Barking Owl (*Ninox connivens*). In this international edition I thought I'd deep dive on this species and highlight why they have become one of the most common species to feature in programs here in Australia.

Natural History & Distribution

The Barking Owl ranges across much of mainland Australia. It prefers open woodlands, forest edges, and riparian habitats where it can perch with a good view of potential prey. While widespread, its populations are patchy and declining in some regions due to habitat loss and fragmentation.

These owls are true generalists, feeding on a variety of prey, from large insects and small mammals to birds and reptiles. They're also known to hunt bats and are one of the few owl species to regularly take prey in flight.

That Call, Though . . .

The vocalizations of the Barking Owl are what set it apart. Its most iconic call sounds eerily like a barking dog—hence the name. But they're also capable of producing a haunting scream often compared to a woman in distress, which has earned the owl a more chilling nickname in some parts of Australia: the "screaming woman owl." These calls are often used in territorial and courtship interactions and can travel long distances through open landscapes.

Conservation Status

While not currently listed as globally threatened, the Barking Owl is considered Vulnerable or Endangered in several Australian states. The loss of large, old trees with hollows suitable for nesting is a major concern, as is the ongoing impact of land clearing for agriculture and development.

Why Barking Owls?

Barking Owls are undoubtedly the superstar of Australian free flight programs, but why. The behavioural picture of a Barking Owl is unique

in the owl world, particularly compared to other Australian owls. They are highly active in their hunting and often known to catch prey on the wing. This opportunistic nature in their hunting approach presents an amazing opportunity for programs to shape engaging routines for our visitors to enjoy. Where some Tyto species may present a few flights, Barking Owls will readily deliver ten plus flights that are high speed and agile. The agility that gives them access to hunting in dense forest also gives the chance for high-speed weaving through audiences, creating amazing wow moments.

Here at Adelaide Zoo, this even features a mid-air catch and if the throw is right, a full back flip into the catch.

The Role

These birds break all the rules that are set in people's minds about owls, including the time of day that they can be active. So, these birds create engagement but also challenge people to remain curious about wildlife and continue to learn, as the exceptions these birds show is what makes them successful both in the wild and in human care.

What Does it Mean to Give an Animal a Voice?

Adam Geltz, CPAT-KA, Senior Trainer, Natural Encounters Inc.

Photos courtesy of the author

"Just be a good trainer." A phrase that often comes around within NEI and has the greatest of intentions. While internalizing that saying for a second, some of us might be left in a spot where our next thought looks a little something like, "What the flippin' heck does that mean?" (sorry for the profanity). When this comes from a place of, "in order to be a better _____ (insert role) you should consider giving the animal more of a voice," you still might be left feeling a little befuddled. You still want to move ahead and grow, but how can we use this voice thing to be a better trainer? Here are some ponderings and attempts to apply this feedback (and several blunders) that may be of use.

To adequately use the principle of giving the animal a voice, we must have a plan. To devise this plan, we will need an animal (human or nonhuman). Once our subject has been acquired, come up with your best scheme on how to help them to succeed.

Nothing too formal here, let's just think of what a good starting place is to begin with. For this example, we might be trying to reinforce a macaw for approaching a target. Great!

Now, let's consider what we could do if this plan goes exceedingly well. Maybe we decide that we will try to fade out our prompts. Capital!

Before beginning, we consider one last condition. What if this plan implodes furiously and our avian ally is not interested in being in the same county as our perceived torture device on a stick? Maybe we then ask the macaw to land on a perch adjacent to the one with our target. Seems like we are ready to begin.

So, our trainer enters the flight where our feathered friend lives, outfitted with a target stick, some peanuts, and a dream. They then set up our perch for our macaw friend. Everything is perfect, except that our avian amigo is not interested in going anywhere near them, the weapon wielding peanut peddler.

One might imagine that all that prep work we had done was for nothing. You might be thinking, the jig is up, time to pack it in, the princess is in another castle. This is where you would be wrong. We just forgot to ask one of the members of our party how they felt about the plan, so let's ask them.

What proceeds next is best interpreted in my experience as our trainer asking a series of questions (with their behavior) to figure out what element of our plan the sticking point for our animal partner might be. Maybe that perch we wanted to work on was hard to get to. It is possible the perch was low and left us looming over our bird buddy with less escape availability if they felt uncomfortable, or maybe the bird would like to have more control over their approach of the target in a static location where they can be sure that those humans don't pull any funny business. Whichever it is, if we allow the macaw to tell us how to proceed, they will contribute to our

plan we made previously, and we can make a plan that is even more effective.

Have you ever heard someone's uncle come up to you while working with an animal in some capacity and say "Looks like that bird is trainin' YOU! Har Har Har!"? Well Uncle Charlie, you couldn't be more correct. While he may be a bit abrasive, he has stumbled into some wisdom unbeknownst to him. When we allow the animal to make plans alongside us, they do train us, and it is one of the best things I think a trainer can experience. Whenever asked "If you could have any superpower. . ." as a child (and adult, honestly), I would have picked the ability to talk to animals, and the exciting part is, through behavior, we can, in a sense.

The benefits of having a highly adaptable plan that collaborates with your partner in training are tremendous. The more you adjust to the animal's needs and proceed together, you continue to strengthen trusting relationships that transfer to the environment as well. You might notice your critter cohorts persist in environmental conditions where they would normally decline or leave the session. There are few things cooler in this life than animals and people succeeding and doing things confidently in ways that surprise you. Birds landing places that I wouldn't have thought to teach them, new trainers making decisions that work better than what I taught them, and animals confidently thriving in adversity, are all byproducts of well-generalized trust.

This philosophy does come at a cost. You might have to set fire to a few training plans and might have to tell your boss why the shredder is jammed up with said plans (we've all been there). Some folks might also derive a lot of self-value from the animal doing what they ask, when they ask, and in accordance with the plan they've created. Change can be uncomfortable and difficult. It can also be nerve wracking for the fate of some people to be in the hands of a crow, which is a valid concern. To these challenges, my best advice would be to start small and safe if this is an unfamiliar topic. Maybe try something in their home environment and create a proof of concept. Read this and test the waters skeptically, understand that Adam (that's me) was a bit of a dingus ten years ago, and I hope I can call Adam today a bit of a dingus ten years from now. That means we are learning and growing and allowing the animals, people, and events in life to form the training plan for our own development and it only has been made easier by giving all those things more of a voice.

Some of you might be concerned about how to approach implementing a plan with an apprehensive leader, and you are not going to believe how to handle this situation: give them a voice. Let them tell you how to proceed in your plan to meet both your goals. Hear their concerns and raise yours too. You are going to have a really hard time getting them to let you do some crazy progressive training plan with a bunch of corvids if you can't have a good conversation and relationship with them (ask me how I know). The value of giving the animal a voice is about collaboration, it's about listening, and it's about working together as a team. This applies not just to the animals in our care, but the people in our lives as well. If you have second thoughts about having a conversation with your leader, maybe, like a macaw learning about the target, start asking some questions.

Well, here we are at the end, and I still haven't completely figured out what it means to "be a good trainer," but the more I ponder it, the more I start to think there isn't really anyone explaining that idea explicitly because it contains more elements than can be explained in one sitting. I mean, I tried to give this "animal a voice" thing a crack at explaining and after sitting here, typing this for the last hour or two, there is still so much more to talk about, as it is only a single element of animal training and communicating. One of the coolest things about this field, though, is there is so much more to this than any of us can learn in a single lifetime, and for all those things we don't know yet, we can allow the contributions of others (animal and human animal) to have a voice in how we proceed in shaping the future.

Enrichment 101: Building Blocks of a Successful Enrichment Program - The Three R's: Review, Revision, Record Keeping

John Simcox, CPBT-KA

Talon Ridge Raptor Institute

Photos courtesy of Tracy Aviary

In this last edition of "Building Blocks," we will explore the "Three R's" of enrichment planning: review, revision, and recordkeeping. When developing successful enrichment programs, the "Three R's" help facilitate evaluation of the enrichment provided while also identifying key areas that can be improved, all while maintaining appropriate records that meet institutional, city, state, or federal guidelines. I hope you'll read along and then join the Enrichment Committee on IAATE's social media pages to continue learning enrichment strategies through our series titled Empowering Enrichment!

Review

Up to this point, we have done the hard work. We have identified enrichment opportunities for our bird, understood our bird's natural and individual behaviors that we want to influence, and have put our enrichment idea into motion by creating a proposal that has rigorous safety guidelines. Now, it's time to implement our enrichment plan by utilizing that proposal that we worked so hard on. But what happens if it doesn't go to plan? What do we do if our bird doesn't interact with the enrichment provided? What if everything goes just right, all according to plan? How do we move forward? Our first "R": Review.

Reviewing your implemented enrichment plans is often an innate behavior that we humans do without prompt. Oftentimes, we are already reviewing our plans before we have even left the aviary or before the bird has even interacted or experienced the enrichment; however, while this may be a behavior we often execute without direction, it doesn't hurt to have a formal review process to help better understand the enrichment's success or failure. When it comes to reviewing enrichment, many facilities have different methods, and you should first follow your institution's policies and procedures as certain guidelines may be in place to adhere to state or federal guidelines or accreditation standards. In my experience, most often, facilities have used some sort of numerical ranking system that identified "how often" the animal interacted with the provided enrichment. This method does have its flaws as it relies on the caretaker's direct observation and encourages guesswork for periods when no observation occurs. If you're creating your own program, note that no method is perfect and most often they all have flaws; it's up to you to decide what method works best for you and your institution's policies to properly review enrichment opportunities.

In our review, we should be asking questions such as, "did this enrichment encourage/discourage the behavior it was intended for?" "Did it encourage a behavior that I wasn't aware of prior?" "What level of interaction did this bird exhibit with the provided enrichment?" These questions help us better understand our birds by forcing us to think critically about the implementation of our plan and how we can do better.

**NOTE: If your review observations yield a safety concern, immediate intervention should be taken, and the enrichment should be decommissioned until further assessment of the enrichment plan can be conducted.*

Revision

Now that we have conducted thorough observations and reviews of our enrichment plans, it is time to make appropriate changes, if any, to our enrichment plan/proposal. These plans should reflect the observations made during the review process, and they should further the anticipated goals or objectives of the enrichment opportunity. Additionally, in this stage, we can identify the level of supervision required for this enrichment activity for the specific bird. At Talon Ridge Raptor Institute, we identify our enrichment as "supervision required," "partial supervision required," and "access." This not only alerts us to potential safety concerns, but it allows

us to plan our enrichment strategically. Lastly, revision may also mean scrapping an entire enrichment plan altogether. This isn't the ideal option, but sometimes it may be necessary. It is important to remember that if revision suggests the decommission of an enrichment opportunity, it is not necessarily a reflection of you, your knowledge, or your skill. Sometimes, it just doesn't work out, and that is okay.

Record Keeping

Good recordkeeping is a lifeline for maintaining significant and updated information while appropriately communicating to others the most needed information. Often, I've observed records that have bare bones information such as weight or a short description of what the bird did that day. Unfortunately, this kind of recordkeeping can lead to issues in communication and poor development for the bird over time. Most wildlife care software such as ZIMS, Tracks, RaptorMed, Animal Care Software, etc. have features that allow you to track enrichment, among many other things, and we should be taking advantage of these features. By properly utilizing these features, or by keeping detailed documents if you don't have access to these programs, we can accurately track our bird's histories with specific enrichment items and not only better understand our bird but better understand how we can keep them

engaged. Additionally, keeping adequate and appropriate records allows us as caretakers to communicate and maintain consistency across our entire flock. Plus, for many facilities, these entries are public records, and may be required by your local city, state, or federal government along with any accrediting bodies your facility may be associated with.

Recordkeeping is essential. There is no doubt about it; however, it doesn't have to be complicated. As stated above, many of our software programs already create streamlined tracking processes that involve checking a few boxes and writing a description. We don't have to overcomplicate our records, and truthfully, it's important that we don't. Our entries should be digestible enough to be able to read quickly yet detailed enough to adequately describe the session and allow the reader the opportunity of full comprehension. It's important that both points be true because one without the other could lead to confusion and missed opportunity, ultimately affecting our birds in the process.

In conclusion, the "Three R's" are the final building block of creating a successful enrichment program, and they represent the bookend of this mini-series. A reminder that just as enrichment should be tailored to each individual, our programs will be tailored to fit our needs as well. What works for one person may not work for another, and that's okay. It's important to remember that "Enrichment 101" is just the beginning. Enrichment is not just a luxury that we provide when we have time or when we want to, nor is it always just toys or "things" that we give to our birds. Enrichment is a behavior modification method that, when used correctly, can yield similar positive results to other management strategies. Enrichment is a science that is steeped in observation; it's constantly changing and evolving, and it is up to us to develop cutting edge programs that push the boundaries of our knowledge in a continuous pursuit to increase avian welfare while prioritizing ethical and sustainable practices under human care.

2026 IAATE PHOTO CONTEST

CONTEST RULES:

- 2026 Entry Deadline: All entries must be submitted by **February 28, 2026.** Entries are pre-judged before the conference and presented in a slide show at the banquet. The entry deadline is not flexible, so please plan ahead.
- Contest open to IAATE member and ABMA member photographers only! You must take your own photos to enter. No 2nd party non-member photos please. Selfies are okay. **Please check that your IAATE or ABMA membership is current when submitting photos!**
- AMATEUR photographers only (a professional photographer is defined as making 40% or more of their annual salary from selling photos).
- Entries must be sent emailed as jpegs, send via file sharing or on a USB stick. Please email Kim Caldwell to determine what file sharing method is compatible. The USB stick will only be returned in a self-addressed stamped envelope. Please submit photos of 300dpi or better. You may send images via email as long as they are *full size images of 1-3MBs*. If you send compressed images by email, the quality may be compromised. We really want these photos to look good in print, so the higher quality is important. Sending photos individually is acceptable. A return email will be sent to confirm receipt of the photos. If you do not receive a confirmation email, Kim did not receive the photos.
- No more than 10 entries per individual.
- Photographer grants IAATE permission to use the photos in any IAATE publication, including the IAATE website. All other rights retained by Photographer. Please no watermarks on the photo entries. Any watermarked photos can not be used in the contest.
- Please clean up your photo entries if scanned. Cropping is ok. No modifications will be made to photos for judging once received. **Please do not send images larger than 5MB** (closed file size). 1-3MB is sufficient.
- **Please use the species common name and your own name as the file name:** i.e. Goldeneagle.KimCaldwell.jpg, and Blackcrownedcrane.HelenDishaw.jpg. This will help with the filing system to access photos in the future for our publications.

IAATE Mission Statement

IAATE's mission is to foster a community empowered to provide excellent wellbeing for birds in human care and create programs that inspire conservation action.

Categories

Portraits of Birds

Birds in Action: Flying, jumping, running, bathing etc.

People and Birds: Birds and trainers in shows, birds and audience members, funny moments with birds, etc.

All entries must be accompanied by:

- Name
- Email address
- Phone number
- Category of each entry

Email entries to Kim Caldwell: KBCaldwell@cox.net

Enter your photos for a chance to win prizes! $250 in Amazon.com gift certificates were awarded last year! And, see your winning photos in the Flyer!

You do not need to be present at the conference to win!

ABMA IAATE
PARTNERING FOR SUCCESS CINCINNATI 2026

2026 Conference
General and Conservation Raffles

Each year the raffles at our annual conference bring in hundreds of dollars that go directly to supporting the mission of IAATE. You can help make our 2026 raffles a success by donating items. A few high quality and unique items will be selected for our Conservation Raffle to raise money for our Conservation Fund.

Please bring donated items with you to the conference. You may also ship ahead to this address:

IAATE c/o Julie Grove
2650 Montchateau Drive
Cincinnati, Ohio 45244

2026 BEHAVIOR TRAINING SHOWCASE

Every year the opening day of our conference kicks off with a celebration of our members' training successes with the Behavior Showcase presentation. This video montage sets the stage for a wonderful conference experience with members sharing and learning from each other.

Do you have a training success you would like to share with the attendees of the IAATE/ABMA annual conference? Would you like to inspire other facilities to reach new heights in training? Get your cameras out and capture your team's achievements!

This year, we are accepting submissions in the following categories:

- Cooperative Care
  - Animals voluntarily participating in their own care, e.g. stationing, stepping on a scale, self-loading into a crate, voluntary nail or talon trims.
- Audience Connection/Show Behaviors
  - Connections between guests and animals, e.g. close encounters, audience participation, dynamic flight, hunting/foraging, mimicry, etc.
- Just for Fun
- Anything else, as long as it's good for the animal!

The deadline for submission is **February 28, 2026**. Videos that are edited with text overlay and (royalty free) music are strongly encouraged. Visit IAATE.org for detailed submission guidelines and to watch a 9 minute video tutorial to use free, online video editing software!

2026 GRANTS

2026 grant submissions are due in by:
Education Grants: **January 9, 2026**
Conservation Grants: **January 9, 2026**

Please adhere to the deadline!

This is to allow enough time for a thorough evaluation process with follow up. Attendance at the conference is not required. Grant funds are open to any individual or organization proposing work that will support IAATE's mission. Successful applicants will be required to provide a written report for *The Flyer* within the grant year.

For more information and to download application forms, go to IAATE.org and navigate to:
Conferences > Grants, Scholarships, Contests.

Conservation

IAATE Conservation Grants are available to support sustainable, in situ conservation projects which are shown to have a positive, measurable impact on a specific avian species, or the habitat and ecosystem they are found in. Applications should include details on community involvement where applicable.

To be eligible for the grant you must be:

- A current member in good standing.
- An active participant in the project and its goals.

Applications will be evaluated on the following criteria:

- The status of the focal species
- The potential impact on avian conservation
- The ability to provide measurable means of evaluation
- Project sustainability
- Detailed budgetary information relating to the funds
- Alignment with the mission of IAATE

Education

Education Grants are designed to support programming for our members to achieve their avian education goals.

IAATE will be awarding multiple grants (up to $1,500 each) to eligible applicants. Each grant will provide financial assistance to be used for educational purposes.

To be eligible for this grant, you must be:

- A current member of IAATE in good standing.
- An active participant in the project seeking funding.

Applications will be evaluated on the following criteria:

- Project summary
- Impact
- Measurable outcomes
- Sustainability
- Alignment with the mission of IAATE

All eligible avian trainers and educators are encouraged to apply for a grant to help you reach your full potential!

Building an Animal Welfare Assessment Program for Your Birds

Kirya Marchand

Photos courtesy of the author

Many among you readers are professional bird trainers, nature educators, wildlife rehabilitators, and champions of conservation. Each of you has followed a path motivated by a passion for birds, and a dedication to the well-being of the animals under your care. You are now prepared to take the next step as responsible animal care professionals: building an animal welfare assessment program for your birds. But what exactly is an animal welfare assessment? How are they created, implemented, tabulated, and managed? What are the benefits to your birds and your institution?

This paper is your introduction to building your own animal welfare assessment program. First, we will define animal welfare assessments and how they differ from other forms of observational evaluations. We will then outline the different considerations and parameters that must be set for the implementation of your program. It is my hope that, by the end of this paper, you will feel empowered and inspired to build an animal welfare assessment program that works for you, your team, and your birds.

What is an animal welfare assessment?

In the most basic terms, an animal welfare assessment program provides a holistic framework for the evaluation of the well-being of an individual. The goal of the assessment is to explore the factors that affect the physical, behavioral and mental states of your animals, and to identify the factors that may be positively or negatively affecting those states. To be effective, your animal welfare assessment must be objective and quantifiable.

Animal welfare assessments are usually long-form evaluations that examine the myriad factors that contribute to the well-being of an individual at a single moment in time. Typically, an institution chooses to perform an animal welfare assessment for an individual on an annual or bi-annual basis, or perhaps strategically scheduled in response to changes in an animal's living conditions (i.e. before or after a transfer to a new enclosure).

These holistic assessments differ from other forms of evaluations such as space-use assessment, behavioral assessment, or quality of life assessments. Space-use assessments are meant to track the frequency or duration of time that an individual spends in different areas of their enclosures. These assessments can be combined or compared to ethograms and activity-budget analyses to paint a picture of how, where, and when an animal spends the hours of their day. Behavioral assessments are performed to better understand the factors that motivate or trigger specific behaviours, and would be useful, for example, in responding to stereotypical behaviours such as feather-plucking or pacing. Quality of life assessments are usually short-form evaluations that are performed on a regular basis with the goal of monitoring the progression or degeneration of an animal's well-being. Quality of life evaluations are often implemented for aging animals, or for animals suffering from chronic health conditions. Space-use, behavioral, and quality of life assessments are all useful instruments in your animal care toolbox and can inform an animal welfare assessment, but they differ in that they are not as holistic nor necessarily relevant to every individual. By comparison, animal welfare assessments can be performed systematically for every animal for whom you are responsible and are relevant at every life stage of an individual.

Building your animal welfare assessment program

Now that you have a better understanding of animal welfare assessments, it is time to begin building your program. There exists a plethora of frameworks, resources, and tools available to you, and it is up to you to determine which model would be the best fit for you, your team of caretakers, and your birds.

Step 1: Choosing your framework

Animal welfare assessments were first developed for evaluating farmed animals, but, in recent years, have been increasingly utilized to evaluate the well-being of wild animals under human care. A plethora of different frameworks and models have since been designed for zoo animals, and a few templates have even been created for target species and taxa. You may choose among these various frameworks, or you may decide to design your own template.

Designing your own template. One benefit to designing your own template is that you can ensure that the length, the interface, and the questions in your assessment will be relevant to your animals, and appropriate for the resources of your institution. Many online resources exist to guide you in the design of your own template. The Association of Zoos and Aquariums has published a guide to building your own welfare assessment framework, as well as a compilation of tools that have been pooled from various publications and committees[1]. There are also a few disadvantages to designing your own template. Foremost is the risk that your framework may be incomplete or may not be representative of the effects of your inputs. One good way to avoid the pitfalls associated with designing your own template from scratch is to choose an existing framework and to modify it to best suit your institutional needs.

The Five Domains Framework. The most widely employed framework for animal welfare assessment is based on the Five Domains of Welfare. These five domains are Nutrition, Environment, Physical Health, Behavior, and Mental State[2]. These five domains are grouped into two wider categories: resource-based indicators, and animal-based indicators. Resource-based indicators include factors such as enclosure size, food quantity/quality, environmental conditions, frequency of enrichment, etc.; in other words, what you provide for your animals. Animal-based indicators include metrics measured by observing the individual being evaluated: body condition score, signs of illness/discomfort/injury, condition of feathers, etc. Each of

Wild Turkey (Meleagris gallopavo)

Black-crowned Night Heron (Nycticorax nycticorax)

these factors is scored according to a pre-determined grading system and may include a separate column for notes where an evaluator may describe the rationale for their score. Although these descriptive notes are not tabulated in the final numerical averages, they are useful in qualifying the scoring of each question in the evaluation.

The combination of resource-based and animal-based metrics paint a holistic image of the welfare state of the individual, and these two categories are then informed by a third category: the mental state. The mental state of the animal is undoubtedly the most difficult to assess without falling into the pitfalls of projection, assumption, and anthropomorphism. The mental state of an individual is often evaluated in qualitative terms rather than by attributing a numbered score as in the preceding categories, as with a phrase describing – in the most objective terms possible – how the overall mental state of the individual appears to the evaluator.

There are many different templates of the Five Domains model available to you online, and all of them can be tailored to fit the species, specifications, and particularities of your institution. For a very comprehensive, free example of a welfare audit template, I recommend referring to the British & Irish Association of Zoos and Aquarium's Welfare Tool Kit[3].

Step 2: Setting your schedule and assigning assessments

Now that you have chosen your template and welfare framework, it is time for you to decide how you implement a schedule for performing evaluations. This aspect of your program may be the most challenging, as well as the most flexible depending on the number of animals under your care and on the structure of your team of caregivers.

Scheduling animals for evaluation. The number of evaluations performed annually by your institution will depend on several factors. For larger institutions, it may be impossible to perform evaluations for each individual every year. Smaller institutions may be able to perform numerous evaluations for all individuals within a given year – for example, for one individual during summer and once again during winter, or during seasons with large numbers of visitors or activities versus quieter months with fewer public interactions. Whatever the scope of your institution, performing any number of evaluations will be to the benefit of your animals and your team – there is no such thing as 'too many' assessments. In terms of selecting animals for evaluation, there are two options available to you: scheduling animals based on certain time factors, or creating a randomized calendar.

The first option is to manually select animals for evaluation. You may choose to assign assessments based on certain factors such as age, season, and circumstance; for example, it may be beneficial to you to assign an assessment for an animal who will soon be moved to a new enclosure as your assessment may inform certain design choices for their new living space. For geriatric animals, it may be useful to perform more frequent evaluations to chart the progression of certain metrics related to aging. Finally, animals that are housed in different enclosures in different seasons – such as over-winter or off-exhibit areas – may benefit from the comparison of evaluations in each space. Another opportune moment for evaluation may be directly following an annual veterinary exam – in that case you and your care team would be fully equipped to evaluate all aspects of that animal's physical and behavioral parameters.

On the other hand, you may choose to randomize your schedule for evaluations. Although this may be likened to 'picking names from a hat', there are benefits to a randomized schedule. Foremost is the advantage that randomized schedules reduce selection bias. With selected schedules, an institution may be able to avoid evaluating animals who are in precarious states of welfare or who are experiencing poor welfare. Contrarily, randomized schedules may also present a disadvantage in the sense that animals may be evaluated at inopportune moments that do not produce a relevant assessment of that animal's usual welfare state – for example, it may be interesting to evaluate an animal who is temporarily isolated for medical treatments, but that evaluation is hardly representative of the typical state of that individual.

It is important to remember that there are no rules when it comes to planning your animal welfare assessments. Whether you choose a selected schedule or a randomized schedule, the goal of your program remains to evaluate the well-being of your animals as effectively and objectively as possible. The best schedule of assignments for your program will be based on several factors: the number of animals under your care, the seasonal variations, the regulations of your accreditation, and myriad other

circumstances particular to your institution. As the manager of your animal welfare program, it is up to you to choose the schedule that best fits your team and your animals.

Scheduling assessments for your team. Now that you have determined a schedule for the animals you wish to evaluate, it is time to begin assigning assessments to your team. This aspect of the animal welfare assessment may arguably be the most difficult hurdle for your program.

We are all aware that the schedule of animal care attendants is often surcharged and overloaded: there is food and medication to be delivered, enclosures that need to be cleaned, medical procedures that cannot wait, unpredictable emergencies, necessary renovations, and schedules that must be respected for training sessions, enrichments, and public presentations. Amid all those constraints, it may be difficult to add animal welfare assessments to the busy schedule of your staff members. As managers of the program, it is your responsibility to design and implement a schedule for evaluations that is realistic and achievable for your team. This is especially true because animal welfare assessments are time-sensitive: often, the observation period is limited to a single week, and evaluations must be completed within the assigned time-limits to be considered valid. Assigning evaluations that are too demanding in terms of time and staff resources is a recipe for failure – either your assessments will not be completed, or the results will be rushed and sub-par. It is important for you, as the manager, to design and schedule assessments that can be accomplished by your teammates in a timely manner and within the constraints of their schedules.

The next hurdle is to decide who should be assigned which assessments. Once again, there are no steadfast rules when it comes to determining eligibility for assessments, but there are some guidelines that you may find useful:

- Assessments should be completed by caregivers who are familiar with the natural adaptations of the species. For example, if a question on your template refers to appropriate foraging behaviors for this species, then it is important that the evaluator has a basic knowledge of this species' foraging behaviors in the wild.
- Assessments should be completed by staff members who regularly and currently care for the individual being evaluated. Evaluators should also have access to all relevant information about the individual animal, such as recent weights, veterinary records, training logs, observational data, etc. All these pieces of information are necessary to complete an animal welfare assessment, and access to information should be a determining factor in deciding who can be assigned to an assessment.
- Assessments can be completed by employees with any amount of experience. You may choose to only assign welfare assessments to staff members with a certain level experience, or you may choose to integrate the process into the training procedures of new employees. The decision is yours, and there is no minimum requirement for being eligible to complete an assessment other than the two stipulations outlined above. The more employees that you have completing an evaluation, the more well-rounded and informed your averages will be. Smaller institutions and/or specialized teams may be more limited in this sense: for example, if you only have two employees trained to care for your Harpy Eagle (*Harpia harpyja*), then those two employees may be the only ones who are eligible to complete an animal welfare assessment for that individual. There is no minimum number of employees necessary to complete an assessment, as there is also no maximum number of employees that can be assigned to a single evaluation. The ultimate decision of how to train for and assign assessments will be yours based on the structure of your animal care team.

Step 3: Compiling and interpreting assessments

Now that you have set a schedule for the animals to be evaluated and assigned the assessments to be completed, it is time for you to gather and interpret the results. Although all levels of staff members may be invited to complete evaluations, the compilation of the results should be performed by one – or by very few – designated personnel. There are many considerations for managers charged with the collection and publication of the results of animal welfare assessments, but the most relevant are confidentiality, time limits, and how to respond to negative welfare scores.

Confidentality. You may decide that the results of your assessments are accessible to your entire team, or even shareable with members outside of your department such as your board of directors, shareholders, and donators. Whatever the destination of your assessments, it is advisable that your team be able to submit their assessments with the knowledge that their answers will remain confidential. Anonymity is essential to encourage your staff to submit their answers in the most honest and objective manner possible. When training your team to complete their evaluations, it is important to underline that a negative score is not necessarily a criticism of the level of care that an animal receives – on the contrary, the very act of performing an evaluation proves your dedication to the welfare of that individual. It is important that assessments are published in a way that protects the anonymity of the evaluators. This step may seem inconsequential but may be a determining factor in the honesty and objectivity of the evaluations that are submitted.

Compiling the results in a timely manner. Animal welfare assessments must be completed within a designated timeframe to be considered valid, but the interpretation and calculation of the evaluations do not necessarily have a time limit. It is, however, important that results are reviewed and compiled within a reasonable timeframe. This is imperative to ensure that factors contributing to poor welfare are recognized and responded to as quickly as possible. This requires a significant commitment on behalf of yourself or the team member assigned to the interpretation of the results. The time required for the tabulation of assessments should hence be carefully considered when planning the schedule of assigned welfare assessments.

Reacting to a negative welfare assessment. The schedule has been determined, the evaluations assigned, and the completed assessments have been submitted - now you, the manager of the animal welfare assessment program – have tabulated an evaluation that indicates some poor scores or risks to animal welfare. So how should you proceed? It is

advisable that managers have a predetermined mechanism in place for logging and responding to poor scores in assessments. In many instances, this mechanism will take the form of a separate document dedicated to the follow-up of poor scores. This document may be accessible to managers, directors, or any level of animal care attendants, and may include tables wherein various authors can respond to poor scores with proposed solutions. There may also be space in this document dedicated to tracking progress on the response to the poor score. Whatever the format of this document, the important point is that there must be a process in place for acknowledging, documenting, and responding to poor scores in animal welfare evaluations in a timely manner.

Why should you build an animal welfare assessment program?

The benefits of an animal welfare assessment program are multiple and multi-faceted. Of course, the first goal of the program is to improve the well-being of the animals under your care. You may be surprised, however, to discover that an animal welfare assessment program can also reap important benefits for your team and for your institution.

Benefits for your birds. The primary goal of an animal welfare assessment is to identify, evaluate, and score the factors influencing the well-being of the individuals under your care. By grading these factors using a pre-determined scoring system, the assessment enables you to identify those factors which may be contributing to poor welfare or could stand for improvement. The results of the assessment can then be translated into improving husbandry practices, can inform plans for enclosure renovation or design, and help managers to decide in the allocation of financial or institutional resources. By committing to a systematic framework for evaluating animal welfare, assessments can be compared over time and progress can be measured, documented, and revaluated.

Benefits for your animal care team. Performing regular animal welfare assessments requires commitment and demands investment from your team, but it also generates significant benefits. One of the biggest advantages is that the process of completing assessments is an opportunity for continued learning. By performing these assessments, your staff members learn to consider the many dimensions of animal welfare and become sensitized to the many factors that influence the well-being of the animals under their care. In this sense, your animal welfare assessments not only contribute to the well-being of the animals but also provide continued professional development for your staff and encourage them to become better animal care professionals. A second benefit to your team is that animal welfare assessments provide a legitimized platform for raising concerns and making suggestions. By encouraging your staff to complete the assessments with honesty and objectivity, they become actively involved in the decision-making process for the animals to whom they are devoted.

Benefits for your institution. Almost every institution that keeps wild animals propounds to care about animal welfare, but the management of an animal welfare assessment program is proof of this dedication. Not only does the process itself prove that you are committed to the objective, scientific pursuit of best practices in welfare, but it produces measurable and publishable results to that effect. Results of animal welfare assessments can be synthesized and shared with shareholders, donators, and even the public. The progress that your team makes over time can be measured and tracked over time. In addition, animal welfare assessment has, as of late, become a requirement for institutions seeking to gain or maintain accreditation; for example, the Association of Zoos and Aquariums has made it a stipulation that members must have an animal welfare assessment program in place to qualify for membership.

Conclusion

It is my hope that this paper can serve as both guide and inspiration for you to implement your own animal welfare assessment program. Many of you readers may already be active participants in existing animal welfare programs, and, in that case, I hope this paper has been useful in informing or improving your existing programs. Whatever the realities of your institutions – be it a few birds, or a whole zoo full of different species – I wish you the best in your endeavors to reach new heights as guardians of animal welfare. By committing to an organized, holistic program for monitoring animal welfare, you are already on the right path towards providing the best possible standard of care for your birds.

References

1. Association of Zoos & Aquariums (2024). Welfare Assessments. Retrieved online: https://www.aza.org/welfare-assessments

2. Mellor DJ, Beausoleil NJ, Littlewood KE, McLean AN, McGreevy PD, Jones B, Wilkins C. (2020). The 2020 Five Domains Model: Including Human-Animal Interactions in Assessments of Animal Welfare. Animals (Basel). Oct 14;10(10):1870. doi: 10.3390/ani10101870.

3. British & Irish Association of Zoos and Aquariums (2019). Welfare Toolkit. Retrieved online: https://strapi.eaza.net/uploads/BIAZA_ANIMAL_WELFARE_TOOLKIT_9789f6a1d8.pdf

The Secretarybird (*Sagittarius serpentarius*) in Northern Tanzania: Ecology and Conservation Challenges

Elena Ramella Levis[1,2] and Federico Romani[1]

[1] Eurafrica Conservation Projects - ODV, Non-Profit Organisation for the Conservation of Biodiversity, Colonna, Rome, Italy

[2] Wildlife Ecology and Conservation group, Department of Environmental Sciences, Wageningen University and Research, Wageningen, the Netherlands

The Secretarybird, a Grassland Avian Top Predator

The Secretarybird (*Sagittarius serpentarius*) is a diurnal raptor widespread across grasslands and savannas of sub-Saharan Africa (BirdLife International 2020). It is a taxonomically isolated species, as the only extant member of the Sagittaridae family, and is well known for its distinctive appearance and unique hunting behavior, both of which are highly adapted to a predominantly terrestrial lifestyle. Its long legs allow it to spend most of its time walking through open habitats, actively hunting a wide range of prey including insects, reptiles, small mammals, hares, mongooses, ground-dwelling birds, and their eggs. It delivers powerful downward kicks, capable of striking with a force up to five times its own body weight (Portugal et al. 2016). This feeding strategy renders the Secretarybird a relatively opportunistic predator, capable of adapting its diet, which can be advantageous under certain ecological conditions. When grasslands — its primary habitat — are vast and of high quality and productivity, they can support a greater number of breeding individuals, as territorial pairs do not require extensive territories (Romani et al. 2025). Moreover, as a generalist predator, it can exploit prey availability along environmental gradients, showing a certain tolerance, and at times even a preference, for ecotonal habitats (Romani et al. in review). However, its strong dependence on the quality and size of grassland patches size makes the species particularly vulnerable to their loss, degradation, and fragmentation.

The global population of the Secretarybird has undergone a marked decline over the past two decades. In 2020, it was classified as Endangered in the IUCN Red List of Threatened Species (BirdLife International, 2020). Several factors have been identified as threats to the species' persistence and survival; first and foremost are habitat loss and fragmentation, followed by illegal harvesting, direct human disturbance, electrocution, disease, road kills, and, at a more local scale, the improper management of fires (Nkwabi et al. 2018, Whitecross et al. 2019, Shaw et al. 2024, Brink et al. 2024, Romani et al. 2025). However, the relationships between these threats and the different stages of the species' life cycle remain poorly understood, and the potential effects of climate change on population trends should be thoroughly investigated. Furthermore, it remains unclear which of these threats are currently exerting the greatest impact on populations, and in which countries these impacts are most severe.

The Northern Tanzania Secretarybird Project

Understanding the relationship between population dynamics and ecological characteristics is crucial for identifying the key habitat features that support reproductive performance and juvenile and adult survival. This knowledge helps identify the biotic and abiotic factors that limit populations across varying environmental contexts, guiding effective conservation strategies (Martin 1993).

Given the limited information available on the Secretarybird in East Africa, the non-profit organization Eurafrica Conservation Projects launched the Northern Tanzania Secretarybird Project in 2023. This long-term research focuses on the species' demography, ecology, and genetics, and also aims to evaluate the effectiveness of selected conservation actions. The project pursues several complementary goals: mapping areas of highest Secretarybird density and investigating the environmental drivers of abundance; assessing nesting success and productivity; analyzing the dispersal behavior of juveniles, with a focus on how habitat selection varies between age classes. Additionally, the study seeks to identify key causes of adult mortality, estimate turnover rates, define conservation units and potential reservoirs of genetic diversity in case of future translocations. The ultimate objective of this ambitious project is to develop a recovery plan for the species in East Africa.

During the initial three years, research efforts have focused on key protected areas in northern Tanzania, primarily within the Serengeti ecosystem. Thanks to the collaborative efforts of various partners – above all The Peregrine Fund — and donors, including the International Association of Avian Trainers and Educators, the study area has progressively expanded to include the Tarangire ecosystem and Mkomazi National Park, which represents the Tanzanian side of the greater Tsavo ecosystem. Northern Tanzania was selected as the starting point due to its high secretarybird abundance and the strategic role of its protected areas as ecological corridors linking Tanzania and Kenya.

Field Diary

Given the wide range of objectives in this project, the field sampling effort is particularly intense. We regularly collect data from several large study areas in order to address the various ecological and biological questions. Our activities

primarily take place during the reproductive period of the species, which in northern Tanzania coincides with the rainy season (from November to May, with a short break between January and February). However, reproductive patterns vary across the studied ecosystems, both in terms of season length and the timing of breeding attempts. For example, in drier areas such as Tarangire and Mkomazi, the breeding season tends to be shorter and begins slightly earlier than in the Serengeti ecosystem, where rainfall is more abundant and distributed over a longer period.

During the breeding season, nests are actively searched for, mapped, and then monitored weekly. For a selected subset of nests, camera traps are installed, allowing us to continuously observe the nesting process and collect detailed information on diet and predators. Moreover, we gather pellet samples from the nests, which will be analyzed using environmental DNA techniques to compare results obtained from the camera trap images/videos with genetic data. At the nesting sites, we also collect small-scale environmental data, focusing particularly on plant communities, with attention to the tree species present. Additionally, we record the presence or absence of potential predators, competitors, or other species that could cause disturbance or harm to the secretarybird, such as African elephants, which sometimes knock down trees with active nests.

When the chicks are around six weeks old, they are captured to collect biological samples (blood and feathers) which are used to study population structure and sex ratio. Others are captured at nine to ten weeks old, when their body size is similar to that of adults, in order to be fitted with solar-powered satellite transmitters.

Finally, before the start of the breeding season, we carry out road counts within protected areas to estimate encounter rates, population size, and, consequently, the population trend. Starting next year, we will begin experimenting with nest protection measures, such as using olfactory and acoustic repellents to reduce the risk of predation by generalist mesopredators. Increasing reproductive success means enhancing recruitment probabilities. In a threatened species, rapidly declining across much of its range, even small improvements in this regard can make a significant difference for long-term conservation.

From Grasslands to Woodlands: What Shapes the Secretarybird's Home?

During the first two years of research, our key findings focused on the Serengeti ecosystem, particularly within the Serengeti National Park and the western sector of the Ngorongoro Conservation Area. In 2025, we successfully expanded our data collection to additional key ecosystems, including Tarangire and Mkomazi, where we obtained the first significant results.

The Serengeti ecosystem (~30,000 km2) currently represents one of the last strongholds for the Secretarybird in East Africa, where the highest population densities recorded in sub-Saharan Africa have been observed. In the Serengeti National Park alone — covering roughly half of the entire ecosystem — we estimated a population of around 1,500 individuals. Specific areas in the central and southern Serengeti have been identified as Highest Density Areas, with population densities ranging from 26 to 31 individuals per 100 km^2 (Romani et al. 2025). These areas are located primarily between the vast Serengeti grasslands, known as the *Serengeti Plains*, and the surrounding open woodlands, and they represent the core breeding grounds for the species across this ecosystem. In contrast to the Serengeti National Park, Tarangire and Mkomazi National Parks are characterized by more heterogeneous and generally more arid habitats. These landscapes feature higher levels of grassland fragmentation and denser canopy cover in wooded areas. As a result, expansive grassland patches are limited or almost absent, covering only a very small portion of the protected area. Being more arid ecosystems, resource availability is generally lower, and breeding territories for Secretarybird pairs tend to be larger. Consequently, fewer

Juvenile Secretarybird

Prescribed fires nest

breeding pairs and nests have been identified compared to areas of similar size in the Serengeti. In Tarangire National Park (~2,600 km2), approximately 20% of the landscape is covered by swamps, while the remaining 80% consists of woodlands, shrublands and a complex mosaic of wooded/shrubbed areas and small to medium-sized grassland patches, where we estimated a density of 3 individuals per 100 km^2. In Mkomazi National Park (~3,200 km2), suitable habitat is even more limited: about 80% of the protected area is covered by dense woodland and shrubland. To date, only four stable breeding pairs have been identified within the entire park.

We have identified several ecological factors that influence Secretarybird abundance (Romani et al. 2025). Chief among these is the presence of high-quality grasslands with high grass ground cover, referred to as *closed grasslands*. The extent of this vegetation type is also critical: at the landscape scale (~50 km^2), it needs to cover at least 40% of the area to support the stable presence of at least four individuals. By contrast, *open grasslands* — characterized by sparse vegetation cover — are less suitable, especially for breeding pairs, due to lower prey availability. These grassland types are typically found in more arid zones, where breeding densities tend to decline even when grassland patches are extensive. As expected, a greater presence of *open woodland* — woody habitat with tree canopy cover between 20 and 50% — also negatively affects Secretarybird abundance. At the landscape level, the optimal threshold for wooded habitat cover appears to be around 20%. Forests, mostly concentrated along permanent rivers, have a clearly negative impact on the species' presence. Another key factor is mean annual rainfall, which strongly influences vegetation structure. The highest Secretarybird abundances are found in areas receiving between 700 and 850 mm of rain per year. Rainfall above this threshold tends to promote woody plant encroachment and alters grassland composition, making the native grass cover taller and denser — conditions that may hinder movement and hunting efficiency. Finally, the species tends to favor flat terrain or gently sloping areas, avoiding more rugged or hilly landscapes.

While these factors generally explain species presence across all age classes, breeding pairs show somewhat different habitat preferences during the nesting season; for instance, they seem to prefer areas with slightly more woodlands cover — up to 50% — during the nesting period.

Changing Landscapes and Unpredictable Rains on Secretarybird Reproductive Success

We analyzed Secretarybird nesting success and productivity in relation to vegetation structure — measured as the level of grassland fragmentation — and seasonal rainfall regimes. Our findings show how these two environmental factors significantly influence the species' reproductive performance (Romani et al. in review). In areas where grassland cover drops below 50%, meaning the Secretarybird's primary habitat is highly fragmented, nesting success was low (18.9%), as was average productivity (0.8 successful nests per 100 km^2). This is likely due to stronger edge effects, which increase nest exposure to predation. Among the predators identified were the honey badger and the leopard, both generalist species well adapted to ecotonal environments. In moderately or slightly fragmented habitats (with grassland cover between 50% and 90%), we recorded the highest nest densities (up to 7.6 nests per 100 km^2) and the greatest productivity (2.5 successful nests per 100 km^2), even though nesting success remained moderate (29%). This pattern may be attributed to edge effects exacerbated by density-dependent predation, especially since most nests were found at the boundary between grasslands and woodlands. However, these areas appear to offer a favorable trade-off between access to grassland and prey availability. As a generalist predator, the Secretarybird can exploit a broad spectrum of food sources, from small mammals and orthopterans in vast grasslands to larger prey such as snakes, hares, and francolins, often found along habitat gradients. In landscapes where grass cover exceeds 90%, nesting success reached its highest level (71%). Nonetheless, nest densities were lower compared to moderately fragmented areas, leading to intermediate productivity (1.7 successful nests per 100 km^2). This could be related to a combination of factors, including the limited availability of trees, competition with other raptors nesting in the same tree species, and the greater environmental fluctuations (in terms of annual precipitation and food availability) to which these types of habitats are exposed.

A crucial factor influencing reproductive output is wet-season rainfall, which showed a strong correlation with nest abundance. In 2024, a year with much higher rainfall than 2023, the number of nests nearly tripled, resulting in increased productivity (2.2 vs. 0.8 successful nests per 100 km^2), even though nesting success remained relatively constant. This indicates that rainfall during

Above: Camera trap image. Left: Camera trap deployment.

a specific breeding season primarily affects the number of breeding attempts, rather than nesting success. However, the abundant rainfall of 2024 led to a notable increase in prey biomass — especially small mammals — thereby significantly improving food availability for both adults and chicks during the 2025 breeding season. This trophic boost likely contributed to the higher nesting success and brood size observed in 2025 compared to the two previous years. In 2023, the average brood size within the first month after hatching was 1.2; in 2024, it was 1.5; and in 2025, it increased to 1.7. Conversely, poor rainfall during the rainy season can reduce prey availability and negatively impact not only the current but also the subsequent breeding season.

These findings highlight the Secretarybird's sensitivity to environmental and climatic changes, which can reduce the availability of suitable habitat, disrupt predator-prey dynamics, and impair reproductive success — posing significant challenges for the long-term conservation of the species.

The Role of Fire: Between Management and Impact

Another key factor that deserves attention is the use of prescribed fire. Areas where 25% to 55% of the surface is burned show a positive effect on Secretarybird abundance (Romani et al. 2025). This outcome appears to be linked to the reduction of woody vegetation, which helps maintain open habitats while still ensuring adequate prey availability.

However, excessive use of fire — both in terms of the extent of burned areas and the lack of a rotational burning regime — has a negative impact on the species. This effect is particularly exacerbated by shifts in seasonal rainfall patterns driven by climate change. Areas that are frequently burned and exposed to increasing aridity can rapidly lose productivity. In these conditions, breeding pairs may abandon their territories, fail to reproduce, or delay the onset of the breeding season due to insufficient food resources to support a brood. Fires can also damage or destroy nesting trees and nests. Burning large areas of grassland during the breeding season causes a sudden drop in food availability, with indirect effects on chick survival, especially during the early stages of development. Weaker chicks become more vulnerable to disease and parasitism. Additionally, fire poses a direct threat to chicks, as they may die from heat exposure or smoke inhalation, given that the species typically nests in trees rarely taller than 6 to 7 meters (Romani et al. in review). Finally, the sudden decrease in resources can intensify intraspecific competition among nearby pairs and interspecific competition with other predatory or opportunistic species, triggering a cascade of negative effects on the species (Fernandez-de-Simon et al. 2014, Mueller et al. 2016). Although fire plays an essential role in controlling woody plant encroachment and limiting excessive grassland fragmentation (Higgins et al. 2000), proper fire management is equally critical for maintaining high numbers of breeding pairs and increasing nesting success, thereby sustaining population stability.

When to Go Where to Stay

In 2024, we equipped five juvenile Secretarybirds with satellite transmitters. Unfortunately, two of them were predated just a few days after fledging, and the units were destroyed during the predation events. The remaining three individuals survived and successfully left their natal areas, initiating their dispersal.

So far, movement patterns have shown individual differences, especially with one of the three juveniles. In particular, two of them dispersed approximately three months after fledging, while the third delayed dispersal until around six months post-fledging. These differences may be linked to environmental characteristics of the respective natal areas. The two individuals that dispersed earlier were hatched in areas with higher nest density, featuring moderately to slightly fragmented habitats and high-quality closed grasslands. Prior to dispersal, their movements were largely confined within a 1.5 km radius from the nest. The third bird, in contrast, hatched in one of the driest zones of the Serengeti National Park, characterized by expansive open grasslands with low vegetation ground cover and an almost complete absence of wooded habitat. This juvenile remained in the natal area for twice as long as the others, but its daily movements spanned up to 8–9 km from the nest. These arid habitats support fewer breeding pairs, each occupying significantly larger territories. After dispersal, all three individuals remained within the boundaries of the Serengeti National Park and the Ngorongoro Conservation Area, primarily moving between the southern Serengeti and the more arid regions of western Ngorongoro. While the two birds originating from more heterogeneous habitats explored a wider variety of habitats, the third individual settled in a large area of arid grasslands and has shown no further significant movements.

In 2025, between April and May, we deployed an additional ten satellite

transmitters on juveniles hatched during the current breeding season. The movement patterns recorded so far appear consistent with those of the two earlier dispersers from 2024: at approximately two months post-fledging, just one of them has left the natal area, and their movements remain confined within a 1.5 km radius from the nest. Unfortunately, one of these juveniles was predated roughly twenty days after fledging, but we were able to recover the GPS unit and fit it to another Secretarybird. None of these ten transmitters were deployed in the arid grassland regions of the Serengeti National Park or the Ngorongoro Conservation Area. All tagged juveniles began roosting in trees other than the nest tree approximately one month after fledging.

Safeguarding a Declining Savannah Icon

The Secretarybird is a rapidly declining species across much of its range and is affected by numerous real and potential threats. Understandably, attention often focuses on broad-scale ecosystem changes, such as the fragmentation, transformation, and loss of suitable habitat — driven primarily by human activities — and climate change. Focusing on these processes is crucial, as solid scientific evidence is needed to support large-scale changes in resource management.

Some species, particularly predators, serve as excellent models for understanding the negative links between rapid environmental change, population dynamics, and biodiversity loss. Our research findings to date clearly support this notion: the presence, abundance, and reproductive success of the Secretarybird are strongly influenced by rainfall patterns and by habitat quality and continuity. High quality grasslands with large extent and low to moderate level of fragmentation have proven essential for the species' productivity. In contrast, more fragmented savannahs affected by drought, or densely wooded habitats, are significantly less suitable; they disrupt predator–prey dynamics and, in the most extreme cases, lead to the abandonment of breeding territories. Likewise, data from juvenile movement tracking reveal that the post-fledging and dispersal phases are also shaped by habitat availability and quality, as well as by human pressure. Notably, the tracked juveniles have remained exclusively within protected areas. In this context, small-scale threats such as direct persecution must not be underestimated. Their impact can be much greater than expected and is almost always linked to specific local socio-economic and cultural conditions. Addressing these issues requires targeted interventions that we, as researchers and conservationists, are often not in a position to lead directly. In such cases, the most effective actions should come from national governments. Awareness campaigns within local communities are undoubtedly essential, but they risk having little or no impact if not supported by strong and coherent institutional policies and strategies.

References

BirdLife International, 2020, *Sagittarius serpentarius*. The IUCN Red List of Threatened Species 2020: e.T22696221A173647556. Accessed on 18 June 2023.

Brink, C. W., Lee, A. T. K., Priyadarshani, D., Hwang, W. H., Retief, E., Chetty, K., & Whitecross, M. A., "Recent distribution and population trends for Secretarybirds Sagittarius serpentarius in South Africa, Lesotho, and Eswatini from citizen science data," *Bird Conservation International,* Vol. 34, pp.e23, 2024.

Fernandez-de-Simon, J., Díaz-Ruiz, F., Cirilli, F., Tortosa, F. S., Villafuerte, R., & Ferreras, P., "Role of prey and intraspecific density dependence on the population growth of an avian top predator.," *Acta Oecologica,* Vol. 60, pp.1-6, 2014.

Higgins, S. I., Bond, W. J., & Trollope, W. S., "Fire, resprouting and variability: a recipe for grass–tree coexistence in savanna," *Journal of Ecology*, Vol. 88, pp.213-229, 2000.

Martin, T. E., "Nest predation and nest sites," *BioScience*, Vol. 43, pp.523-532, 1993.

Mueller, A. K., Chakarov, N., Heseker, H., & Krüger, O., "Intraguild predation leads to cascading effects on habitat choice, behaviour and reproductive performance," *Journal of Animal Ecology,* Vol. 85, pp.774-784, 2016.

Nkwabi, A. K., Lyamuya, R. D., Masenga, E., Bukombe, J., Mwakalebe, G., Mdaki, M., & Fyumagwa, R., "Spatial-temporal distribution, abundance, diversity and mortality of birds on road network in the Serengeti Ecosystem, Tanzania," *International Journal of Biodiversity and Conservation*, Vol. 10, pp.192-202, 2018.

Portugal, S. J., Murn, C. P., Sparkes, E. L., & Daley, M. A., "The fast and forceful kicking strike of the secretary bird," *Current Biology*, Vol. 26, pp.R58-R59, 2016.

Romani, F., Buij, R., Mjingo, E. E., Mmassy, E. C., Pellitteri-Rosa, D., Posillico, M., & Ramella Levis, E., "Effects of grassland fragmentation and precipitation on reproduction: evidence from Secretarybird (*Sagittarius serpentarius*) nesting success and productivity in the Serengeti ecosystem," *Journal of Avian Biology,* under review.

Romani, F., Mmassy, E. C., Pellitteri-Rosa, D., Posillico, M., & Ramella Levis, E., "Habitat selection by an extraordinary savannah raptor: environmental factors driving abundance of the Secretarybird *Sagittarius serpentarius* in the Serengeti National Park (Tanzania)," *Bird Study,* pp.1-24, 2025.

Shaw, P., Ogada, D., Dunn, L., Buij, R., Amar, A., Garbett, R., ... & Thomsett, S., "African savanna raptors show evidence of widespread population collapse and a growing dependence on protected areas," *Nature Ecology & Evolution*, Vol. 8, pp.45-56, 2024.

Whitecross, M. A., Retief, E. F., & Smit-Robinson, H. A., "Dispersal dynamics of juvenile Secretarybirds *Sagittarius serpentarius* in southern Africa. Ostrich,"Vol. 90, pp.97-110, 2019.

SPREAD WINGS & DEAD THINGS

Kit Ellsworth, Master's Student, University of Washington - Museology

Photos courtesy of the author except where noted.

When using animal ambassadors in public education, picking the right bird for the job is paramount. Perhaps surprisingly, sometimes it turns out that the right bird for the job is a dead bird. (*Photo 1*)

In college, I learned to prepare avian specimens while I was simultaneously learning to train and educate with live raptor ambassadors. For me, preparing specimens is a relaxing way to spend an afternoon, a hands-on opportunity to discover new things about the birds, and provides a powerful education tool to share the incredible world of raptors with my audience.

While many raptor centers may have a handful of assorted biofacts, they may be unsure how to best utilize them in education to strengthen the impact of programming and improve welfare of your ambassadors. I hope that the ideas in this article will inspire you to actively and intentionally write specimens into the scripts of your education programs, and maybe even encourage you to prepare your own specimens.

Added Educational Value

Incorporating specimens can significantly enhance educational programming, but knowing where to start to create the most impactful programs where specimens and ambassadors complement each other and play equally valuable roles in educating your audience can be difficult. Consider ways specimens can educate that live ambassadors can't and vice versa. Ambassadors are invaluable for creating empathy and building connections between humans and animals, but specimens can offer unique tactile and visual experiences that ambassadors can't.

For instance, specimens allow for hands-on education, giving the public the chance to feel animals—an experience that is typically unethical and unsafe with live raptor ambassadors. Specimens allow the public to engage directly with animal textures. For instance, while as educators, we can describe adaptations which help owls fly silently like the velvety feather texture and fringed edges of their flight feathers (Christopher J. et al., 2020), providing specimens that let guests feel these traits and compare them with hawk feathers leaves an indelible impression which helps the facts stick. (*Photo 2*)

Some centers may be wary about allowing guests to touch and potentially damage specimens. I think tactile education is incredibly valuable, especially for guests who may have visual impairments. Brainstorm ways to incorporate this opportunity into your education while mitigating potential damage: use signage that asks people to be gentle or use a certain number of fingers, provide hand sanitizer before

Left: Photo 1 - Clockwise from top left: Raccoon (Procyon lotor) skull, Cooper's Hawk (Accipiter cooperii), American Barn Owl (Tyto furcata), Great-horned Owl (Bubo virginianus) wing, Northern Flicker (Colaptes auratus) wing, Violet-green Swallow (Tachycineta thalassina), Steller's Jay (Cyanocitta stelleri) wing, Mallard duckling (Anas platyrhynchos), Virginia Opossum (Didelphis virginiana) skull, Coyote (Canis latrans) skull, American Mink (Neogale vision) skull.

Right: Photo 2 - Close up of a Great-horned Owl's wing showing the comb-like serrated leading edge of a primary feather.

Photo 3: Side by side comparison of a juvenile Sharp-shinned Hawk (front) and juvenile Cooper's Hawk (back)

handling to minimize oils transferring to the specimens (and after to help people feel clean), keep the specimens on a table and don't let people pick them up, and/or have someone always manning the touch table or guiding the specimen handling to supervise and ensure careful handling. You may want to avoid using certain specimens for handling that are fragile, old, or rare, but especially if you're at a rehabilitation center and have frequent access to common raptor species, don't be afraid to let the public touch specimens.

Specimens also provide an unchanging snapshot in time. While live birds will grow and change with time, specimens preserve plumage variations that change with age or season. For instance, while a young Red-tailed Hawk (B*uteo jamaicensis*) ambassador will eventually lose its juvenile plumage, two Red-tailed Hawk specimens can indefinitely demonstrate the brown tails of juveniles versus the red tails of adults.

Beyond temporal comparisons within a single species, study skins are valuable for learning to identify and compare multiple species. Study skins are customarily posed consistently across taxa which minimizes countless variables that can complicate bird identification. For instance, how fluffed up a bird is can change its apparent size, making it difficult to differentiate between similar species like Cooper's Hawks (*Astur cooperii*) and Sharp-shinned Hawks (*Accipiter striatus*). (*Photo 3*) Specimens can make subtle distinctions like bill size, tail shape, and coloration far more obvious than when observing live birds. Seeing these differences clearly on specimens can then aid in identifying the field marks in live ambassadors or wild birds.

Specimens also allow us to go beneath the skin and easily compare internal structures with skeletons and skulls. Owl skulls are an excellent example, allowing you to show exactly how big an owl's eye sockets are compared to other raptors or birds generally. Using the skull of an *Aegolius* sp. owl like a Northern Saw Whet Owl (*Aegolius acadicus*) or a Boreal Owl (*Aegolius funereus*) really drive home the extreme asymmetry of their ears compared to an owl like a Great-horned Owl (*Bubo virginianus*) (McGillivray 1985) or Screech Owl (*Megascops* sp.) (skull (Marshall 1967) which have symmetrical ears and a symmetrical skull to match. Furthermore, you can compare both to a Barn Owl (*Tyto* sp.), (which does have asymmetrical ears but only in the soft tissue around the skull while the skull remains fairly symmetrical (Krings et al. 2018). This is a good example of how even when animals have adaptations for similar purposes they may have evolved them in different ways (*Photos 4 and 5*). Asymmetrical ears evolved four or more independent times across the owl order (Norberg 1977).

Personal Benefits of Preparing Specimens

The hands-on experience with specimen preparation fosters a deeper understanding of bird anatomy and physiology,

Left: Photo 4 - Northern Saw-whet Owl skull showing asymmetrical ear openings with the right higher than the left. Photo credit: Mary Margaret Ferraro.

Right: Photo 5 - Eastern Screech-Owl skull showing the symmetrical ear opening. Photo credit: Mary Margaret Ferraro.

Photo 6: Initial stages of prep on a Northern Saw-whet Owl (Aegolius acadicus) showing abundant fat deposits in the pocket of the wishbone and around the abdomen but limited over the keel bone.

enriching your ability to teach others. While sometimes it's as simple as exploring how the various tendons of the feet control each toe, giving raptors their defining grip strength, or learning that dead Ospreys (*Pandion haliaetus*) smell like goats. Other times, I got to see just how sufficient damage to a single tendon by a squirrel bite can doom an otherwise healthy and experienced adult Red-tailed Hawk to starvation, or that Ospreys seem to have a higher external parasite load than other raptors (would recommend making sure the Osprey was frozen before prep). I could've kept my hands clean and learned everything perusing scientific papers, but specimen preparation directly led me to discover these details for myself. Without the process of preparing these birds, I may not have even thought of looking for that information.

Examining internal organs during specimen preparation has also improved my skills in conducting amateur necropsies and directly enhanced my ability to monitor and improve the health of the live raptors I work with. By seeing firsthand how organs appear in different species and how different injuries/illnesses affect these, I've become better at identifying common issues in particular species. For example, when I first learned to handle raptors, I was just taught to feel the keel to assess body condition, but by studying fat deposition patterns in different raptor species, I learned that only looking at fat stored along the breast muscle can be very deceiving. Some birds will store very little fat there even when they're dangerously overweight. Fat can be stored all over the body, like in the pocket of the furcula (wish bone), in a pad on the back above the tail (especially in owls), and around the internal organs such as along the folds of the intestines and around the heart. Preparing overweight birds drove home how important weight management is for health and how we need to take a holistic look at the entire body of each bird when assessing condition (*Photo 6*).

Alongside Live Ambassadors

Much of my experience is from small raptor centers that focus primarily on offsite education like bringing ambassadors to schools or tabling at events. Offsite programming can be difficult for some ambassadors and fulfilling these programming expectations can be especially challenging if your center is transitioning legacy raptor ambassadors to choice-based training while simultaneously trying to meet existing programming expectations. As a result, centers sometimes face the dilemma of assigning ambassadors to programs they may be unprepared for or conducting programs with minimal ambassadors.

For instance, at one center, our basic program advertised three to five raptor ambassadors but this number

Photo 6: A touch table set up with an array of specimens for the charity gala. Left to right starting with the taxidermy mount: Flammulated Owl (Psiloscops flammeolus), Sharp-shinned Hawk (Accipiter striatus), Cooper's Hawk (Accipiter cooperii), Red-tailed Hawk (Buteo jamaicensis), California ground-squirrel (Otospermophilus beecheyi), North American Porcupine (Erethizon dorsatum) quills and skull, Common Raven (Corvus corax), American Crow (Corvus brachyrhynchos), Steller's Jay (Cyanocitta stelleri), American Barn Owl (Tyto furcata), Northern Pygmy Owl (Glaucidium californicum), Northern Saw-Whet Owl (Aegolius acadicus), Northern Flicker (Colaptes auratus), two European Starlings (Sturnus vulgaris) (breeding and non-breeding plumage), and Violet-green Swallow (Tachycineta thalassina).

was often difficult to meet with losses in our aging ambassador team and while adopting new training strategies for both our experienced birds and new ambassadors. As a result, we frequently had to choose between our programming goals and our training goals and opted to offer programs with fewer live ambassadors and compensate with increased specimen use. At another center, where we had some limited capacity to offer onsite programming, we temporarily stopped taking raptors to offsite programs all together while we retrained off-site program behaviors like crating and traveling in cars for extended durations. By using specimens, we continued to offer off-site educational opportunities and maintained our outreach efforts while respecting the limitations of our ambassadors (*Photo 7*).

If your center is facing a similar quandary, there isn't one right answer and the factors unique to your organization and ambassadors will affect your decision. However, incorporating specimens in your education can make that decision easier. In addition to adding educational value, specimens can be excellent for filling out your educational lineup so that even programs with one, two, or even no live ambassadors remain compelling to your audiences.

Additionally, for small centers with limited staff or volunteers, maintaining a large specimen collection rather than a large ambassador collection can help your organization avoid overextending its people and budget. Specimens don't require food, enrichment, enclosures, or training to be program ready, so having a room full of specimens requires far fewer resources and time than aviaries full of ambassadors. So specimens can be a great way to educate on a broader range of species including species that are challenging to care for in captivity generally or for your particular facility, while ensuring that a small number of live ambassadors get the high level of dedicated care they deserve.

Photo 8: Female American Kestrel (Falco sparverius) round skin.

Conclusion

Ultimately, specimens not only enhance educational programming but also foster a deeper appreciation and understanding of wildlife, both for educators and for the audiences they serve, while simultaneously allowing us to expand our educational endeavors and maintain the high level of care for our live ambassadors. I hope I've inspired you to incorporate specimens into your education collections. If you're interested in learning more, you can view more of my preparations, read the full write-up of my presentation from the 2025 conference, and view the illustrated guide to preparing avian round skins, spread wings, and skeletons here: deadbirdsdaily.tumblr.com

REFERENCES

Christopher J., LePiane, K., & Liu, L. (2020, January 20). Evolution and Ecology of Silent Flight in Owls and Other Flying Vertebrates. *Integrative Organismal Biology,* 2(1). https://doi.org/10.1093/iob/obaa001

Ferraro, M. M., & Rohwer, V. (2022). BIOEE 1150 *Techniques of Avian Specimen Preparation* [Lecture]. Cornell University

Ferraro, M. M., & Rohwer, V. (2023). BIOEE 2150 *Advanced Techniques of Avian Specimen Preparation* [Lecture]. Cornell University.

Krings M, Rosskamp L, Wagner H. Development of ear asymmetry in the American barn owl (*Tyto furcata pratincola*). Zoology (Jena). 2018 Feb;126:82-88. doi: 10.1016/j.zool.2017.11.010. Epub 2017 Dec 2. PMID: 29279251.

Marshall, Jr., J. T. (1967). Parallel variation in North and Middle American screech-owls. Monogr. West. Found. Vertebr. Zool. 1.

McGillivray, W. B. (1985). Size, sexual size dimorphism, and their measurement in Great Horned Owls in Alberta. *Canadian Journal of Zoology* 63:2364-2372.

Norberg R. Å. (1977). Ocurrence and independent evolution of bilateral ear asymmetry in owls and implications on owl taxonomy. Phil. Trans. R. Soc. Lond. B280375–408

Buses, Birds, and Big Ideas

Dr. Robyn Miller, Auburn University Raptor Center

Photos courtesy of the author

There's a wonderful kind of chaos when 60 third graders tumble off a school bus full of questions, curiosity, and unfiltered energy. Field trips like these are among the most visible, high-impact tools for inspiring tomorrow's conservationists, but making them truly meaningful requires preparation and planning.

From both sides of the teaching perch—as a college instructor and a conservation educator—I've learned that the strongest programs speak to two audiences: the students in front of you and the educators who brought them. When we support both, we cultivate a community that values nature not just as spectacle, but as something personal, participatory, and worth protecting.

Every Flock Has Its Own Song

Before we teach, we must listen. Learning outcomes and interpretive guidelines like the Rule of Five are only as effective as the degree to which they resonate with our audience. As Tilden reminds us, visitors always interpret our words through their own experiences (Tilden, 41). These personal associations aren't obstacles; they're essential entry points for connection.

That means asking teachers, students, and neighbors what wildlife looks like in their everyday lives and what matters most to them. Some helpful starting questions include:

- What local conservation issues or opportunities are most relevant to each audience and age group?
- What misconceptions or barriers prevent certain groups from participating in conservation action and behaviors?
- How can we connect our conservation messaging to the lived experiences and daily realities of our audiences?
- What outcomes do community members hope to achieve by engaging in our program?
- What behaviors do we want to change or reinforce within our community? What behaviors must we change within ourselves to achieve that?

Support the teachers, and the whole class flies higher.

Teacher Test Flights

An impactful field trip doesn't begin when the bus doors fold open; it starts months in advance. One essential tool I've created is a digital pre-program packet sent at the first inquiry from an interested teacher. This packet provides teachers and chaperones with a clear "what to expect" overview, alongside free pre-visit classroom activities and worksheets. Paired with curriculum standards, it

Hands-on activities deepen conservation learning, and your incredible volunteers are key to making those moments memorable.

Forging a lifelong love for conservation starts by helping young hearts fall in love with the wilderness in their own backyards.

helps teachers justify the trip to administrators and decision-makers—an often-overlooked hurdle.

Want to bolster field trip attendance? Support teachers by hosting complimentary educator preview days, ideally during the summer. Educator field experiences like these have been linked to stronger retention rates and greater professional confidence (Dawson & Leytham, 2020). These informal visits give teachers a chance to experience your program ahead of the school year, build relationships with your staff, and explore how your content fits their unique classroom needs. Just as importantly, they communicate something essential: you value their role in the learning process.

Teachers aren't just the ones who submit program requests; they're our educational partners. When programs empower them, even in small ways, they're more likely to carry your conservation messaging back into the classroom long after the field trip ends.

Approximate Your Content with Care

Your bird show might be polished, but don't underestimate the power of hands-on learning. Activity-based conservation education has been shown to improve children's environmental attitudes more than the teaching method or organizational affiliation alone (Alon & Tal, 2015).

The challenge lies in scaling these activities across age groups. For younger students, this often means focusing less on environmental crises and more on nurturing connection. As David Sobel writes in *Beyond Ecophobia*, children need "an opportunity to bond with the natural world… before being asked to heal its wounds" (Sobel, 2013).

As students mature, programming can expand to include more complex ecological concepts and conservation dilemmas. High school audiences, for instance, may engage more deeply through real-world problem-solving tasks: tracking a wildlife patient intake case, debating local land-use tradeoffs, or designing a mitigation strategy for a conservation threat in their own community.

Thoughtfully designed to build on one another, grade-block curriculums create a through-thread that carries learners from childhood into young adulthood—and beyond. By creating opportunities for students to connect with the natural world, let conservation ideas mature alongside them, and see themselves as capable of impact, they begin to move from observation to ownership. They don't just learn about conservation; they live it.

Don't Stop at the Parking Lot

Even after students wave goodbye, the learning—and partnership—can continue. A post-fieldtrip assessment can be as simple as an email with a survey, a note of appreciation, and optional student reflection prompts

Joy, wonder, and curiosity: field trips that spark these emotions create lasting impressions...and future conservationists.

or activities.

Crucially, this is a chance to ask educators what would benefit them next time. If you find that the responses don't match your anticipated outcomes, you can always return to the front-end community questions that you explored during the development of your program. These evaluations should be considered complementary to one another—a process in perpetuity, not a product (Clavijo, 8).

As we reflect on what's working and what needs retooling, it's also essential to consider who may be excluded from these opportunities altogether. Barriers like transportation access, cost, language, or differing physical and cognitive needs can limit participation. Communal field trip design means asking not just "What do we teach?" but "Who are we missing?" and "How can we reduce those gaps?" If conservation is for everyone, then our field trips must be, too.

Soaring Past the Schoolyard

A well-executed field trip is more than student enrichment. They're an opportunity to shift community mindsets, one busload at a time. When we design these experiences with care—centering both students and teachers, scaling content thoughtfully, and extending learning beyond the trip itself—we create more than just memorable programs.

And if we get it right, maybe—just maybe—those big ideas will stay with them long after the birds are back in their aviaries and the bus pulls away.

(Want to take it a step further? In the next issue, Ali Gustavson will walk us through how to design a lesson plan that takes flight.)

References

Alon, N., and T. Tal. "Student Self-Reported Learning Outcomes of Field Trips: The Pedagogical Impact." International Journal of Science Education 37(8):1279–98. 2015.

Clavijo, K. and Khalil, K. A. *Practical Evaluation for Conservation Education and Outreach*. Rowman & Littlefield, 2020.

Dawson, S. A., and P. A. Leytham. "Don't Forget the Field Trip! The Professional Impact on K-12 Teacher Preparation and Retention." *International Journal of Instruction* 13(4):133–44. 2020.

Sobel, D. "Beyond Ecophobia: Reclaiming the Heart in Nature Education," Orion Reader, 2013.

Tilden, F. *Interpreting Our Heritage*. Chapel Hill: University of North Carolina Press, 1957.

Inspiring awe is its own kind of education; sometimes a single flight can spark a lifetime of curiosity.

Education Grant Update

Naomi Johns, Centre & Operations Manager

The Bird of Prey Project

Photos courtesy of The Bird of Prey Project

Our mission at The Bird of Prey Project is to restore habitats, conserve birds of prey, and make wildlife education accessible to all communities. We're a registered charity funded by a multiple award-winning visitor attraction, home to just over twenty resident birds who make up our free flight display & experience programme, trained and managed through restraint free shaping behaviour training.

Through our accessible wildlife education programme, we are looking for ways to make nature-based learning something all communities can engage with and help our beneficiaries develop a deeper connection to their own local wildlife.

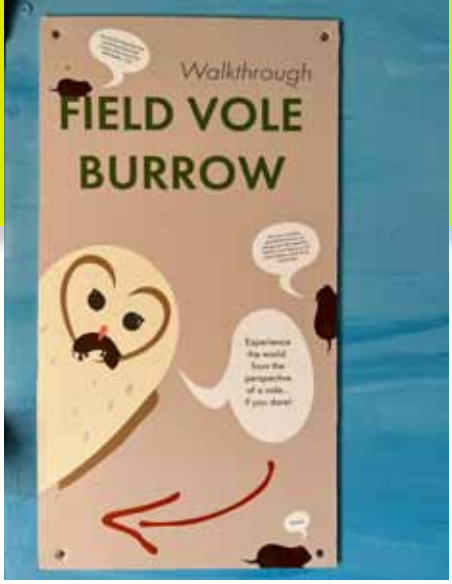
We designed the Conservation Station Project with the idea in mind to enable learning not just through sight, but sound, colour, light, touch and even scent. We were thrilled to receive the IAATE education grant to make the work possible, and in July this year, we opened the new space.

The station is inspired by the work The Bird of Prey Project does to monitor and conserve wild cavity nesting species – notably the European Kestrel (*Falco tinnunculus*) and Common Barn Owl (*Tyto alba*) – two species that fluctuate heavily because of the lost ancient grassland habitat in the UK and have suffered population declines. With fun, image-based signage led by a cartoon Barn Owl called Ozzie (inspired by our resident flying Barn Owl), guests can explore the room and enjoy exhibits ranging from wildlife top tips, the value of decay in ecosystems, and nature detectives!

You can also get interactive with our feather touch exhibit (this is a great diversion to the classic question – 'can we touch the birds?' and our answer of 'nope!'), pellet dissection activity or raptor skeleton box. We also have a large interactive ecosystem board, where guests can move bird of prey sliders onto their favourite prey item, building an understanding of food chains and the importance of biodiversity.

But perhaps the most exciting aspect of the Conservation Station, is the field vole tunnel. A walkthrough tunnel designed to replicate the feeling of being a short tailed field vole crawling through a grassy burrow, accompanied by a nocturnal soundscape, brings great fun to all ages. And what is effective education, if not fun?

The whole space, including the tunnel, is made wheelchair accessible. The next steps for the Project include inviting groups supporting under-served communities for a free visit to the Conservation Station and The Bird of Prey Project visitor centre free of charge, made possible by the IAATE funding.



IAATE Board 2025 Election

Our 2025 Board of Directors election is coming up. This year, we have open positions for Secretary, International Board Member, and three General Board Members.

We asked candidates to answer a few questions so you can get a feel for who they are. Get to know the candidates here so you can make an informed decision when voting time comes. Watch your inbox for the ballot and vote for the individuals you would like to see represent and serve on the IAATE Board.

Candidates for General Board

Robyn Miller, Auburn University Raptor Center

Years of service/experience: 13 years of experience in the field.

What would you like IAATE members to know about you?: I am deeply grateful to IAATE for shaping my journey as both an educator and a raptor trainer, and I am committed to giving back to this vibrant community. With an unconventional background, "a PhD in literature," I bring a unique perspective that informs my collaborative leadership and educational outreach, and I'm passionate about helping others find their place in this field. Whether through my work on the Education and Marketing Committees or as a current General Board Member, I aim to actively engage with IAATE members and support initiatives that foster connection, collaboration, and community across all experience levels.

What would you bring to the IAATE Board?: IAATE has given me mentors, lifelong friends, and the confidence to pursue ambitious goals in this field, but I often had to advocate for and fund my own participation. Now, as a newly-minted director at AURC, I'm determined to open the door wider, encouraging leaders to budget for their staff's memberships, conferences, and committee work as essential components of professional growth.

Colleen Hartman, Carolina Raptor Center

Years of Service/Experience: 11 years of experience in the field.

What would you like IAATE members to know about you?: I attended my first conference back in 2015 when it was hosted by Carolina Raptor Center. I had just started in the field a year prior and was in awe of all of the information I was learning. That first conference taught me a lot and also introduced me to some incredible lifelong friends and mentors who've helped shape my journey since then. When people ask why I got into this profession and why I love IAATE, my answer is always that I started because of the birds but I've stayed because of the people. I think it's so special to have the opportunity to learn and collaborate with people of all different backgrounds and experience levels. Our ability to work together in this field has such a powerful impact on not only animal care, but on the broader goals of conservation as well.

What would you bring to the IAATE Board?: I want to be elected to serve on the IAATE Board because I truly believe in the power of collaboration and the impact we can make when we support each other. This organization has played a huge role in my professional journey, and I'd love the opportunity to give back in a meaningful way.

Josh Sanko, Natural Encounters, Inc

Years of Service/Experience: 9 years in the field.

What would you like IAATE members to know about you?: I've been working with birds, primarily raptors, for 9 years. I have worked at multiple raptor centers transitioning to a birds-first model and have seen first-hand the struggles and victories that can come with that change. Almost a year and a half ago I began working with Natural Encounters, Inc. and broadened the types of birds I was working with to include hornbills, parrots, cranes, and many more. Working with animals and people is incredibly important to me, and I consider myself lucky that I have found a field where I can do it every day.

What would you bring to the IAATE Board?: IAATE has helped me grow in ways I didn't expect. It helped me learn about a community as dedicated as I was to the wellbeing of the animals in my care and the importance of sharing these special species with the public. I want to be on the board because when I was a member, the board was welcoming and kind to me at every turn, making me feel comfortable to share my experiences and ask for help. I hope to make others feel the same to continue growing a community where being open and honest is reinforced for the betterment of the field. I care about connecting people. I am currently the chair of the marketing committee, and I work with a great team sharing social posts, hosting happy hours, and advertising all of the things IAATE has to offer throughout the year. I would bring to the board an experience of doing that work and hope to build on the progress that's already been made there as we reach new members.

Morgan Bryson, The Raptors (Pacific Northwest Raptors)

Years of Service/Experience: 13 years in the field.

What would you like IAATE members to know about you?: I began volunteering with birds when I was just 13 years old, which goes to show you're never too young (or old!) to chase your dreams. I attended my first IAATE conference at 17, and every time I see young people at the conference now, I'm reminded of how much that experience shaped me.

Birds have always been a central part in my life for as long as I can remember, but my passion for helping others has recently led me to a new adventure as well: I've started working as an Emergency Medical Responder for the British Columbia Emergency Health Services. It's been an incredible way to give back to my community while continuing to grow both personally and professionally!

What would you bring to the IAATE Board?: This organization has played a significant role in my development both as a bird trainer and as a person, and I have been passionate about its mission for many years. I believe I can bring meaningful value to IAATE through the diverse experiences I've gained during my time as a trainer and give back to this amazing community.

In addition to my hands-on work with birds, I also manage a growing and engaged social media presence for our centre (@islandraptors). I love using our online presence to further connect the public with our work and the incredible birds we care for. I would be thrilled to bring my social media skills to the IAATE team!

Mary Ewers Joyner, Lorain County Metro Parks

Years of service/experience: I have been working with program ambassador raptors for 23 years.

What would you like IAATE members to know about you?: I am truly honored to be nominated for the IAATE Board. With over 25 years of experience in the field of nature interpretation, I've spent the past 18 years dedicated to my

current facility. I currently serve as the Avian Program Curator for Lorain County Metro Parks in Ohio, where I manage the Carlisle Raptor Center, home to six resident birds. Though our collection is small, my responsibilities are broad, I serve as the primary trainer, coordinate and train both staff and volunteers, maintain facilities and enclosures, manage permits and records, facilitate animal acquisitions, and educate the public through engaging programs with our wildlife ambassadors.

Becoming a member of IAATE in 2015 was one of the most impactful decisions of my professional career. The organization has played a key role in my growth, helping me elevate the care and welfare standards not just for our raptors, but for all the animal ambassadors in our wildlife programs. In recent years, I've had the privilege of serving as Chair of the IAATE Enrichment Committee, collaborating with an incredibly talented and passionate team.

What would you bring to the IAATE Board?: Being a member of IAATE has had a profound influence on my career. This organization has provided me with invaluable support, inspiration, and resources over the years, and I am eager to give back to this community that has given me so much. I believe service is essential because it allows us to contribute to something larger than ourselves. to help shape the future of our field, support one another's growth, and ensure that the values we share continue to thrive. Giving back feels not only important but necessary, especially when the community has had such a lasting, positive impact on my own journey.

I believe my strong work ethic, organizational skills, conscientious approach, and deep care for both people and wildlife will help me serve effectively on the IAATE Board. I am committed to excellence and motivated by a genuine desire to make a meaningful difference. My passion for fostering connections between people and the natural world continually pushes me to grow, improve, and support others along the way.

Candidate for Secretary

Running Unopposed

Kristin Dean, CPBT-KA

Kristin Dean, CPBT-KA, has worked with birds, primarily raptors, for nearly 20 years. She most recently served as Director of Avian Operations at Carolina Raptor Center (CRC), overseeing both rehabilitation and ambassador programs. After relocating to Iowa for her family, she continues to support CRC as a Senior Consultant.

Kristin is passionate about leadership, staff development, and helping people connect with birds and conservation. She has shared her expertise through seminars, consulting, NEI's TEC Talks, and IAATE presentations, papers, and articles.

She is completing her first term as Secretary on the IAATE Board, following two terms as a General Board Member, and hopes to continue in the role. As Secretary, she maintains board records, manages IAATE's membership database, and oversees inquiries submitted through the website's contact form. Kristin also serves on the IAATE Executive Committee, and is an active member of the Website, Conservation, and Professional Development Committees.

Candidate for International

Running Unopposed

Holly Cale, (BSc Zoology)
Manfred Horstmann Vulture Conservation Trust

Holly Cale is a vulture conservationist with a wealth of knowledge in training, care of captive birds, and breeding of threatened species of raptors. She began her career with a BSc in Zoology and in 2009 joined the team at the ICBP. Serving over a decade as curator and aviculturist at the centre, she was involved in everything from training both birds and staff, to aviculture, wild bird rehabilitation, and leadership. To date she has hatched upwards of 400 chicks from over 50 species of raptor.

In 2022, Holly went on to become founding director/trustee of the Horstmann Trust; a vulture conservation charity formed around a well-established collection of birds in South Wales. Combining her broad range of skills in this most recent role, Holly is passionate about improving all aspects of bird welfare and conservation breeding, and teaching and sharing that knowledge far and wide.

Discriminating Tastes Prefer...

Quality, Value and Convenience.

Discover what tens of thousands of customers including commercial reptile breeding facilities, veterinarians and some of our country's most respected zoos and aquariums have already learned: with Rodentpro.com®, you get quality AND value! Guaranteed.

RodentPro.com® offers only the highest quality frozen mice, rats, rabbits, guinea pigs, hamsters, gerbils, chickens, quail, live insects, other foods and supplies at prices that are MORE than competitive. We set the industry standards by offering unsurpassed quality, breeder direct pricing and year-round availability.

We are confident that you will be truly pleased with the products and service you receive from RodentPro.com®. We will do whatever it takes to earn your business.

We guarantee it!

Order online!

www.RodentPro.com

It's quick, convenient and guaranteed!

P.O. Box 118
Inglefield, IN 47618-9998

Tel: 812.867.7598

Fax: 812.867.6058

E-mail: info@rodentpro.com

PayPal

RODENTPRO.com®
PREMIUM ANIMAL NUTRITION

International Association of Avian Trainers and Educators

Building Connections, Inspiring Excellence

IAATE
416 S Governor Street
Iowa City, IA 52240

Upcoming Events

March 29 - April 2, 2026:
34th Annual IAATE Conference, Cincinnati OH, USA (with ABMA)

Below: American Crow, Corvus brachyrhynchos
Photo credit: Helen Dishaw

Take Note! IAATE Flyer Deadlines

WINTER 2026
Submissions Due:
November 1, 2025

SPRING 2026
Submissions Due:
February 1, 2026

SUMMER 2026
Submissions Due:
May 1, 2026