

This null hypothesis stated that there would be no significant difference between the amount of donations given between the bird shows utilizing the Blue and Gold Macaw or the stand-alone donation box.

Discussion: There was a significant increase in conservation donations when there was direct human-animal interaction. The general trend showed higher audience numbers during the morning bird show. This is potentially due to a large portion of the visitors attending the Wings of Wonder bird show on their way into the zoo, as opposed to on their way out of the zoo. The audience numbers doubled, which can have an effect on the monetary amount of donations flowing in. However, despite an increased audience number, the monetary donations were consistently higher during the show of the day that had the bird present and collecting donations.

Donations typically followed a conservative trend, multiple families donating two to three dollars. Occasional outliers included a couple of \$20 bills collected throughout the research period and a handful of \$10 bills donated. One extremely generous individual donated a \$100 bill during one of our more intimate 1130 bird shows with the bird present and taking donations. These generous donations had an impact on monetary amount per visitor for those particular shows.

Comparing the monetary amount per visitor while the bird was taking donations versus the box collection, there was twice as much donated with the bird present. During box donations, there was an average of \$0.12 donated per individual while during the bird collection, an aver-

age of \$0.28 per individual. The average monetary amount more than doubled while audience members were interacting with a live bird.

Conclusion: Facilitating an interaction between a zoo visitor and an animal clearly creates a strong connection that leads people to want to contribute more towards conservation. When someone can interact with an animal, a connection is made. There is an emotional response that creates a connection between that animal and the message being conveyed. Research shows that having physical interactions can strengthen those emotional responses and, in turn, can create at home differences that are geared towards conservation issues. As shown in this study, when visitors had the opportunity to interact with a live bird, they were more than twice as likely to donate towards the conservation zoo fund at the Kansas City Zoo.

Here, results showed that having a Blue and Gold Macaw take donations directly from visitors hands generated an increase in the overall donations made towards conservation. Associating an animal interaction with donating to conservation is one tool that can be used when working on improving the reach of conservation efforts. This study shows the potential of having a bird taking donations at every show to increase donations towards the conservation projects that the Kansas City Zoo supports all around the world. This can be extended to other institutions wanting to increase their funds towards conservation. We as humans, are the only species on this planet that can ensure future generations of others, so we should do our part and try to make this world

a better place for all living creatures surviving off this land.

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ADAPTIVE PERCHING

Kit Lacy, Cascades Raptor Center

All photos courtesy of Cascades Raptor Center

Perching a habitat for any raptor requires careful attention to overall design. Physical safety of the bird, increased overall health and welfare through encouraging movement, and safety of the human servicing the space and interacting with the bird during training are just a few of the many details one needs to consider. However, perching for a disabled bird in human care – such as many raptors housed at facilities across the United States – takes on an entirely new level of complexity.

At Cascades Raptor Center (Eugene, OR, U.S.A.), several members of our collection are wild-hatched individuals who have been deemed non-releasable due to disabilities. Once these birds have passed our initial selection criteria as a good candidate for a life in human care, we design their perching to their specific needs based on their natural history and mobility limitations. We have found that such attention to detail has allowed us to become better designers of habitats not only for these disabled individuals, but also for others in our collection that do not have a physical disability but who are elderly and need extra assistance navigating their spaces.

Our philosophy is that all birds prefer elevated perching. We attempt to give every individual as much height as possible in their enclosures. We have found that even species whose natural history would suggest they prefer lower perching – Snowy Owl (*Bubo scandiacus*), Burrowing Owl (*Athene cunicularia*) and Northern Harrier (*Circus hudsonius*), for example – utilize both the highest perching options available to them and also spend a great deal of time perched low. We will also offer high perches to those individuals who are flight-impaired. Having passed our initial assessment as individuals who will have the highest possible well-being in human care, we believe that the improved mental welfare of perching high above our heads (and those of visitors) outweighs the possible risks of falling off perches and injuring themselves. Preliminary selection assessment, choice-based training techniques, and enclosure design can all help minimize the risk of a disabled indi-

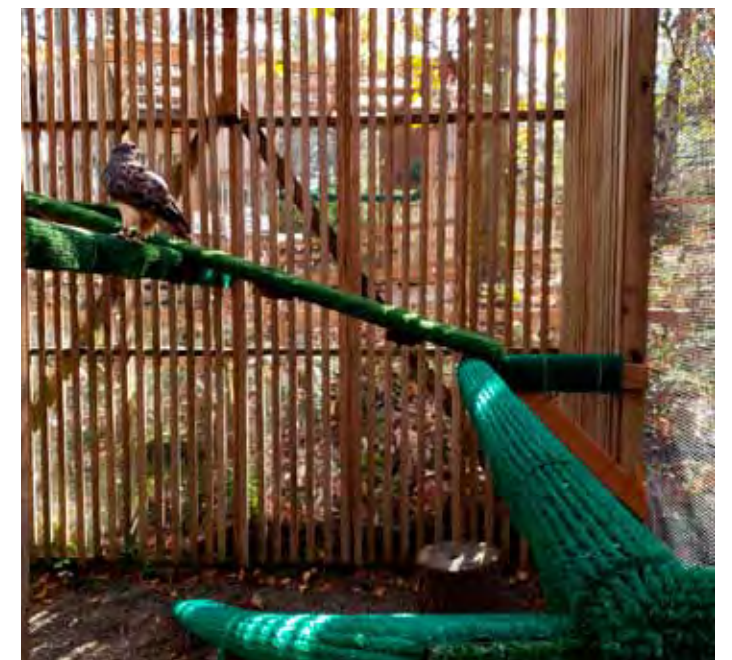
vidual harming themselves due to a fall from a high perch.

When initially designing any enclosure, height of the space is a major consideration. While some may put emphasis on the width and length of enclosures, we are not afraid to build up – adding height to the design. Over the years, several of our aviaries have been successfully modified with additional dimensional height. Once height has been added to a space, or if part of the original design, the next goal is to make it as easy as possible for the individual to navigate to and from the highest points.

MAKE IT EASY

There are several methods we use to make the path to a high perch as easy as possible. One way to create access is the use of ramps. When ramping an enclosure, we ensure that the ramp is wide enough for the bird to walk up the ramp facing forward. If the ramp is too narrow, the bird will have to side-step its way up the ramp, slowing progress and requiring the individual to use more effort in its attempt to reach higher locations. The steepness of the ramp is also an important design consideration. If the ramp is too steep, the bird could find it difficult to use. We use ramps that are angled no more than 40 degrees to make the ascent as easy as possible. The surface of the ramps is either

Adaptive ramp system



very rough bark or “turf,” so that the bird can get purchase on the surface. We also position ramps away from walls or other perches, so the bird can open its wings to assist in the climb without hitting them. Often, due to the height of the enclosures, we will use a two-tiered ramp system to allow us to use a gentle angle for the ascent. The first ramp from the ground attaches to a mid-level perch and the second ramp allows for access to the highest perches. Finally, we make sure that the ending point of the ramp allows for an easy hop to the main perch system. (Picture 1 – A)

Sometimes ramps do not fit into a space or there may be other complications to that design idea. One solution we developed for some of our residents as their mobility decreased with age was the design of a mobile, stairstep perch system. With the help of our facilities volunteers, we designed a four-step mobile perch to allow for an easy hop from the ground or bath pan to already installed, preferred highest perches on walls. (Picture 2)

The footprint of the system is relatively small, the unit can be adjusted until the correct placement on the ground is found, and it can be moved to other enclosures as needed. Perches attached to walls in a stairstep fashion or circular staircases on central poles can be other alternatives to assist the birds to their highest perch.

Access to a bath pan can also be modified to assist disabled or elderly raptors in bathing. We have found that with some individuals, elevating their bath pan onto a platform increased the frequency and vigor of bathing. Being overly

AstroTurf® on sides of bath pans provides perch and aids bird getting in and out



wet is a hinderance to flight for any bird. If disabled, the vulnerability of being wet increases the limitations on mobility of an individual who may have difficulty navigating their space. Thus, one possible solution is to place the bath pan at a higher position on a platform, so the bird doesn't have to travel to the ground to bath and once wet, they are closer to the higher perching options. To assist with bathing, we attach AstroTurf® to the sides of all pans as a landing/perching location for getting in and out.

FOOT HEALTH

Foot health is always a huge concern for any bird in human care – especially individuals who are already disabled. Fortunately, thoughtful perching and increasing fitness can eliminate the occurrence of bumblefoot or other foot health issues. The importance of prevention cannot be overstated, as treatment for foot problems is stressful and not always successful.

Varied perching options can decrease the occurrence of foot health issues. Perching should take into consideration the bird's foot size and natural history. Providing perches of different sizes to allow the foot to be closed around the perch, opened slightly, and opened completely is important. We include platform perching or large bark-covered stumps on their sides to provide the foot fully open option. The perches are either turfed with AstroTurf® or stadium turf or are natural limbs with rough bark. We avoid all smooth surfaces (replacing any natural limb which loses its bark), exposed lumber, and sisal rope. While many fa-

Foam pipe insulation adds extra cushioning



cilities use sisal rope, there are anecdotal reports of birds irritating their foot bottom landing on sisal rope perches. In our wet Pacific Northwest winters, sisal also tends to rot or mildew quickly. With the option of rough wood or some form of turf, we have discontinued the use of sisal rope. We have successfully used nylon rope – strung from wall to wall - for some small birds like White-tailed Kites (*Elanus leucurus*) or American Kestrel (*Falco sparverius*).

To decrease the possibility of one foot consistently bearing more pressure while perched, we make sure that preferred perches, especially overnight roosting perches, are level so both feet are carrying equal weight. Two equally high (and therefore preferred) perches of different sizes or substrate can also help distribute weight on the foot and increase foot health. Additionally, under any man-made substrate (turf material), we often install foam pipe insulation to add extra cushion to the perching location. These pipe insulation tubes are relatively inexpensive, all-weather, and mildew resistant. Finally, before the completion of any perching upgrades, trainers run their hands over the entire perch surface to ensure that nothing sharp or irritating meets the bird's feet. Any object used for attachment of perch substrate needs to be carefully installed in order to avoid potential problems.

NATURAL HISTORY IN MIND

Understanding the natural history of any species with

Burrowing Owl hutch



which a trainer is working is crucial. This is also true for designing the best perching. Falcons often prefer a perch that is flat such as the rocky cliffs they may perch on in the wild. Giving platforms to falcons is important, especially as they age and sometimes choose to lay down on their elevated platform perches. Surprisingly, many of the other raptor species in our care also select their platforms for perching upon – especially owls. On a quiet, warm day it is not uncommon to find an owl sitting on their hocks in the sun upon their platform perch - sunbathing. (Picture 4)

Platform perching must be installed with caution for any species that may see it as a nesting platform, such as Red-tailed Hawks (*Buteo jamaicensis*). If there are safety concerns for the bird (egg binding) or handler (space defense by the bird) during breeding season, a platform perch may not be an appropriate perching design element for specific individuals.

Keeping natural history in mind, we have included burrowing perching options, turfed grasses and rocks.

THE BENEFITS

Given so many easy to obtain options for perching, we find the birds in our care move between many different perches, increasing their fitness, utilizing different substrates for better foot health, and enriching themselves with a variety of perching choices during the day. High or low. Sun or shade. All with ease.

We have been able to give disabled raptors the confidence to move around their habitat easily while accessing low perches, high perches above our heads, bath pans, and areas for interacting with trainers. We have noticed, for some individuals, an increased participation in their training sessions once their enclosures have been redesigned to increase their ability to navigate their space. A bird who may have been reluctant to even move down perches to cue to a scale, once given the appropriate perching, quickly cues down to the scale. If they choose to end the training session, they will be able – with ease – to move to a higher, preferred perch. Limited mobility does not have to mean a limit in choices. Being given the choice to easily navigate a space has increased the enthusiasm for, and participation in, training sessions for more than one bird.

Given that the birds in our care are spending the vast amount of their time in their enclosures, on their perches, it is well worth the time to design the best perching options for them.



*Above: Elevated Burrowing Owl hutch
Below left/right: Logs on their side add perching at ground level.*



Above: Tufts of grass are another way to vary texture and options at ground level.



Above: Ramping for co-housed exhibit birds.



Above: Considering natural history of the bird, varied ground perching consisting of a combination of rocks and logs.



Below: Platform perches allow birds to sit in comfortable elevated locations while providing opportunity for flat foot posture.



Below: Natural branch perch..



Above left and right: Ramp and platform system.



Below left and right: Step perch system.

