

Flock This Way: Techniques to Facilitate the Removal of Birds From a Large, Free-flight Aviary

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speaker notes in italics





Tropics at SCZ

Built in 1977

Originally known as the “Jungle”

Refurbished in 2015

Replaced glass skylights with ETFE cushion system

28,000 square feet

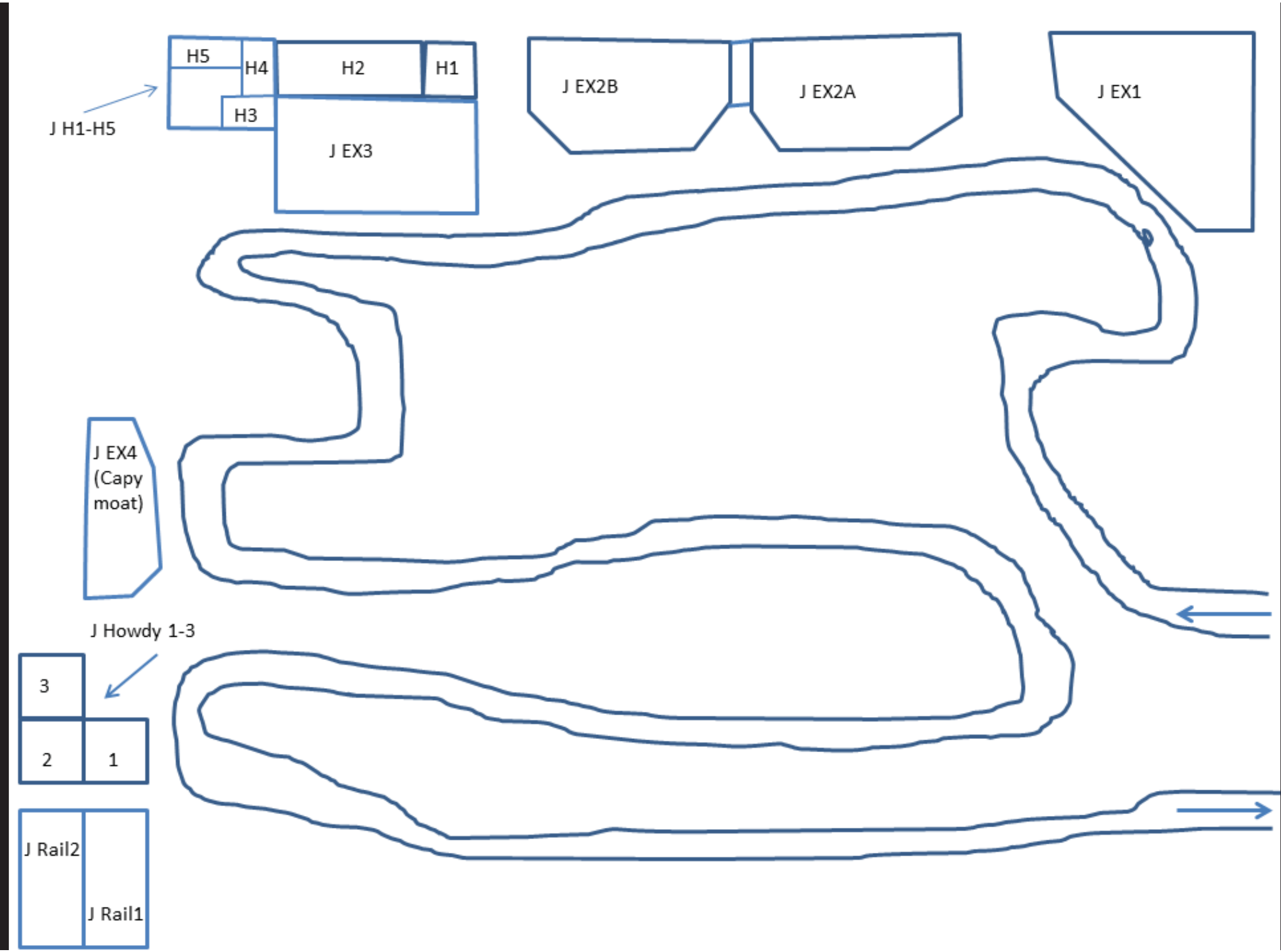
At any one time, home to 250+ birds of roughly 50 species, plus fruit bats, fish, reptiles, and invertebrates

Increased scope

Can exhibit any species whose range is between the Tropic of Cancer and the Tropic of Capricorn







Birds of the Tropics Exhibit



 EMERALD STARLING <i>Lamprolaima imbes</i>	 VIOLET-BACKED STARLING <i>Corynarchus usambarae</i>	 GOLDEN-BREASTED STARLING <i>Coereba regia</i>	 GROSBEAK STARLING <i>Scolecophagus dubium</i>	 CHESTNUT-BACKED THRUSH <i>Geothlypis trichas</i>	 FAIRY BLUEBIRD <i>Irena puella</i>	 SCARLET-FACED LIOCICHLA <i>Liocichla riparia</i>	 CHINESE HWAMEI <i>Gerrhonotus canorus</i>	 COLLARED FINCH-BILLED BULBUL <i>Sipanea semitorquata</i>	 COMMON BULBUL <i>Pycnonotus barbatus</i>	 SNOWY-HEADED ROBIN CHAT <i>Coccyus melanophaea</i>	 ORIOLE WARBLER <i>Pipreola erubescens</i>
 WHITE-BREASTED WOODSWALLOW <i>Artamus leucorhynchus</i>	 RED-CAPPED CARDINAL <i>Pterocarpus gularis</i>	 BLUE-GRAY TANAGER <i>Tangara cyanea</i>	 CINEREUS FINCH <i>Ploceus cinereus</i>	 BLACK-FACED DACNIS <i>Dacnis tringoides</i>	 RED-LEGGED HONEYCREEPER <i>Cyanerpes cyaneus</i>	 SUNDA PARROTFINCH <i>Erythrura tricolor</i>	 SPANGLED COTINGA <i>Cotinga cayana</i>	 SPECKLED MOUSEBIRD <i>Colinus striatus</i>	 CRESTED COUA <i>Coua cristata</i>	 RED-CRESTED TURACO <i>Coryphopterus cristatus</i>	 GREAT BLUE TURACO <i>Coryphopterus albus</i>
 GOLDEN-HEADED QUETZAL <i>Pharoscorupus auratus</i>	 REGENT PARROT <i>Apapane orestes</i>	 NICOBAR PIGEON <i>Columba nicobariensis</i>	 PINK-NECKED FRUIT DOVE <i>Ptilinopus porphyreus</i>	 BEAUTIFUL FRUIT DOVE <i>Ptilinopus pulchellus</i>	 BRUCE'S GREEN PIGEON <i>Ducula bairdi</i>	 WONGA PIGEON <i>Lophoceros wongae</i>	 LUZON BLEEDING HEART DOVE <i>Columba eburnea</i>	 CRESTED QUAIL DOVE <i>Geopelia striata</i>	 TAMBOURINE DOVE <i>Sturnira sumatrana</i>	 VICTORIA CROWNED PIGEON <i>Columba victoriae</i>	 GREEN-NAPED PHEASANT PIGEON <i>Columba palumboides</i>
 VIETNAM PHEASANT <i>Cathartes aura</i>	 CRESTED WOOD PARTRIDGE <i>Francolinus leucurus</i>	 BLACK CRAKE <i>Zonaria tricolor</i>	 SUNBITTERN <i>Eurostocheus hololeucus</i>	 PERUVIAN THICK-KNEE <i>Burhinus urocyathus</i>	 NORTH AMERICAN RUDDY DUCK <i>Oxyura jamaicensis</i>	 MARBLLED TEAL <i>Mareca angustirostris</i>	 BAIKAL TEAL <i>Silvretta forsteri</i>	 BAHAMA PINTAIL <i>Anas bahamensis</i>	 MANDARIN DUCK <i>Aix galericulata</i>	 FALCATED DUCK <i>Mareca falcata</i>	



Tropics Roof

Keeping the cushions inflated properly is also what maintains the insulating properties, as well as the rigidity to withstand being hit by hail or debris and to withstand high winds.

Ethylene Tetra Fluoro Ethylene Cushions

2nd zoo in the country to use this system (Buffalo Zoo the first)

Attached to air system

Keeps the cushions at correct inflation for optimal sunlight penetration, building insulation and rigidity; dehumidifies air in the system

Automatic fault system

Texts any faults in system directly to Curator and Zoological Manager

2020 Vandalism

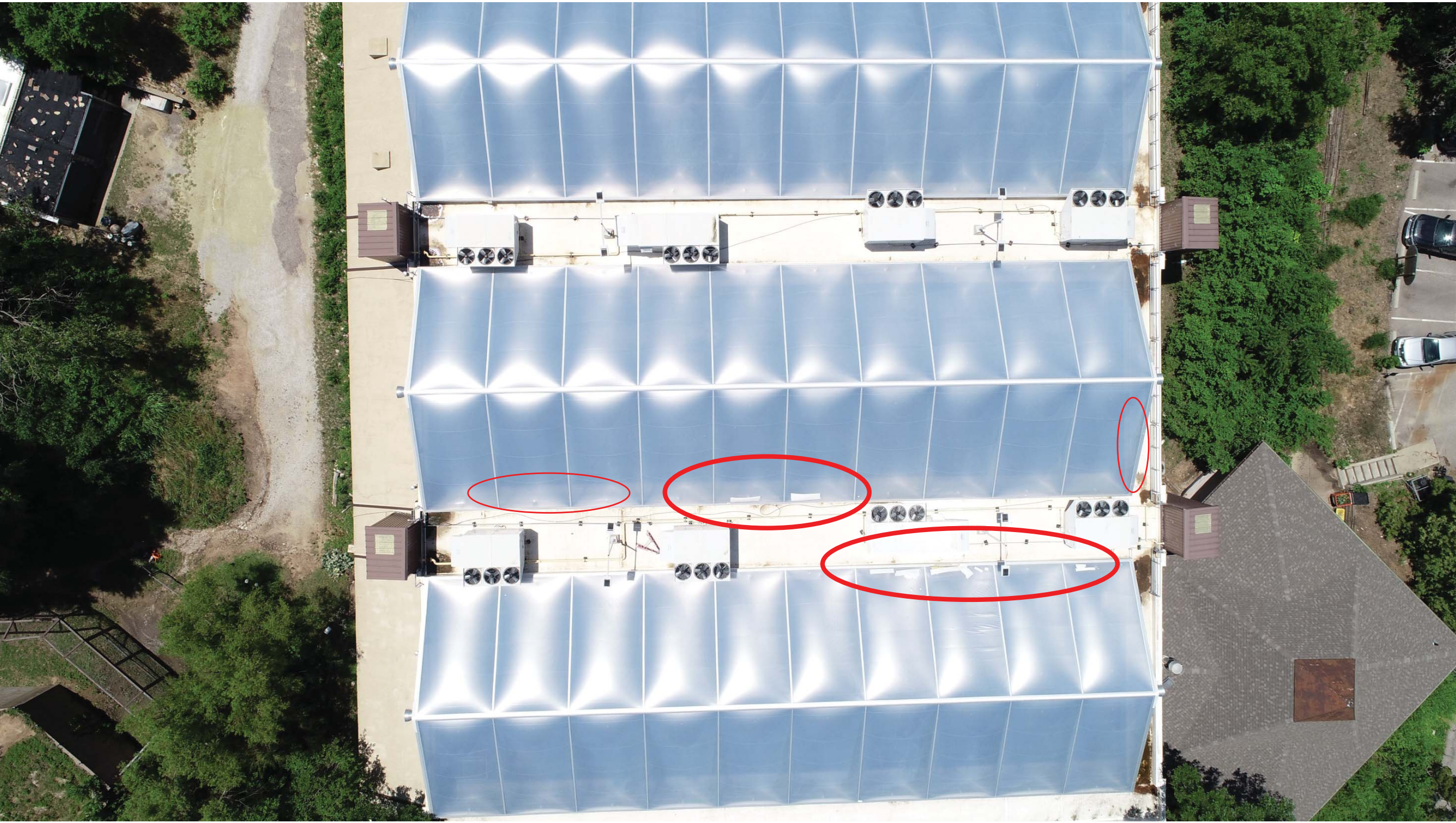
Early morning of Jan 28, 2020, a group of vandals was found on zoo grounds; damage noticed on the Tropics roof; machete damage to multiple cushions.

I have some pictures from that morning, if you want them. The cuts are patched, but it shows more of the extent of the damage. Also, maybe gloss over the time gap between when the damage occurred and when we found it – since the text system failed to alert us to it.... Ugh.



Added more patch locations.







Final Decision

Remove the Birds and Bats

The best option was decided to be the removal of all free-flight animals from the building, in order to completely remove and replace cushions. However, not enough holding space at the time.



APF 2

Modeled after APF 1

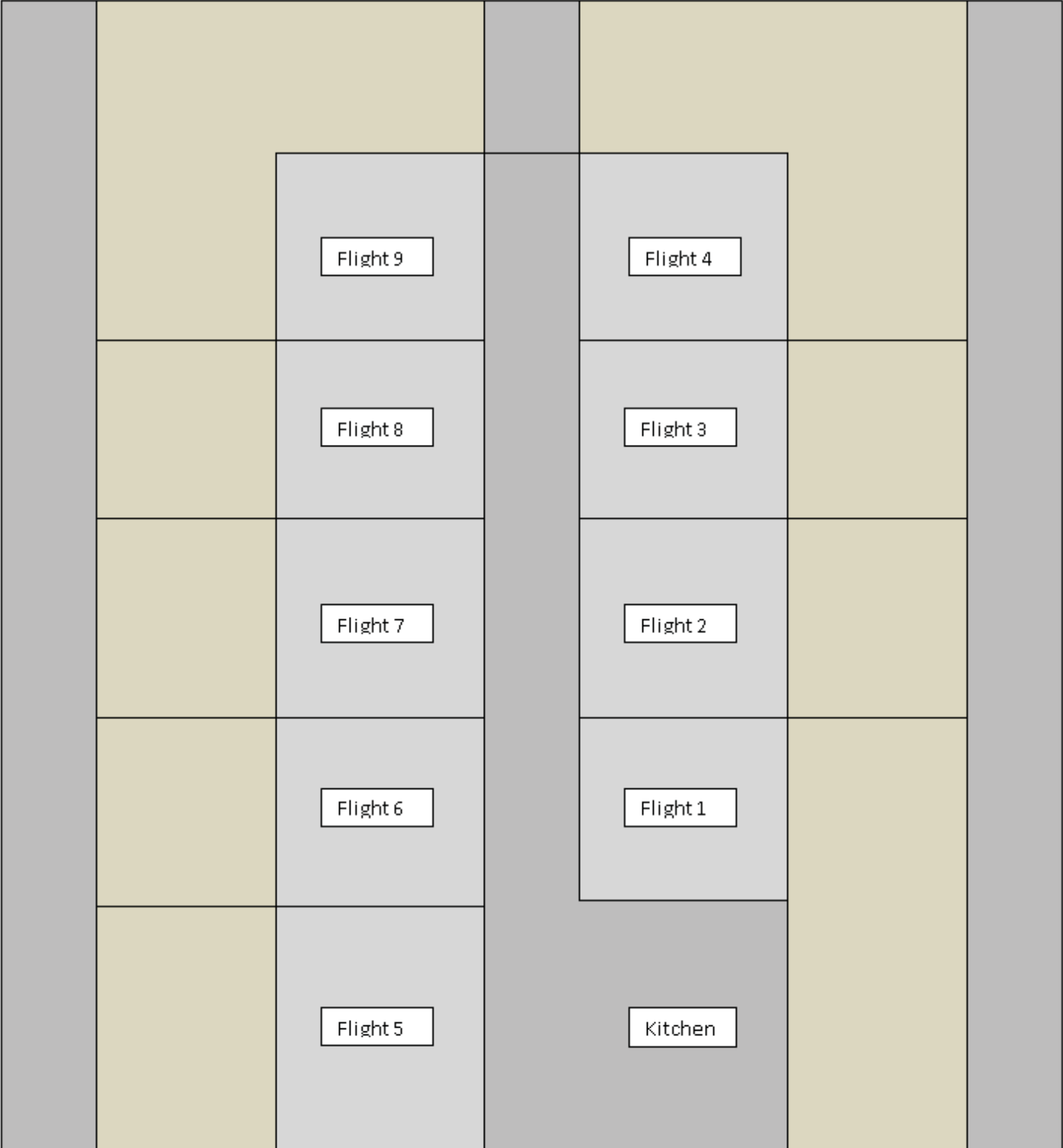
Off-exhibit breeding facility built in 2010.

Made for holding large numbers of birds
9 individual flights; indoor/outdoor
access

Designed to be flexible

Skylights, Heated floors, UVB. Large
enough to hold the bulk of the Tropics
population







The Hunt is on

May 18, 2022

First “official” day of capturing birds; goal of completion by August 1. Tropics closed for duration of process

3 main strategies

- “Active trapping”
- “Passive trapping”
- Mist netting
- These techniques are used yearly by the team for our annual census; the timetable gave us more urgency this time

Tropics Team

- 4 full-time keepers; main trappers
- 1 Zoological Manager; trapping assistance
- 1 temporary keeper; hired to allocate more time to trapping and netting

“Active Trapping”
So-called “Active trapping” involves baiting a trap, attaching a string to the trap door, and waiting for a bird to enter. Once a bird has fully entered the trap, the string is pulled, shutting the bird inside.













“Passive Trapping”

So-called “passive trapping” involves baiting a trap, and walking away.

Birds enter the trap in absence of keeper; if keeper happens upon a bird in a trap while passing by, the chase is on!







Mist Netting

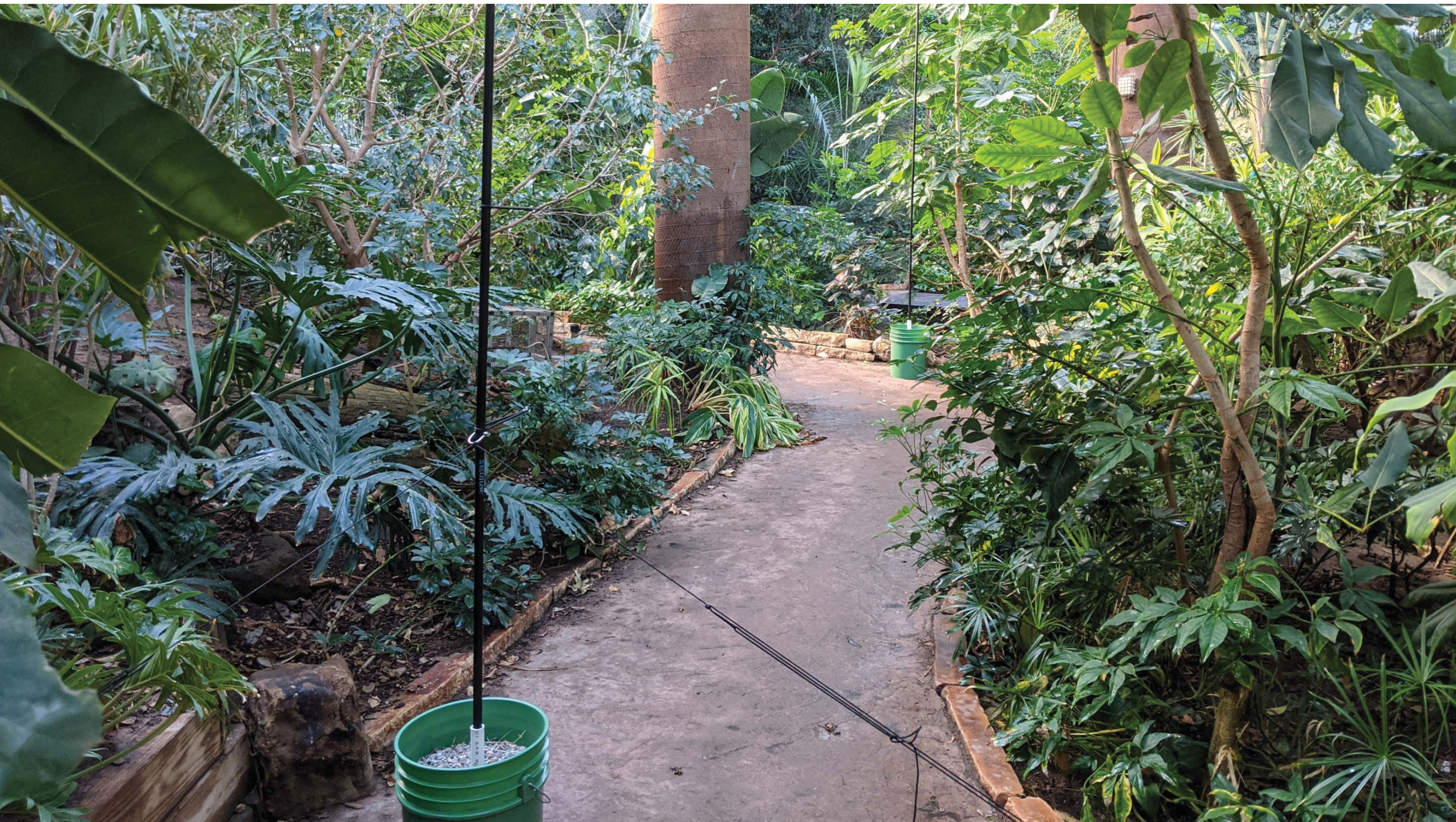
Inspired by Field Ornithology

Mist netting is commonly used *in-situ* as a way of capturing birds; involves stretching a very fine-mesh net with pockets across a flyway in order to catch birds as they fly through an area.

Modified for our needs

We made adjustments to ‘normal’ mist net setup in order to more easily mist net in the building



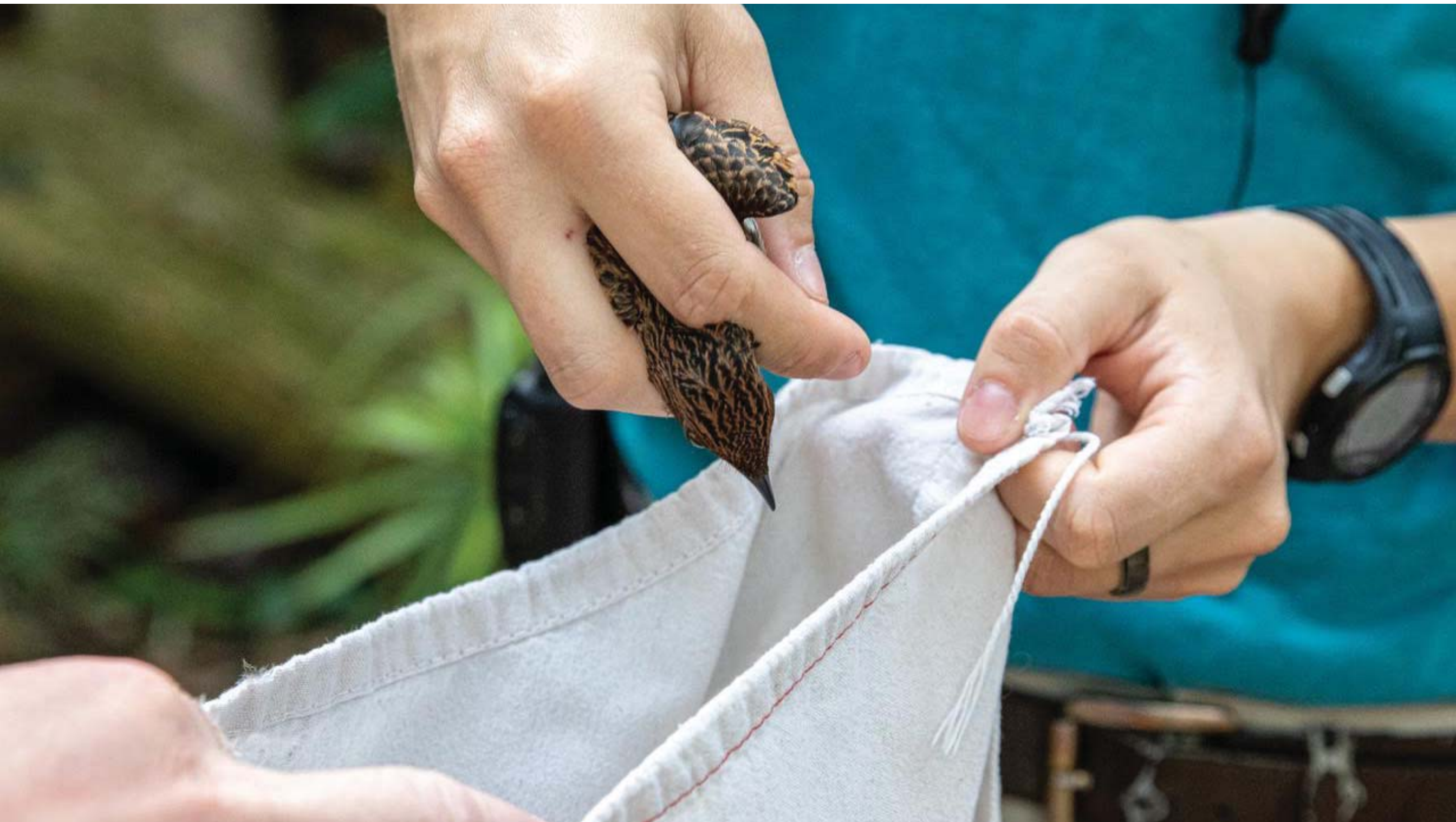














Processing Birds

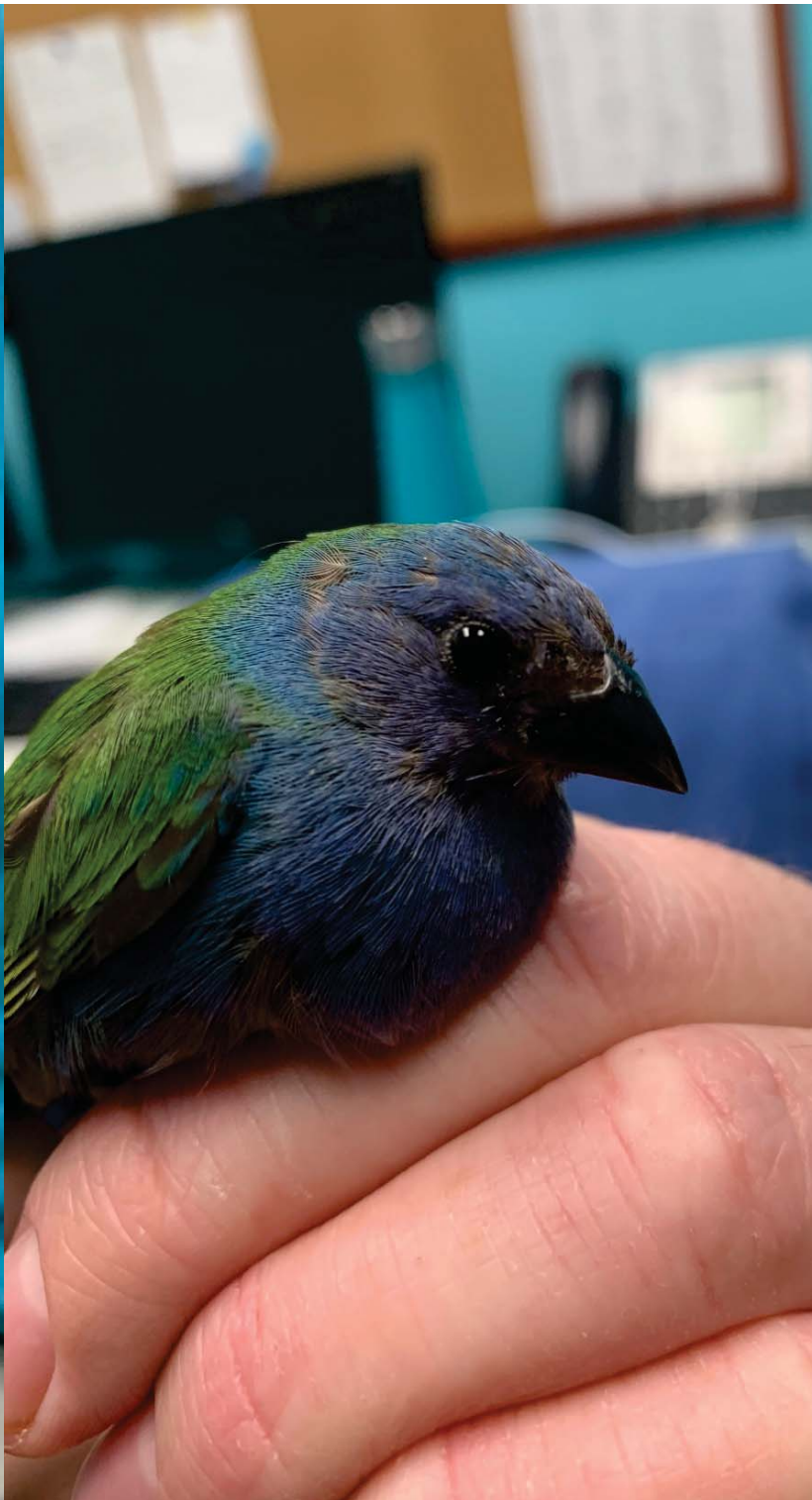
Once a bird has been captured, it is taken to ZM office for processing; every bird weighed, given BCS. Nails and bills checked, leg bands checked and replaced if necessary. Birds placed in kennels to be taken to holding spaces. Each individual checked off of master population list.

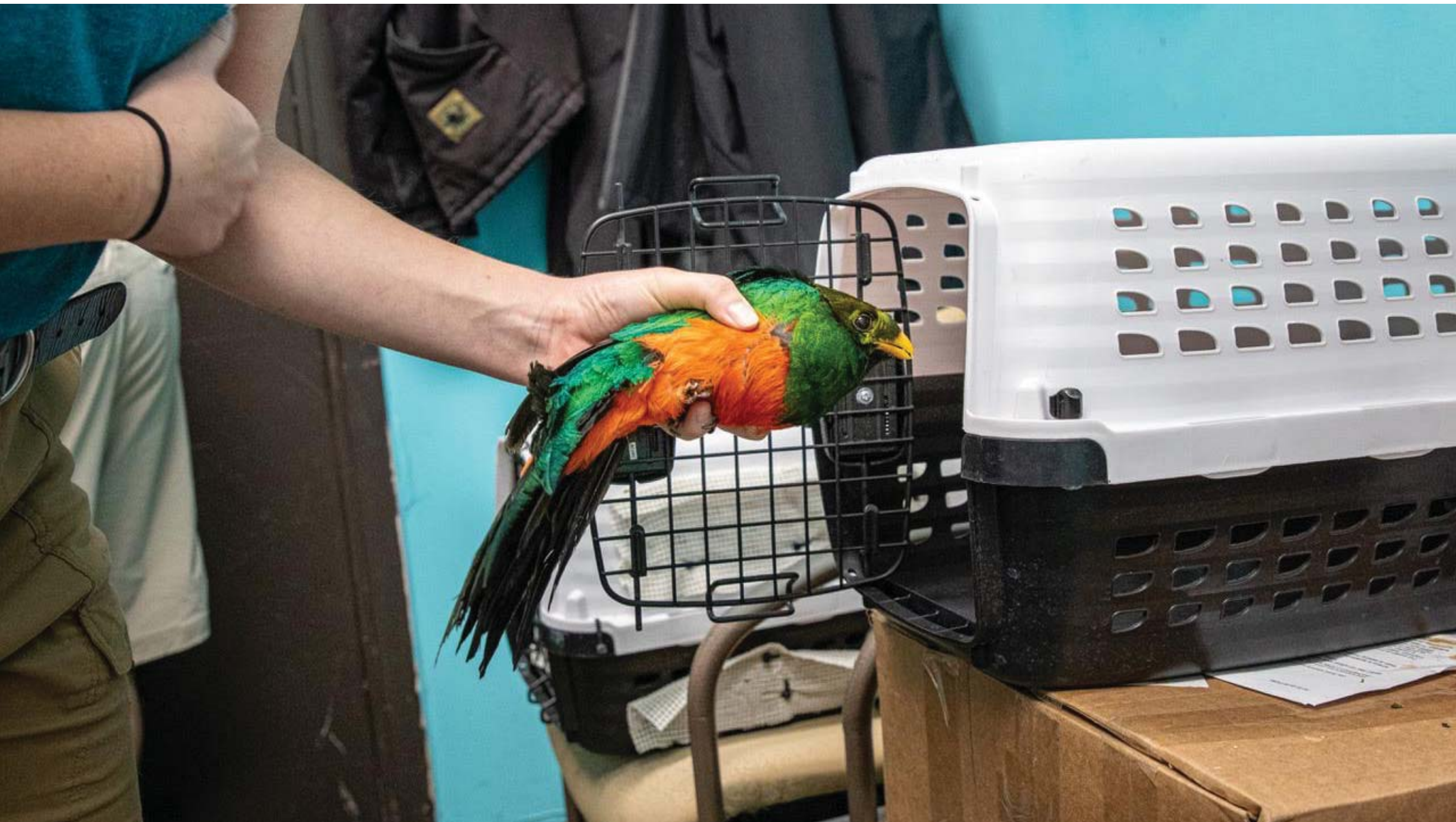




CJ-4000 Capacity 4000g x 0.01g
15.95g
ON TARE









Maintaining our Standards of Welfare

The welfare of the animals was always priority number one:


- Species mixes were determined to avoid aggression
- Keepers kept close watch on birds as they were introduced to holding spaces
- Birds were occasionally moved if any aggression was noticed
- Diet consumption closely monitored; diet amounts changed both in the exhibit as well as in holding as more birds were moved; exhibit diets were striking a balance between having enough food and keeping the birds motivated enough to enter traps.



Getting Creative

As the Tropics population began to dwindle, keepers began flexing their creative thinking skills and drawing on natural history in order to continue being successful.

- Feeding at different times of the day
- Keepers trapping in “street clothes”
- Getting Horticulture involved
- Staying after hours
- Using exhibits as traps
- Consistently moving traps to new locations
- Taking advantage of the biology and behavior of each species was critical for some; Mandarin Ducks, White-breasted Woodswallows, Bruce’s Green Pigeons, Emerald Starlings, Indian Flying Foxes



Making sure we caught everything

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- Presumed last bird caught on July 26, 2022, after lots of brainstorming and MacGyver-ing of mist nets
- In order to ensure there were no birds hiding from us, one food tray was placed in the building each day for 2 weeks; camera trap set to film anything that might visit
- No animals seen on camera trap after 2 weeks; we felt comfortable calling it



Final Numbers

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- 268 birds and 4 bats caught from free-flight area in 69 days- several weeks earlier than our final cutoff
- 13 Birds removed from individual exhibits
- In addition to:
 - Daily care of Tropics birds and ~200 other birds around the zoo
 - Having a successful flamingo breeding season
 - Hand-rearing and crate training 2 adolescent cassowary
 - Dealing with the ever-evolving threat of HPAI





Main Takeaways

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- Know the natural history of your collection, and take advantage of it
- Properly allocate resources to staff for intensive projects that require a specific timeframe
- Trust keeper staff; let them get creative
- Work as a team; leave ego out of it



**SEDGWICK
COUNTY
ZOO**

