

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Are your hyraxes housed primarily indoors?**

**1**

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Baltimore Zoo	yes
Brookfield Zoo	yes
Buffalo Zoo	yes
Buffalo Zoo	yes
Calgary Zoo	yes
Dallas World Aquarium	no
Dallas Zoo	no
Henson Robinson Zoo	yes
Jacksonville Zoo	no
Kansas City Zoo	no
Lincoln Park Zoo	yes
Oglebay's Good Zoo	yes
Pittsburgh Zoo	yes
San Antonio Zoo	no
Santa Barbara Zoo	no
St Louis Zoo	yes
Staten Island Zoo	yes
Tautphaus Park Zoo	no
The Living Desert	no
Utah's Hogle Zoo	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**What are the dimensions of your indoor exhibit?**

**2**

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<b>Brookfield Zoo</b>	30' wide x 23' high x 16' deep
<b>Buffalo Zoo</b>	15' x 17', 16' tall
<b>Calgary Zoo</b>	14' wide x 8' deep x 10' high
<b>Henson Robinson Zoo</b>	3' x 6'
<b>Oglebay's Good Zoo</b>	19' x 12'
<b>St Louis Zoo</b>	12 x 4 x 6
<b>Staten Island Zoo</b>	45' x 12' x 14'
<b>Utah's Hogle Zoo</b>	~18' x 8' x 8' high

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:** **Is there shifting capability?**

**3**

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Baltimore Zoo	yes
Brookfield Zoo	yes
Buffalo Zoo	no
Buffalo Zoo	no
Caldwell Zoo	no
Calgary Zoo	Not at present - planned for near future. Hodling/back area will be built to provide separation area if necessary and catch/transfer cage.
Henson Robinson Zoo	yes
Jacksonville Zoo	yes
Kansas City Zoo	yes
Lincoln Park Zoo	yes
Oglebay's Good Zoo	no
Pittsburgh Zoo	no
St Louis Zoo	yes
Staten Island Zoo	yes
Utah's Hogle Zoo	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:** Please describe the general design of your indoor exhibit?

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<b>Brookfield Zoo</b>	Gunnite floor with a slight slope. Exhibit provides mostly vertical space with gunnite, naturalistic craggy rock walls that provide hiding and resting spaces and footholds for climbing. Built to resemble a kopje. All the walls have an overhang or a net at the top to prevent escapes. Three Plexiglas nestboxes are accessible through doors cut into the rock walls at 5, 10 and 15 feet. There is a 1.5 x 1.5 mesh wall with a door for keeper access at the front of exhibit with a public viewing bridge above it that overhangs the mesh cagefront.
<b>Buffalo Zoo</b>	1 inch mesh 15' x 17'. It contains 2 rock planters, several "cement pipe" hiding areas, branching. It is a "temporary" free standing flight cage originally used for birds.
<b>Buffalo Zoo</b>	glass fronted room w/double door system in rear for servicing; rock work w/several tunnels in them, natural branching
<b>Caldwell Zoo</b>	10' x 10' wood building, 3 windows & 2 doors, cement floor
<b>Calgary Zoo</b>	Gunite rock work at many levels using full vertical space. Artificial and natural logs hanging or fixed horizontally for lots of escape pathways and resting spots. Glass viewing window at front. They especially like a hanging PVC tube in which they sleep. Tube has hole cut inside so they are still visible but feel secure.
<b>Henson Robinson Zoo</b>	Narrow enclosure with chain link front, has logs & shelves w/ milk crates for nesting, solid sides & back. Has a heat lamp for winter months.
<b>Lincoln Park Zoo</b>	Replication of dry thorn forest, including rocky outcroppings. Overlooks the meerkat exhibit on one side.
<b>Oglebay's Good Zoo</b>	two solid walls (one 15' and one ~13'); viewing sides are Plexiglas extending 65" above the floor (the minimum distance from any rockwork to the top of the Plexiglas front wall is 40")
<b>Pittsburgh Zoo</b>	until several months ago, the hyrax were housed in the colobus exhibit which is indoor "naturalistic" gunnite with mesh and glass front viewing area and fresh running water
<b>St Louis Zoo</b>	free standing glass fronted exhibit, furniture includes rocks, stumps and branches
<b>Staten Island Zoo</b>	artificial gunnite rocks, Twilight Savannah themes
<b>Utah's Hogle Zoo</b>	Our exhibit is in the shape of an "L" somewhat. The longest length is ~18' and the longest depth is ~8' with the width of that part being ~6' and a height of 8'. There are many ledges of gunnite rockwork and 5 large gunnite rocks. There is also a gunnite tree which makes up much of the exhibit that is hollow to provide hiding spots. There is a small shift (3'x2'x2') attached which goes into the keeper closet. The shift is high in the exhibit and the hyrax must jump from one ledge to another three feet away.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

**What type of substrate do you use in your hyrax exhibit?**

**5**

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<b>Baltimore Zoo</b>	none
<b>Brookfield Zoo</b>	none
<b>Buffalo Zoo</b>	mulch, litterbox with wood shavings
<b>Buffalo Zoo</b>	concrete floor & rockwork
<b>Caldwell Zoo</b>	sod, topsoil & sand
<b>Calgary Zoo</b>	Gunite, hose down floor with pockets of bedded areas (shavings)
<b>Henson Robinson Zoo</b>	concrete flooring w/mulch on occasion
<b>Lincoln Park Zoo</b>	Dust for bathing.
<b>Oglebay's Good Zoo</b>	sand
<b>Pittsburgh Zoo</b>	gunite with areas of straw bedding
<b>St Louis Zoo</b>	mulch
<b>Staten Island Zoo</b>	none
<b>Utah's Hogle Zoo</b>	Part of our exhibit (the part where they rarely defecate) is covered in sand or bark chips.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question: **What cage furniture do you use?**

**6**

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<b>Baltimore Zoo</b>	concrete trees, natural branches, plastic hide tubes both on the ground and suspended, large nestbox
<b>Brookfield Zoo</b>	We avoid using any porous cage furniture. Large pvc tubes, heavy-duty plastic shelves, and plastic mesh are used as cage furniture in holding. Ramps are made of bamboo and vinyl coated mesh.
<b>Buffalo Zoo</b>	branching, rock planters, ornamental grasses
<b>Buffalo Zoo</b>	natural branching, large & medium sized rocks, artificial plants
<b>Caldwell Zoo</b>	logs, stumps & rocks, shelves and nest boxes
<b>Calgary Zoo</b>	hanging logs and PVC piped for resting/hide spots
<b>Henson Robinson Zoo</b>	shelves, logs, plastic milk crates
<b>Lincoln Park Zoo</b>	Large bowls to hold dust for bathing, plus other items he can sit in or on. There are many ledges in the exhibit from which he can get a variety of vantage points to see other exhibits in the building.
<b>Oglebay's Good Zoo</b>	2 trees, several rocks, rockwork, nestbox for meerkats (most commonly sit in the trees or on a platform located above the heat lamp)
<b>Pittsburgh Zoo</b>	currently logs, milk crates, shelves, plastic "hide boxes", etc
<b>St Louis Zoo</b>	branches, stumps and rocks
<b>Staten Island Zoo</b>	logs
<b>Utah's Hogle Zoo</b>	We have one large hollow log and anywhere from 1-4 branches that are changed out periodically.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### What type of heating and ventilation system do you use?

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<b>Brookfield Zoo</b>	gas forced air heat, central air conditioning
<b>Buffalo Zoo</b>	The cage stands in the middle of our giraffe house so it is heated by the house boiler.
<b>Buffalo Zoo</b>	exhaust fan
<b>Caldwell Zoo</b>	heat lamps in winter, fans in summer
<b>Calgary Zoo</b>	part of overall building systems - forced air heating
<b>Henson Robinson Zoo</b>	forced air system
<b>Oglebay's Good Zoo</b>	central air and heating unit with additional electric wall heat located outside the exhibit provided in winter; heat lamps in exhibit
<b>St Louis Zoo</b>	exhibit building has central air and heat, hyrax provided with heat lamp for basking
<b>Staten Island Zoo</b>	basking lights
<b>Utah's Hogle Zoo</b>	We don't have any specific heating or ventilation system for that particular enclosure. All of our exhibits in the area are run by one heater in a central location. We also provide a heat lamp in the exhibit behind a screen in a cubby hole for the hyrax.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**What is the average temperature range of your indoor exhibit?**

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<b>Brookfield Zoo</b>	74 degrees F
<b>Buffalo Zoo</b>	65 - 85 degrees F; winter temp constant 65 degrees; spring-fall the building is at the outdoor temp
<b>Buffalo Zoo</b>	65 - 75 degrees F
<b>Caldwell Zoo</b>	no lower than 40 degrees F & no higher than 85 degrees F
<b>Calgary Zoo</b>	62.6 degrees F - 75.2 degrees F (17-24 degrees C)
<b>Henson Robinson Zoo</b>	84 degrees F summer, 80 degrees F winter
<b>Lincoln Park Zoo</b>	75 - 85 degrees F
<b>Oglebay's Good Zoo</b>	70-75 degrees F
<b>Pittsburgh Zoo</b>	77 - 87 degrees F
<b>St Louis Zoo</b>	65 degrees F to 72 degrees F
<b>Staten Island Zoo</b>	68 - 75 degrees F
<b>Utah's Hogle Zoo</b>	In the winter, temperatures rarely fall below 65 degrees F and in summer a high of ~80 degrees F.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Is the exhibit on a light cycle?**

**9**

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<b>Baltimore Zoo</b>	yes
<b>Brookfield Zoo</b>	yes
<b>Buffalo Zoo</b>	yes
<b>Buffalo Zoo</b>	yes
<b>Caldwell Zoo</b>	no
<b>Calgary Zoo</b>	yes - natural light cycle in summer, supplementary lighting in winter
<b>Henson Robinson Zoo</b>	no
<b>Jacksonville Zoo</b>	yes
<b>Lincoln Park Zoo</b>	no
<b>Oglebay's Good Zoo</b>	no - exhibit is next to large windows and it lit by natural light (on warm, sunny afternoons, the animals will spread out on the window sill)
<b>Pittsburgh Zoo</b>	yes
<b>St Louis Zoo</b>	yes
<b>Staten Island Zoo</b>	no
<b>Utah's Hogle Zoo</b>	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### If so, what is the day/night cycle?

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<b>Brookfield Zoo</b>	12 and 12 with daylight at 7 am
<b>Buffalo Zoo</b>	12hr/12 hr
<b>Buffalo Zoo</b>	mimics natural light which comes in from front of exhibit; changed seasonally 2X year
<b>Calgary Zoo</b>	~ 7am - 6 pm in winter, 5-ish - 9 pm or so when days are longer in summer
<b>Lincoln Park Zoo</b>	Has dome that brings in natural sunlight.
<b>Pittsburgh Zoo</b>	natural light cycle for western PA
<b>St Louis Zoo</b>	right now it is set for 12 hours
<b>Utah's Hogle Zoo</b>	Just a normal diurnal cycle of light 6am till 6pm approximately.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

**Do your hyraxes have an outdoor exhibit?**

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Baltimore Zoo	no
Brookfield Zoo	no
Buffalo Zoo	no
Buffalo Zoo	no
Caldwell Zoo	yes
Calgary Zoo	no
Dallas World Aquarium	yes
Dallas Zoo	yes
Henson Robinson Zoo	yes
Jacksonville Zoo	yes
Kansas City Zoo	yes
Lincoln Park Zoo	no
Oglebay's Good Zoo	no - however, we are planning on adding a colobus exhibit outside in the next few years. At that point, we would like to house hyraxes in our indoor exhibit as well as with the colobus.
Pittsburgh Zoo	no
San Antonio Zoo	yes
Santa Barbara Zoo	yes
St Louis Zoo	no
Staten Island Zoo	no
Tautphaus Park Zoo	yes
The Living Desert	yes
Utah's Hogle Zoo	no

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Do you have temperature restrictions for them to be outside?**

**12**

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Caldwell Zoo	yes
Dallas World Aquarium	no
Dallas Zoo	yes
Henson Robinson Zoo	yes
Jacksonville Zoo	yes
Kansas City Zoo	yes
San Antonio Zoo	no
Santa Barbara Zoo	no
Tautphaus Park Zoo	yes
The Living Desert	no

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**If so, what are your temperature guidelines?**

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<b>Caldwell Zoo</b>	40 degrees F and above for outside
<b>Dallas Zoo</b>	lock in below 32 degrees F
<b>Henson Robinson Zoo</b>	usually out from late spring - early fall; in before temps go too low
<b>Jacksonville Zoo</b>	below 32 degrees F they are locked in, but the night house is heated when outside temperatures are forecasted to be below 55 degrees F
<b>Kansas City Zoo</b>	lock out at 45 degrees F, lock in at 40 degrees F
<b>San Antonio Zoo</b>	have access to holding at all times
<b>Tautphaus Park Zoo</b>	above 40 degrees F at night

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Do you have an indoor holding area?**

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Baltimore Zoo	yes
Brookfield Zoo	yes
Buffalo Zoo	no
Caldwell Zoo	yes
Dallas World Aquarium	no
Dallas Zoo	yes
Henson Robinson Zoo	no
Jacksonville Zoo	yes
Kansas City Zoo	yes
Pittsburgh Zoo	yes (hyrax have recently been relocated to an off-exhibit holding area)
San Antonio Zoo	yes
Santa Barbara Zoo	yes
St Louis Zoo	no
Staten Island Zoo	yes
Tautphaus Park Zoo	yes
The Living Desert	no

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

**What are the dimensions of your indoor holding space?**

**15**

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<b>Brookfield Zoo</b>	Cages range from 6 x8 x 6 feet to 12 x8 x 6 feet
<b>Dallas Zoo</b>	2 stalls - each is 10' x 5 1/2' wide x 7' high
<b>Jacksonville Zoo</b>	26"L x 12"W x 12"H
<b>Kansas City Zoo</b>	2 adjacent stalls - each 7 3/4 ' x 4 1/2 ' with one shift door at ground level
<b>Pittsburgh Zoo</b>	~10' L x 10' D x 8' H
<b>San Antonio Zoo</b>	20" x 12" x 12"
<b>Santa Barbara Zoo</b>	6 sq ft and 3 ft high
<b>Staten Island Zoo</b>	4' x 2' x 2' and 2' x 2' x 2'
<b>Tautphaus Park Zoo</b>	6' x 8'

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

**Describe your indoor holding space (construction, layout, etc)**

**16**

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<b>Baltimore Zoo</b>	cement floors (textured), block walls, chain link, plastic lofts, 2 cages
<b>Brookfield Zoo</b>	Chain link cages with chain link walls and ceilings and cement floors. One holding cage has vinyl coated half by half inch mesh. Large pvc pipes and plastic shelves are hung on the walls of holding cages for hiding and climbing.
<b>Dallas Zoo</b>	Barn consisting of 3 equal size stalls & a keeper hallway. Hyrax receive access to 2 adjacent stalls. Shift doors are at ground level. Shift doors between each stalls and to exhibit. Wooden shelves (4 1/2' high from floor), ramps, logs. Walls between stalls are 4 1/2' high solid metal, then small mesh to ceiling. Grain bags and boxes provided for hiding. 2 litter boxes in one stall with cinder blocks around them.
<b>Jacksonville Zoo</b>	It's a wood and wire mesh box that the animal enters through a PVC tube. It is only large enough for the animal and a food and water bowl to be placed in. The bottom is lined with newspaper. The box (night house ) is inside a concrete block building, where it is mounted up on the wall.
<b>Kansas City Zoo</b>	concrete wall along back of both and side of 1 (corner) stall, 1"x1" wire mesh on doors and other "walls"; lots of logs, perches ~2-6 feet off of the ground, mostly wood; outdoor holding spaces (not exhibit) can be accessed through either indoor stall, 11' x 4 1/2' and 8' x 4 1/2'
<b>Pittsburgh Zoo</b>	mesh with concrete floors (heated). Windows for natural light. Various shelves, "hides" branches and other climbing structures.
<b>San Antonio Zoo</b>	nest boxes (5)
<b>Santa Barbara Zoo</b>	tile floor, concrete walls, wooden bench about 1/2 way up the back wall and about 1/3 of the size of the space. Access from the exhibit is both onto the bench level and on the floor level.
<b>Staten Island Zoo</b>	none
<b>Tautphaus Park Zoo</b>	A 6' x 8' Corners Limited Cage in a heated animal holding facility is used for winter only.
<b>The Living Desert</b>	den box

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**What type of heating and ventilation does your holding area have?**

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<b>Baltimore Zoo</b>	thermostat controlled @ 75 degrees F
<b>Brookfield Zoo</b>	same as indoor exhibit
<b>Caldwell Zoo</b>	heat lamps, windows, and fans
<b>Dallas World Aquarium</b>	An infrared heating strip is suspended in exhibit during winter months; three mesh areas, one of which has a fan within it, are for ventilation in summer.
<b>Dallas Zoo</b>	electric heater, fan, roof and door vents
<b>Jacksonville Zoo</b>	There is an exhaust fan for summer and space heaters in winter.
<b>Kansas City Zoo</b>	floor heat and forced air, air conditioners, fans installed in summer
<b>Pittsburgh Zoo</b>	floor heat, industrial fans
<b>San Antonio Zoo</b>	radiant heater in winter, holding area open to outside air
<b>Santa Barbara Zoo</b>	Heat is provided by a heat lamp, no additional ventilation other than open doors.
<b>Tautphaus Park Zoo</b>	electric ceiling heaters with exhaust fan

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### What are the dimensions of your outdoor exhibit?

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<b>Caldwell Zoo</b>	25' x 25' x 10' high
<b>Dallas World Aquarium</b>	10' 7" long x 8' 9" wide x 15' high
<b>Dallas Zoo</b>	20' x 30', usable vertical height 30'
<b>Henson Robinson Zoo</b>	24' x 10' x 6'
<b>Jacksonville Zoo</b>	25'L x 10'W x 10' H
<b>Kansas City Zoo</b>	~11 feet at its longest in the front (visitors) and 8 feet front to back at its longest, funnels back to access tunnel
<b>San Antonio Zoo</b>	24' x 12' x 22'
<b>Santa Barbara Zoo</b>	The exhibit is about 25 sq ft and about 15 ft tall. Guest viewing is at about 8 ft from the floor of the exhibit. The hyrax spend most of their time in the top 1/3 of the exhibit.
<b>Tautphaus Park Zoo</b>	~10' x 10' x 8'
<b>The Living Desert</b>	16' x 9' x 7'

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### What type of substrate do you use in the exhibit?

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<b>Caldwell Zoo</b>	sand, top soil & grass
<b>Dallas World Aquarium</b>	a product from Home Depot "Landscape Mix" - it's a soil/bark mix
<b>Dallas Zoo</b>	manufactured rockwork (gunite), soil, grass
<b>Henson Robinson Zoo</b>	grass
<b>Jacksonville Zoo</b>	soil, rockwork
<b>Kansas City Zoo</b>	mostly gunite rockwork, small soil area at base
<b>San Antonio Zoo</b>	crushed granite
<b>Santa Barbara Zoo</b>	natural soil and grass
<b>Tautphaus Park Zoo</b>	Natural ground with some grass, trees, bushes, and rocks. Perching with tree limbs and rock structures.
<b>The Living Desert</b>	dirt

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Please describe your outdoor exhibit**

**20**

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<b>Caldwell Zoo</b>	enclosed with 1x2 wire, chicken wire on roof, water pond, trees, bushes, grass, sand and rocks
<b>Dallas World Aquarium</b>	It's semi-enclosed in that it is a more cave-like/Kopje display, natural rock-work walls and ceiling with loafing areas. There is a large glass viewing panel and mesh on either side of viewing panel for ventilation. Naturally planted with plants from South Africa.
<b>Dallas Zoo</b>	multi-level: rockwork, boulders, ledges, crevices; 2 large planters containing a tree, yuccas, grass. Large deadfall pieces. Plexi-glas in various coners to prevent escapes. Hiding holes built into rockwork. 2 dry moats with large steps down them. Front of moat walls curve towards exhibit. Plexi-glas above moats for public viewing/barrier
<b>Henson Robinson Zoo</b>	grass substrate with a cement wall with 4 denning areas at various heights with chain link along sides, front & top
<b>Jacksonville Zoo</b>	It is a long, narrow exhibit set up off of the ground ~3 ft above ground level. The front mesh is Zoomesh and the roof is 1"x 1" galvanized wire mesh. A shallow "dump and fill" concrete pool is in the center of the exhibit. There is a small acacia tree on the left-hand side. There is extensive rock work up to about seven feet high.
<b>Kansas City Zoo</b>	piano wire barrier in front, Plexiglas added for babies, gunite rockwork allows multiple levers for hyrax to climb to, wire mesh roofing with shade cloth; exhibit is accessed from outdoor holding through a wire mesh "tunnel" rising diagonally from ground level to exhibit entrance about 6 feet high
<b>San Antonio Zoo</b>	small pool 2' x 2', gunite rock work, perching. Entire exhibit enclosed by chicken wire attached to 22' posts.
<b>Santa Barbara Zoo</b>	Rockwork walls and 1" x 1" woven mesh along the front viewing area. Three nestboxes are available in the back of the exhibit at different heights but have been blocked off due to management challenges. A fourth area is still available, this is the holding area described above. The rockwork walls form platform areas for resting, some deadfall provide additional resting spots and a few recycled plastic platforms have been mounted in the exhibit as well.
<b>Tautphaus Park Zoo</b>	10' x 10' x 8' wire and post enclosure with 2" x 4" mesh on sides and top. 2' x 2' rock cave and above substrates. They are housed with a pair and occasionally juvenile white-cheeked turaco.
<b>The Living Desert</b>	Exhibit is made of wire mesh fencing and support beams. Rockwork is set up at the back of the exhibit for the hyrax to climb on. An opening in the rockwork leads to a wooden den box inside the service area, with a sliding door to open or close the den box.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:** **Are your hyrax part of a mixed species exhibit?**

**21**

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Baltimore Zoo	yes
Brookfield Zoo	no
Buffalo Zoo	yes
Buffalo Zoo	yes
Caldwell Zoo	yes
Calgary Zoo	no
Dallas World Aquarium	yes
Dallas Zoo	yes
Henson Robinson Zoo	no
Jacksonville Zoo	yes
Kansas City Zoo	no
Lincoln Park Zoo	yes
Oglebay's Good Zoo	yes
Pittsburgh Zoo	no but they were in a mixed species exhibit until 2 months ago, when we discovered that female was pregnant again
San Antonio Zoo	yes
Santa Barbara Zoo	no
St Louis Zoo	no
Staten Island Zoo	yes
Tautphaus Park Zoo	yes
The Living Desert	no
Utah's Hogle Zoo	not now

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**If so, what speceis are they mixed with?**

**22**

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<b>Baltimore Zoo</b>	Black & White Colobus Monkeys
<b>Buffalo Zoo</b>	several finch species and Barbary Coast doves
<b>Buffalo Zoo</b>	1.1 trumpeter hornbills
<b>Caldwell Zoo</b>	Gunthers Dik-dik, several species of birds
<b>Calgary Zoo</b>	we would like to try them with some small bird species
<b>Dallas World Aquarium</b>	1.1 Vulturine Guineafowl; 2.0 yellow-billed hornbill
<b>Dallas Zoo</b>	klipspringer
<b>Jacksonville Zoo</b>	klipspringer, Amethyst starlings, Hadada ibis, violet-crested turacos
<b>Lincoln Park Zoo</b>	1.1 klipspringer, group of male black-masked lovebirds
<b>Oglebay's Good Zoo</b>	slender-tailed meekat
<b>Pittsburgh Zoo</b>	Angolan Colobus Monkeys
<b>San Antonio Zoo</b>	buff-crested bustards, golden breasted starling, wattled starling
<b>St Louis Zoo</b>	have been housed with leopard tortoise in the past
<b>Staten Island Zoo</b>	Gunther's Dik-Dik, blue bellied roller, starling
<b>Tautphaus Park Zoo</b>	white-cheeked turaco
<b>Utah's Hogle Zoo</b>	Von der Decken's hornbills in the past

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Mixed Species / Comments:**

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<b>Baltimore Zoo</b>	Were formerly housed with 1.0 aardwolf and 1.0 Diana monkey as well until their passing. No significant problems with any of them. In the past we have had issues with a male rock hyrax aggressive towards aardwolf. And in the absence of male hyrax, one female became overly amorous towards a male aardwolf.
<b>Brookfield Zoo</b>	We have exhibited hyrax with fennec foxes, klipspringers and free flying birds. Due to hyrax's territoriality, it is preferable to establish other species in the exhibit before the hyrax or at the same time. We have had problems with hyrax being aggressive to the other mammal species when we bred hyrax in those exhibits. Males have been more aggressive to the other species than females.
<b>Buffalo Zoo</b>	We have mixed them with other bird species very successfully: turacos, lilac-breasted rollers, starlings and mousebirds.
<b>Buffalo Zoo</b>	rarely interact, hornbills occasionally displace them, hornbills have not had a nest or young in exhibit
<b>Caldwell Zoo</b>	no problems
<b>Dallas World Aquarium</b>	The male Guinea is bad about pecking the back of the hyrax whenever they are on the ground, often times they are snacking out of his bowl so can't blame him. The hen likes to nest in the hyrax latrine area.
<b>Dallas Zoo</b>	get along well. When locked in barn they are separated because of small space.
<b>Kansas City Zoo</b>	our hyrax share an indoor wire mesh wall with 3 greater bushbabies, no real interaction between them through the caging
<b>Oglebay's Good Zoo</b>	Both species get along well in their exhibit. During the introduction phase there was slight aggression from the meerkats, but the hyraxes would chase them away. Two primary causes of aggression were not providing enrichment items for all animal at once. The hyraxes and meerkats would fight over bags or boxes that were added for enrichment after visitor hours if there wasn't an item for each individual. Another issue was creating a nest box for the meerkats with an entry hole that was too small for the hyraxes. Before this was done, the hyraxes would try to enter the nest boxes. Currently both species get along well, and if it is a chilly day and the exhibit is a little cooler, they will even cuddle up next to each other.
<b>Pittsburgh Zoo</b>	Was not optimal for hyrax or for colobus. Suspected hyrax bite to a juvenile colobus and breeding female colobus "stole" a hyrax baby and dropped it from a tree while attempting to nurse it. Baby hyrax died as a result of injuries sustained. Also, we have witnessed multiple aggressive interactions between the two species - usually no actual contact though.
<b>Tautphaus Park Zoo</b>	hyrax will eat turaco's diet if able to reach it.
<b>Utah's Hogle Zoo</b>	The hornbills raised two clutches before the male was mortally wounded by the hyrax. I don't have many details on this set-up as it was over 10 years ago but it is thought that food competition was a factor in the death.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Mixed Species / Comments:**

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**Dallas World Aquarium**

Little if any interaction between hornbills and hyrax.

**Kansas City Zoo**

bat-eared foxes are housed in holding area across keeper hallway from hyrax

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:** **Are your hyraxes singly housed?**

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Baltimore Zoo	no
Brookfield Zoo	both
Buffalo Zoo	no
Buffalo Zoo	no
Caldwell Zoo	no
Calgary Zoo	no
Dallas World Aquarium	no
Dallas Zoo	no
Henson Robinson Zoo	yes
Jacksonville Zoo	yes
Kansas City Zoo	no
Lincoln Park Zoo	yes
Oglebay's Good Zoo	yes -do not want to house male separately, but we were unable to find another female after our last female died.
Pittsburgh Zoo	no
San Antonio Zoo	yes
Santa Barbara Zoo	no
St Louis Zoo	yes
Staten Island Zoo	no
Tautphaus Park Zoo	no
The Living Desert	no
Utah's Hogle Zoo	no

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:** **If not, how many animals are housed together?**

**28**

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<b>Baltimore Zoo</b>	1.3
<b>Brookfield Zoo</b>	0.4 together, 1.0 alone
<b>Buffalo Zoo</b>	currently 0.3; but we have had 1.5
<b>Buffalo Zoo</b>	2.0 father & son
<b>Calgary Zoo</b>	4 males
<b>Dallas World Aquarium</b>	1.1
<b>Dallas Zoo</b>	1.3
<b>Kansas City Zoo</b>	1.4
<b>Pittsburgh Zoo</b>	1.1 adult + 1 infant, male offspring
<b>Santa Barbara Zoo</b>	0.2
<b>Staten Island Zoo</b>	2
<b>Tautphaus Park Zoo</b>	breeding pair plus their offspring
<b>The Living Desert</b>	two
<b>Utah's Hogle Zoo</b>	currently 1.1, but it used to be 1.2

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

Please describe any concerns or issues you may have regarding introductions between conspecifics.

29

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<b>Baltimore Zoo</b>	we have had no problems
<b>Brookfield Zoo</b>	Female to single or multiple female introductions are the most successful. Then, male to single or multiple females are the next most successful. Generally we do not keep more than one male in a group unless they are littermates and we try to keep females out of their proximity. We have been able to house two male littermates together well beyond sexual maturity on four occasions; the longest was 4 1/2 years and then they were shipped together to another institution. One of the groups also housed a sire with his two male offspring for 2 years and 2 months until the offspring were shipped together to another institution. A fifth attempt was unsuccessful in a litter of three males; one male was removed due to aggression at 6 months of age and the remaining males separated at one year of age. Attempts to house similarly aged (1 1/2 month was the greatest age difference) non-littermate males together was unsuccessful; the initial six males were removed over time due to aggression from 6 months to 2 1/2 years of age. Another failed attempt involved a sire and male offspring from two litters, born a week apart. Severe aggression began after a death (unrelated to aggression) of one male at 7 months. There were separated in to a 1 adult - 1 juvenile pair, and a group of sibs from the same litter. Neither of these smaller groups lasted long due to surplusing in one case, and due to male-male aggression in the other. All of the above housing were done away from the presence of females, if possible.
<b>Buffalo Zoo</b>	We usually do a visual (howdy cage) intro for several days and watch their interactions. We have not had any problems.
<b>Buffalo Zoo</b>	remains of 2.2 group. Adult female died several months ago (heart problems) and 3 yr old female recently died of pneumonia complications related to breathing problems because of her dwarfism. Remaining males currently coexisting peacefully but do not interact much. Howdy cage should be used. Intros will be carefully watched and would not be separated at night if no problems occurred during the day.
<b>Calgary Zoo</b>	Continued, somewhat worrisome aggression directed at least dominant animal. Seems to be mostly low key, but does occasionally require medical treatment. We have had a couple of losses due to aggression and suspect that long-term aggression causes slow degradation of health in least dominant individual
<b>Dallas Zoo</b>	have had aggression between nuetered males at various times
<b>Henson Robinson Zoo</b>	we had a lot of fighting amongst our males
<b>Kansas City Zoo</b>	younger pair killed older female after being housed together for a few months
<b>Oglebay's Good Zoo</b>	We have had no problems with female to female or male to female introduction at our institution.
<b>Pittsburgh Zoo</b>	In the past we have had more animals and have had several instances of aggression, mainly between the males. Several of the injuries did require veterinary care, but did not require immediate, permanent separation of the animals.
<b>Santa Barbara Zoo</b>	we have not had any problem with conspecifics
<b>The Living Desert</b>	aggression: male seems particularly aggressive

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Utah's Hogle Zoo

Our introductions have always seemed to go well, although I am a bit concerned about our future introduction of a female from Omaha. Our male became very aggressive towards keepers and tends to attack anything new in the exhibit so we will have to proceed with care with our upcoming introduction. We have never observed any aggression by him towards our current female or our past female.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Do you separate animals at night?**

**30**

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Baltimore Zoo	no
Brookfield Zoo	no
Buffalo Zoo	no
Buffalo Zoo	no unless there are problems during the day during intros
Caldwell Zoo	no
Calgary Zoo	no
Dallas World Aquarium	no
Dallas Zoo	no
Henson Robinson Zoo	no
Jacksonville Zoo	no
Kansas City Zoo	no
Lincoln Park Zoo	Hyrax and lovebirds together at all times, but klips brought off exhibit at night.
Oglebay's Good Zoo	no
Pittsburgh Zoo	no
Santa Barbara Zoo	no
Staten Island Zoo	no
Tautphaus Park Zoo	no
The Living Desert	no
Utah's Hogle Zoo	no; We do separate our male and female during cleaning but that is due to the aggressiveness of the male towards keepers. The male must be shifted in order for any keeper to enter the exhibit.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### Please describe your hyrax diet:

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<b>Baltimore Zoo</b>	For 1.3 animal group: 6 oz rabbit chow, 4 oz Mazuri high fiber sticks, 1/2 tsp vionate, 8 oz kale, 8 oz apple, 4 oz banana (peeled), 4 oz yam, 4 oz alternating green veggie. They also tend to eat Colobus Monkey leftovers including Mazuri apple fiber biscuits - unknown quantity
<b>Brookfield Zoo</b>	veggie/starchy mix (50% carrot, 50% sweet potato) 58g/24.4%; leafy mix (11% kale, 22% celery, 22% spinach, 44% lettuce) 69g/29%; hyrax grain mix (50% Marion leafeater primate biscuit, 50% ZNN low fiber herbivore pellets) 111g/46.6%; total 238g/100%. All have access to a small tub of timothy grass hay. It is changed weekly. It does not constitute a significant portion of the diet but is consumed in small amounts by some hyrax.
<b>Buffalo Zoo</b>	per animal: ~1/2 cup lower fiber diet, 1/4 apple, 2 green beans, 1 T carrot or sweet potato, 1 T celery, wheat bread, corn on the cob or broccoli, 1 t peanut oil 2X/wk, 2 leaves greens - endive, romaine, spinach or kale
<b>Buffalo Zoo</b>	all items diced: 2 lab chow biscuits, 2 omnivore biscuits, 2 leaf-eater biscuits, 1/2 cup low fiber grain, 1/4 carrot, 1/4 stalk celery, 1/4 apple, 1 slice sweet potato, 3 green beans, 1 handful of kale/endive mix, occasional broccoli
<b>Caldwell Zoo</b>	whole grains, rabbit pellets, fresh raw vegetables and high quality grass (alfalfa or prairie)
<b>Calgary Zoo</b>	for four animals: 4 cups alfalfa (leafy parts); 1/3 each carrot, apple, banana, orange, beet; 1 head romaine lettuce; Purina hi-fiber leaf-eater biscuit (free choice, but not a favored food item); 4 cups spinach
<b>Dallas World Aquarium</b>	sliced 1/2 to 1 inch pieces of sweet potato, carrots, corn-on-the-cob, zucchini and yellow squash, celery, kale, spinach, oranges, apples and bananas (sometimes cook sweet potatoes and carrots as a treat!); one head romaine lettuce; 1/2 cup Mazuri elephant pellets 5666, 1/4 cup small hookbill seed mix, 1/4 - 1/2 cup dried fruit mix
<b>Dallas Zoo</b>	per animal: 1/4 cup Mazuri ADF 16; 1/8 cup each chopped apple, chopped yam, chopped banana; 1/2 tsp each cabbage, carrot, celery; free choice alfalfa
<b>Henson Robinson Zoo</b>	4 red monkey biscuits, 2 brown monkey biscuits, .06# carrot chopped, .10# sweet potato, .10# chopped greens, .10# veggie (seasonal), .10# fruit (seasonal variety)
<b>Jacksonville Zoo</b>	1 cup rabbit chow, 1 cup chopped carrot and apple, 2 whole leaves kale
<b>Kansas City Zoo</b>	1 cup veggie mix/animal - carrots, sweet potato, squash, broccoli, peas corn; 1 cup fruit mix/animal - apples, pears, bananas, blueberries, grapes; 1 cup greens mix/animal - spinach, collared greens, kale, romaine lettuce; 1 cup Mazuri leaf eater pellets/animal; browse in season or prairie hay in winter
<b>Lincoln Park Zoo</b>	110g Mazuri herbivore pellets, 60g of various types of produce
<b>Oglebay's Good Zoo</b>	FOR ONE: 29g Mazuri rodent chow, 57g apple, 10g kale, 10g spinach, 4g broccoli, 22g Marion Leaf-eater biscuit (gorilla size), 57g carrot, 57g yams, 10g celery, 60g sweet red peppers
<b>Pittsburgh Zoo</b>	85g Mazuri Primate Browse Biscuit; 220g carrots, 75g sweet potato, 160g romaine or kale

## AZA Hyrax Husbandry Survey Results / Sorted by Question

<b>San Antonio Zoo</b>	1/4 lb chopped carrot, 1/2 lb chopped yam, 1 oz kale, 1 oz spinach, 1/4 lb corn (Sun & Thurs)
<b>Santa Barbara Zoo</b>	218g giraffe fare pellets; 128g produce (apple, carrot, yam, corn, zucchini, potato, etc.) and free feed alfalfa hay
<b>St Louis Zoo</b>	9 apple fiber biscuits, 1/2 cup herbivore chow, 21g apple, 21g carrot, 21g sweet potato, 28g mixed greens
<b>Staten Island Zoo</b>	8.0 oz ADF pellets (16%), 1/6 head of coarsely chopped cabbage, 1 stalk of chopped celery, 2/3 banana peeled and chopped, 1/2 apple chopped, 1/3 sweet potato, 2/3 carrot, 2/3 red pepper, vionate vitamin; all foods chopped into medium chunks
<b>Tautphaus Park Zoo</b>	PER ANIMAL: 3/8 cup carrot chopped, 3/8 cup yam chopped, 1 cup spinach chopped, 1 cup kale chopped, 1/2 tsp clovite, 12 high fiber primate biscuits, 2 cups grass hay, 1/4 tsp selenium M, W,F
<b>The Living Desert</b>	16% ADF, veggies
<b>Utah's Hogle Zoo</b>	the diet is for 1.1 hyrax: 400g iceberg lettuce (or green leaf when iceberg is unavailable), 100g carrot, 75g yam, 30g green alfalfa pellets, free choice grass hay. At times we use small pieces of banana for training but can usually train with just the lettuce. In the past couple years we have changed the diet to exclude kale and spinach as we had evidence of iron storage disease in our deceased hyraxes. Though most of our hyraxes have come in on a diet including fruit, we have a strict rule of no fruit (with the exception of very occasional banana pieces) as it tends to cause diarrhea and there are concerns about fermentation in the digestive system.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:** **How is the diet presented?**

**32**

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<b>Baltimore Zoo</b>	scattered on the loft of their holding enclosure - some chow in bowls and water in bowl
<b>Brookfield Zoo</b>	In flat metal pans on the floor in holding. In pans and scattered on floor on exhibit.
<b>Buffalo Zoo</b>	in a dish, pie pan or crock
<b>Buffalo Zoo</b>	2 ceramic crocks
<b>Caldwell Zoo</b>	in bowls and atop alfalfa
<b>Calgary Zoo</b>	Some whole fruit items (bananas, whole head of lettuce, yam, etc) hung on bungee cords for enrichment feeding (needs to be hung in 4 spots - one per individual or they fight), cubes left free-choice in dish in enclosure, rest of food chopped and piled in several locations throughout enclosure
<b>Dallas World Aquarium</b>	in a bowl
<b>Dallas Zoo</b>	Grain and produce mixed together in 2 bowls on shelves. Alfalfa in bowls on ground.
<b>Henson Robinson Zoo</b>	bowl, occasionally scattered in the enclosure
<b>Jacksonville Zoo</b>	in a heavy plastic bowl inside the night house
<b>Kansas City Zoo</b>	browse on exhibit or hanging in holding; other food on trays at ground level
<b>Lincoln Park Zoo</b>	chopped, mixed and in bowls
<b>Oglebay's Good Zoo</b>	The diet is presented in a hanging bowl up in a tree in the exhibit. This is to prevent the meerkats from taking food from the hyrax and to prevent any aggression which may result. The bowl is disguised to look like a bird's nest in a tree
<b>San Antonio Zoo</b>	in a bowl in the exhibit
<b>Santa Barbara Zoo</b>	in a bowl in holding
<b>St Louis Zoo</b>	depends on enrichment schedule
<b>Staten Island Zoo</b>	in a flat bowl
<b>Tautphaus Park Zoo</b>	offer all ingredients except hay in square metal pan (NO PLASTIC), put hay in hanging manger
<b>The Living Desert</b>	presented in bowls
<b>Utah's Hogle Zoo</b>	We just dump the pan of food on the floor in a central location. Currently we don't worry about separating the diet as they tend to share well. The hay is either presented in a large black tub or in a puzzle feeder hung from a rope that goes across the exhibit.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### How many times per day are the animals fed?

33

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<b>Baltimore Zoo</b>	once in the afternoon
<b>Brookfield Zoo</b>	In holding - once in the am, leftovers removed after 5-6 hours. Twice when on exhibit to increase activity and visibility for the public. Geriatric, young or sick animals often get 24 hour access to food.
<b>Buffalo Zoo</b>	1X
<b>Buffalo Zoo</b>	1X - bowls left in overnight
<b>Caldwell Zoo</b>	2X daily
<b>Calgary Zoo</b>	once
<b>Dallas World Aquarium</b>	two times a day
<b>Dallas Zoo</b>	grain/produce - 1 time in am
<b>Henson Robinson Zoo</b>	once in am
<b>Jacksonville Zoo</b>	The diet is presented in the afternoon (2:00 or later) and left in overnight. It is pulled in the morning but the hyrax has access to kilpspringer food all day.
<b>Kansas City Zoo</b>	food is in holding when animals come off exhibit in afternoon and pulled in morning
<b>Lincoln Park Zoo</b>	twice
<b>Oglebay's Good Zoo</b>	once daily
<b>Pittsburgh Zoo</b>	once per day
<b>San Antonio Zoo</b>	1
<b>Santa Barbara Zoo</b>	one
<b>St Louis Zoo</b>	1
<b>Staten Island Zoo</b>	once daily, fruit & veg in am, pellets in pm
<b>Tautphaus Park Zoo</b>	once in morning
<b>The Living Desert</b>	twice
<b>Utah's Hogle Zoo</b>	half the diet is fed in the AM and half in the PM

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:** **How are your hyraxes restrained for medical procedures?**

34

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<b>Baltimore Zoo</b>	hand restrained for minor procedures - crated for routine weights
<b>Brookfield Zoo</b>	Usually immobilized at the hospital for medical procedures - animals are in a small cage or squeeze cage and manually restrained to administer drugs via injection or masked down. Occasionally restrained by hand to administer oral or topical meds and for close physical inspection. Thick leather gloves are worn and hyrax is usually pressed against the floor for restraint. We prefer not to restrain them due to the fact that they are easily stressed by the experience.
<b>Buffalo Zoo</b>	physically restrained for quick physicals/weights; chemically restrained for other procedures
<b>Caldwell Zoo</b>	nets and heavy gloves
<b>Calgary Zoo</b>	Netted and hand restrained for immobilization if necessary. Injections can usually be done by hand as they tend to freeze when cornered.
<b>Dallas World Aquarium</b>	Netted then transferred to an acrylic box for administration of isoflurane. If catching up purely to examine a bald patch or weigh, will net up then manually restrain through net with gloves.
<b>Dallas Zoo</b>	Run them into small vari-kennels, keeper wears capture gloves to get them out of crate by dropping towel on face, then grabs from back of neck (to prevent head turning back), other hand supports body to pull out of crate.
<b>Henson Robinson Zoo</b>	manually & chemically when necessary
<b>Jacksonville Zoo</b>	At first they are manually restrained and then placed in an aquarium. Isoflurane gas is piped in until the hyrax appears to go under.
<b>Kansas City Zoo</b>	net & hand restraint with gloves
<b>Lincoln Park Zoo</b>	Hyraxes are restrained manually - towed or gloved hand pinning behind the head then lifting the entire body with support under the body - or induced by facemask under manual restraint for anesthesia.
<b>Oglebay's Good Zoo</b>	The hyraxes are typically manually restrained for any medical procedures. If chemical immobilization is necessary, the hyraxes are placed in a Plexiglas induction chamber.
<b>Pittsburgh Zoo</b>	Usually captured with net and then anesthetized.
<b>San Antonio Zoo</b>	netted and hand injected
<b>Santa Barbara Zoo</b>	netted and crated for transport to the clinic
<b>Staten Island Zoo</b>	manually and masked down with isoflurane
<b>Tautphaus Park Zoo</b>	Manual restraint is adequate for most procedures. Isoflurane via induction chamber, then masked if necessary.
<b>The Living Desert</b>	anesthetized in immobilization chambers, either run into crate or hand grab

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Utah's Hogle Zoo

We crate them and then bag the crate with a garbage bag and gas them down. In the past we have had to try to net them in the exhibit which was very stressful. Now we have one shift trained and partially crate trained (he needs a little encouragement) and the female with crate when scared into the keeper closet or entryway.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

**If you need to immobilize the animals, what drugs have you used and how would you describe their effectiveness:**

35

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<b>Baltimore Zoo</b>	Isoflurane gas via mask is most common. This has been very effective with all animals. Have ability to hand restrain to facilitate this when necessary. Telazol has been used for major procedure. Ketamine/Ace has also been used but is no longer preferred due to frequent correlation with low blood pressure.
<b>Brookfield Zoo</b>	isoflurane- very effective; sevoflurane - very effective; butorphanol/midazolam/ketamine - as premed - excellent results
<b>Buffalo Zoo</b>	chamber induced w/isoflurane; gas anesthesia works well
<b>Caldwell Zoo</b>	Ketamine- worked well; isoflurane
<b>Dallas World Aquarium</b>	Isoflurane gas - very safe, fast induction, smooth recovery
<b>Dallas Zoo</b>	isoflurane by face mask or chamber - successful
<b>Henson Robinson Zoo</b>	telazol then gas worked well
<b>Jacksonville Zoo</b>	Isoflurane works well
<b>Kansas City Zoo</b>	gas anesthesia, isoflurane - results uniformly excellent; telazol - results uniformly excellent
<b>Lincoln Park Zoo</b>	Isoflurane is routinely and effectively delivered by facemask to induce anesthesia and maintained by facemask or endotracheal tube. This would be the case at this institution and this veterinarian's prior experience with over 30 rock hyrax.
<b>Oglebay's Good Zoo</b>	For immobilization, we have used Isoflurane at 5% induction and 3% maintenance with induction occurring in a Plexiglas induction chamber and maintenance occurring with the use of a facemask. The efficacy of the Isoflurane has worked very well the times that we have needed to use it with the rock hyraxes.
<b>Pittsburgh Zoo</b>	Telazol and Atropine Sulfate are used to produce light anesthesia for exams. The anesthetic induction rating is excellent along with muscle relaxation rating. Isoflurane is combined with these drugs during a surgical procedure to keep the effect of the drugs sustained.
<b>San Antonio Zoo</b>	Isoflurane, telazol and sevoflurane; all seem to be effective
<b>Santa Barbara Zoo</b>	We have been able to use a face mask and isoflurane to immobilize them.
<b>Staten Island Zoo</b>	we have only used isoflurane on them
<b>Tautphaus Park Zoo</b>	Isoflurane with good success
<b>The Living Desert</b>	isoflurane - very effective
<b>Utah's Hogle Zoo</b>	Generally, we just use isoflurane. We bag the crate and gas until the hyrax is out and then pull the hyrax out of the crate and use a mask to continue administering gas. This has worked very well for us.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**During an immobilization what, if any, problems have you seen?**

**36**

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<b>Baltimore Zoo</b>	low blood pressure with ketamine/ace
<b>Brookfield Zoo</b>	very difficult to place endotracheal tube
<b>Buffalo Zoo</b>	possible complications would be hypothermia
<b>Caldwell Zoo</b>	stress
<b>Dallas World Aquarium</b>	some mild "hiccupping"
<b>Henson Robinson Zoo</b>	none
<b>Jacksonville Zoo</b>	none
<b>Kansas City Zoo</b>	none related to anesthesia - only those problems being addressed during immobilization
<b>Lincoln Park Zoo</b>	VERY occasionally, depressed respirations but this responds readily to decreased anesthetic concentration.
<b>Oglebay's Good Zoo</b>	none to this point
<b>Pittsburgh Zoo</b>	Minor complication observed with one of the hyraxes was periodic apnea which resulted in a lower dose of isoflurane during procedure.
<b>San Antonio Zoo</b>	no complication except for 1 fatality when telazol was used, died during recovery
<b>Santa Barbara Zoo</b>	none
<b>Staten Island Zoo</b>	none
<b>Tautphaus Park Zoo</b>	none
<b>The Living Desert</b>	no problems
<b>Utah's Hogle Zoo</b>	There have been no problems that I know of during an immobilization only during catch-up for one (broken teeth and cuts)

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### What routine medical procedures do you perform on your hyraxes?

37

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<b>Baltimore Zoo</b>	annual physicals, radiographs as needed, fecals are checked every six months
<b>Brookfield Zoo</b>	bloodwork, radiographs, physical exam, fecal exam
<b>Buffalo Zoo</b>	annual physical exams - CBC, serum chemistry, survey lateral whole body radiographs, dental prophylaxis; quarterly fecal floats and direct examinations
<b>Caldwell Zoo</b>	yearly vaccinations
<b>Dallas World Aquarium</b>	annual physicals, venipuncture for CBC/CHEM, rectal cultures, pregnancy checks; monthly fecals
<b>Dallas Zoo</b>	annual exams, dentals
<b>Henson Robinson Zoo</b>	annual check ups
<b>Jacksonville Zoo</b>	annual physical exam (radiographs, blood work)
<b>Kansas City Zoo</b>	routine fecal exams; full quarantine evaluation includes bloodwork, whole body radiographs, rectal culture, ultrasound, weight, dental exam/cleaning, skin biopsies, etc.
<b>Lincoln Park Zoo</b>	Annually, hyraxes are sedated for full physical examination, dental examination, blood collection (screening for PIF predominantly, see below), rectal culture, whole body radiographs (every other year), vaccination, and resolution of other problems encountered. Twice yearly, we screen feces for ova and parasites.
<b>Oglebay's Good Zoo</b>	annual physical examinations and quarterly fecal exams
<b>Pittsburgh Zoo</b>	physical exam, blood collection, nail trim, weight, x-rays (only if needed), check eyes and mouth
<b>San Antonio Zoo</b>	annual exams, radiographs, bloodwork
<b>Santa Barbara Zoo</b>	annual physical exam with vaccinations, bloodwork, radiographs
<b>Staten Island Zoo</b>	constant dental, occasional cage mate aggression (slight bumps & bruises, scratches)
<b>Tautphaus Park Zoo</b>	We do a complete physical including bloodwork and dental every other year.
<b>The Living Desert</b>	annual general physical exams
<b>Utah's Hogle Zoo</b>	Annual exams with blood work and fecals.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### What vaccinations do you use?

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Baltimore Zoo	rabies
Brookfield Zoo	none
Buffalo Zoo	none
Caldwell Zoo	unknown
Dallas World Aquarium	none at this time
Dallas Zoo	rabies, tetanus
Jacksonville Zoo	West Nile Virus, Rabies
Kansas City Zoo	none
Lincoln Park Zoo	Tetanus toxiod and ImRab
Oglebay's Good Zoo	none at this time
Pittsburgh Zoo	none
San Antonio Zoo	none
Santa Barbara Zoo	rabies
Staten Island Zoo	none
Tautphaus Park Zoo	none
The Living Desert	none
Utah's Hogle Zoo	none at this time

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### What health concerns do you have that are specific to hyraxes?

39

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<b>Baltimore Zoo</b>	We have had a few minor traumas from falls from height and one case of enteritis as well as one case of cellopecia likely due to quarantine stress- have recovered well.
<b>Brookfield Zoo</b>	Historically we have had problems with giardia but have not had this issue for several years. We also have seen the species specific herpes virus. Since there is no cure for the herpes, we only treat animals if symptoms are severe. We have also seen hemosiderosis.
<b>Buffalo Zoo</b>	cardiomyopathy & resultant heart disease/failure; Cfrassnemia procaviae infections, dental disease with severe peridontitis; bezoars in ceca that require surgical removal
<b>Caldwell Zoo</b>	teeth overgrowth
<b>Dallas World Aquarium</b>	This species appears to be predisposed to pancreatic conditions with a hereditary component. See Dr. Kathryn Gamble, Director of Veterinary Services at the Lincoln Park Zoo for more details. Also see seasonal alopecia.
<b>Dallas Zoo</b>	diabetes mellitus, pancreatic fibrosis
<b>Jacksonville Zoo</b>	As they have aged, our hyrax have developed diabetes and heart problems.
<b>Kansas City Zoo</b>	salmonellosis, intraspecific aggression, stillbirths, dental abnormalities, herpetic infections
<b>Lincoln Park Zoo</b>	Dental disease, gastric ulcers, obesity, conspecific issues, and pancreatic islet fibrosis (PIF). The last is a novel pancreatic lesion identified by this veterinarian and a veterinary pathologist as a cause of diabetes mellitus and general decline. Paper published in Journal of Zoo and Wild Animal Medicine 2004, Issue 35.
<b>Oglebay's Good Zoo</b>	One of the primary health concerns that we have had with hyraxes is stress during the quarantine period if the hyraxes have come in alone. Despite providing them with a great deal of enrichment, we have had trouble with them pulling hair when they have been housed alone in quarantine. Even with just one hyrax in an exhibit with meerkats, the hyraxes are much more comfortable with the companionship of the meerkats that they are when they are housed in a solitary situation.
<b>Pittsburgh Zoo</b>	oral papilloma, candidal infections
<b>San Antonio Zoo</b>	microbacteria
<b>Santa Barbara Zoo</b>	dental issues
<b>Staten Island Zoo</b>	dystocia
<b>The Living Desert</b>	none specific to hyraxes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Utah's Hogle Zoo

We are most concerned with iron storage disease. I have found by going back through our past records that most of the necropsies and histopaths have hinted at, if not confirmed, iron storage disease in many of our animals. We are also concerned with dental issues as our current male has lost both of his top front teeth (most likely from hitting rockwork during catch-ups or due to his aggressiveness towards anything). This male also came in with eye problems and does not see well out of one eye in particular. Another concern is over grooming. We have had problems with our current female over grooming other hyrax in the past but this does not seem to be a concern currently. We also have concerns on obesity in our hyrax. Our male currently weights 3.11kg and our female is at 2.91 kg although she was as much as 3.41kg before her diet was modified.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:** **Have you successfully bred this species at your institution?**

**40**

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Baltimore Zoo	yes
Brookfield Zoo	yes
Buffalo Zoo	yes
Buffalo Zoo	yes
Caldwell Zoo	yes
Calgary Zoo	not for many years and not, obviously with this group
Dallas World Aquarium	no
Dallas Zoo	yes
Henson Robinson Zoo	no
Jacksonville Zoo	yes
Kansas City Zoo	yes
Lincoln Park Zoo	no
Oglebay's Good Zoo	no
Pittsburgh Zoo	yes
San Antonio Zoo	yes
Santa Barbara Zoo	yes
St Louis Zoo	no
Staten Island Zoo	yes
Tautphaus Park Zoo	yes
The Living Desert	yes
Utah's Hogle Zoo	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Are the male and female separated before the birth?**

**41**

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<b>Baltimore Zoo</b>	no
<b>Brookfield Zoo</b>	no
<b>Buffalo Zoo</b>	no; we separate the male as soon as the babies are born. We have had a lot of aggression to the male after the babies are born. The aggression seems to increase with the size of the group.
<b>Buffalo Zoo</b>	no
<b>Caldwell Zoo</b>	no
<b>Calgary Zoo</b>	When we housed a single pair, we did not separate the male before birth.
<b>Dallas Zoo</b>	no
<b>Jacksonville Zoo</b>	no
<b>Kansas City Zoo</b>	no
<b>Pittsburgh Zoo</b>	no
<b>San Antonio Zoo</b>	no
<b>Santa Barbara Zoo</b>	no
<b>Staten Island Zoo</b>	no
<b>Tautphaus Park Zoo</b>	no
<b>The Living Desert</b>	no
<b>Utah's Hogle Zoo</b>	no

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**If they remain together, have you seen any aggression by either adult towards the newborns?**

**42**

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Baltimore Zoo	yes
Brookfield Zoo	no
Buffalo Zoo	no
Buffalo Zoo	no
Caldwell Zoo	no
Calgary Zoo	no
Dallas Zoo	no
Jacksonville Zoo	no
Kansas City Zoo	no
Pittsburgh Zoo	no
San Antonio Zoo	no
Santa Barbara Zoo	no
Staten Island Zoo	no
Tautphaus Park Zoo	no
The Living Desert	no
Utah's Hogle Zoo	no

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Do you make any special preparations for the birth?**

**43**

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Baltimore Zoo	yes
Brookfield Zoo	yes
Buffalo Zoo	no
Buffalo Zoo	no
Caldwell Zoo	yes
Calgary Zoo	no
Dallas Zoo	yes
Jacksonville Zoo	no
Kansas City Zoo	no
Pittsburgh Zoo	yes
San Antonio Zoo	no
Santa Barbara Zoo	no
Staten Island Zoo	no
Tautphaus Park Zoo	no
The Living Desert	no
Utah's Hogle Zoo	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**If yes, what are they?**

**44**

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<b>Baltimore Zoo</b>	Need isolated undisturbed nest box. Removal of and/or moving a nestbox may result in aborted fetus.
<b>Brookfield Zoo</b>	Nest boxes are provided off the back of the exhibit and/or holding.
<b>Caldwell Zoo</b>	nesting hay
<b>Dallas Zoo</b>	lots of extra nestboxes; baby proof area to prevent escapes
<b>Pittsburgh Zoo</b>	We always double check cages/exhibit for security - they are SO tiny and precocious (escape risk!!)
<b>The Living Desert</b>	Just check for baby-size gaps, allow access rather than lock on display.
<b>Utah's Hogle Zoo</b>	In the past straw has been used to line the exhibit if there was a chance of birth. Currently we have seen breeding but no young so we will not be prepared with straw if one is born from our current pair. We have had successful young reared with and without straw in the exhibit.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**How long do you leave the offspring with the mother before moving them?**

**45**

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<b>Baltimore Zoo</b>	stayed in group
<b>Brookfield Zoo</b>	We've had one instance in which a hyrax conceived at 3.5 months. Generally we separate sexes at 4-5 months of age.
<b>Buffalo Zoo</b>	ours have usually been at least a year old, probably not necessary - it was more for our convenience
<b>Buffalo Zoo</b>	don't normally move if all getting along
<b>Jacksonville Zoo</b>	indefinitely
<b>Kansas City Zoo</b>	before shipping or sexual maturity ~16 months
<b>Pittsburgh Zoo</b>	no specific cut off age
<b>San Antonio Zoo</b>	all offspring have died within a short time after birth
<b>Santa Barbara Zoo</b>	We wait to see behavioral indications that offspring need to be moved.
<b>Staten Island Zoo</b>	they remain in the exhibit with parents
<b>Tautphaus Park Zoo</b>	usually 2 months or more
<b>The Living Desert</b>	nothing specific
<b>Utah's Hogle Zoo</b>	I think we have kept young for over a year with their mother.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

**How long have you been able to keep the offspring with the parents?**

46

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<b>Brookfield Zoo</b>	We kept a sire and his two offspring together for over two years until the offspring were shipped to another institution; we may have been able to keep them together indefinitely. On another occasion, we kept a male offspring and his sire together almost two years; we had to separate due to sudden, extreme aggression from sire. No problems with aggression amongst dam/female offspring groups. Have kept female relatives (sibs, parents, aunts, etc.) together indefinitely. Breeding and parturition in such a group does not affect dynamics negatively as long as there is only one male breeder introduced and young males are removed by 3-4 months.
<b>Buffalo Zoo</b>	indefinitely
<b>Buffalo Zoo</b>	sometimes indefinitely
<b>Jacksonville Zoo</b>	some were housed together until death
<b>Kansas City Zoo</b>	0.3 born early March '04 and still with parents in October
<b>Pittsburgh Zoo</b>	no specific cut off age
<b>San Antonio Zoo</b>	all offspring have died within a short time after birth
<b>Santa Barbara Zoo</b>	several years
<b>Staten Island Zoo</b>	never separated
<b>Tautphaus Park Zoo</b>	They have all been placed within 8 months to another facility.
<b>The Living Desert</b>	until adulthood
<b>Utah's Hogle Zoo</b>	I think we have kept young for over a year with their mother.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### What concerns do you have when housing the group together?

47

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<b>Brookfield Zoo</b>	In the groups that contain multiple males, we continuously monitor aggression. Displacement at feeding time is common but in cases with more severe aggression, there may be aggression at other times also. Because bite wounds may be difficult to see from a distance, we rely on other factors to indicate when separation may be needed. Bad signs: an animal is spending most of its time on the floor versus elevated positions; an animal has multiple wet fur spots on its body (indicated bite wounds); multiple fur tufts are found; repeated, determined chasing of one individual is seen. When these bad signs occur, we usually separate the aggressor or the "victim" at that time.
<b>Buffalo Zoo</b>	It the group becomes too large they become aggressive to the male.
<b>Buffalo Zoo</b>	conspecific aggression - scabs and bites, otherwise assume everything is okay
<b>Jacksonville Zoo</b>	our primary concerns have been inbreeding
<b>Kansas City Zoo</b>	all seem to be getting along great so far (March - October); have had a female give birth at 17 months of age
<b>San Antonio Zoo</b>	aggression from others, especially the male
<b>Santa Barbara Zoo</b>	none
<b>Staten Island Zoo</b>	cage mate aggression
<b>Tautphaus Park Zoo</b>	Watch for aggression.
<b>The Living Desert</b>	unplanned breeding
<b>Utah's Hogle Zoo</b>	I would imagine we would have concerns about inbreeding or aggression between the father and a young male reaching sexual maturity.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Have you ever had to pull offspring for any reason?**

**48**

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Baltimore Zoo	yes
Brookfield Zoo	yes
Buffalo Zoo	no
Buffalo Zoo	no
Caldwell Zoo	no
Calgary Zoo	yes
Dallas Zoo	yes
Jacksonville Zoo	yes
Kansas City Zoo	yes
Pittsburgh Zoo	yes
San Antonio Zoo	no
Santa Barbara Zoo	no
Staten Island Zoo	no
Tautphaus Park Zoo	no
The Living Desert	yes
Utah's Hogle Zoo	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:** **Have you hand reared offspring?**

**49**

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<b>Baltimore Zoo</b>	yes - pulled for supplementation and medical intervention, returned to group
<b>Brookfield Zoo</b>	no
<b>Buffalo Zoo</b>	no
<b>Buffalo Zoo</b>	no
<b>Caldwell Zoo</b>	no
<b>Calgary Zoo</b>	yes
<b>Dallas Zoo</b>	yes
<b>Jacksonville Zoo</b>	no
<b>Kansas City Zoo</b>	no
<b>Pittsburgh Zoo</b>	yes; twice but both were compromised or injured infants; our attempts to hand-raise were unsuccessful
<b>San Antonio Zoo</b>	no
<b>Santa Barbara Zoo</b>	no
<b>Staten Island Zoo</b>	no
<b>Tautphaus Park Zoo</b>	no
<b>The Living Desert</b>	yes
<b>Utah's Hogle Zoo</b>	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**If yes, please describe your protocol (formula used, number of feedings, when weaned, etc.).**

**50**

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**Dallas Zoo**

from 1995: 2 wks - 2 ml 50% evaporated milk, 50% water every 2 hours; 3 wks - gerber baby food (cereal & fruit), chopped produce from adult diet, alfalfa, ADF 16 soaked in milk; 6 wks - given adult diet

**The Living Desert**

50:50 evaporated milk/water with Poly Vitamin supplement via syringe. Offer rice baby cereal, applesauce, diced veggies at onset (fresh plate 2X/day). Start eating on own almost immediately.

**Utah's Hogle Zoo**

Before I arrived at the Zoo, there was a baby whose mother died shortly after birth. This baby was hand reared in the exhibit very successfully. Each day the baby was pulled for feeding at set times and the rest of the day lived with the father and one other female. The baby did very well with this method and didn't result in an overly friendly or problem adult. The baby was shipped off just before reaching maturity. Do not know specific feeding schedule, etc.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:** **Have you used any type of contraception for your hyraxes?**

**51**

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Baltimore Zoo	no
Brookfield Zoo	no
Buffalo Zoo	no
Buffalo Zoo	no
Calgary Zoo	no
Dallas Zoo	yes
Henson Robinson Zoo	no
Jacksonville Zoo	yes
Kansas City Zoo	yes
Oglebay's Good Zoo	no
Pittsburgh Zoo	no but we are intending to do so; we do not want to continue breeding and do not want to separate them. Will possibly spay female.
San Antonio Zoo	no
Santa Barbara Zoo	no
Staten Island Zoo	no
Tautphaus Park Zoo	no
The Living Desert	no
Utah's Hogle Zoo	no

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**If yes, what have you used and was it successful?**

**52**

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<b>Brookfield Zoo</b>	We separate males from females to stop breeding.
<b>Dallas Zoo</b>	castration
<b>Jacksonville Zoo</b>	MGA implant - don't know if it was successful
<b>Kansas City Zoo</b>	participated in PZP vaccination - did not work effectively

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Are any of your hyraxes used for educational purposes or public demonstrations?**

**53**

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Baltimore Zoo	no
Brookfield Zoo	no
Buffalo Zoo	no
Buffalo Zoo	no
Caldwell Zoo	no
Calgary Zoo	no
Dallas World Aquarium	no
Dallas Zoo	no
Henson Robinson Zoo	no
Jacksonville Zoo	no
Kansas City Zoo	no
Lincoln Park Zoo	no
Oglebay's Good Zoo	no
Pittsburgh Zoo	no
San Antonio Zoo	no
Santa Barbara Zoo	no
St Louis Zoo	no
Staten Island Zoo	no
Tautphaus Park Zoo	no
The Living Desert	yes
Utah's Hogle Zoo	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**If yes, how is the hyrax used?**

**54**

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**The Living Desert**

halter-trained and used for formal on-stage presentation (not currently)

**Utah's Hogle Zoo**

Currently this is relatively informal. We give talks for Zoo camps on the hyrax and at that time I feed the hyrax so that they are down in front or give favorite enrichment devices. Many times I do impromptu keeper talks in the afternoon when feeding the hyrax. At this time I do a training session to exhibit some of the hyrax's natural behaviors. The hyrax are in their exhibit at all time during this.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Do you consider it a successful outreach animal?**

**55**

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<b>The Living Desert</b>	yes
<b>Utah's Hogle Zoo</b>	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**What behaviors have you trained?**

**56**

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**The Living Desert**

A to B

**Utah's Hogle Zoo**

Our trained behaviors are more husbandry based than presentation based.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**If your hyraxes are not used for demonstrations, have you trained any husbandry behaviors?**

**57**

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Brookfield Zoo	yes
Buffalo Zoo	no
Buffalo Zoo	no
Caldwell Zoo	no
Dallas World Aquarium	yes
Dallas Zoo	yes
Henson Robinson Zoo	no
Jacksonville Zoo	yes
Kansas City Zoo	no
Lincoln Park Zoo	not yet but soon
Oglebay's Good Zoo	no
Pittsburgh Zoo	no
San Antonio Zoo	no
Santa Barbara Zoo	no
St Louis Zoo	yes
Staten Island Zoo	no
Tautphaus Park Zoo	no
The Living Desert	yes
Utah's Hogle Zoo	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**If yes, what behaviors have you trained?**

**58**

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<b>Brookfield Zoo</b>	All will stand on a scale voluntarily when given privacy and when a small amount of food is placed on the scale.
<b>Dallas World Aquarium</b>	The male was scale trained at another insitution (Santa Barbara Zoo) and we continue to reinforce.
<b>Dallas Zoo</b>	litter box trained; will run into grain bags/kennel crates for easier catch-ups
<b>Jacksonville Zoo</b>	One of our hyrax was trained to shift inside the night house every afternoon. She then received an insulin injection. This was not a trained behavior as much as it was convenient.
<b>St Louis Zoo</b>	shift to shift box
<b>The Living Desert</b>	crate training
<b>Utah's Hogle Zoo</b>	We have our male shift and target trained. I am currently working on holding on target, stationing, staying in shift until released and crating.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Do you have any plans for future training ?**

**59**

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Baltimore Zoo	no
Buffalo Zoo	no
Buffalo Zoo	no
Caldwell Zoo	no
Calgary Zoo	yes
Dallas World Aquarium	yes
Dallas Zoo	no
Henson Robinson Zoo	yes
Jacksonville Zoo	no
Kansas City Zoo	not specifically
Lincoln Park Zoo	yes
Oglebay's Good Zoo	yes
Pittsburgh Zoo	yes
San Antonio Zoo	no
Santa Barbara Zoo	no
St Louis Zoo	maybe
Staten Island Zoo	no
The Living Desert	yes
Utah's Hogle Zoo	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

### What behaviors would you most like to train?

60

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<b>Baltimore Zoo</b>	The only thing we would consider training is crating but it is easy enough to run them in so it is at this point unnecessary.
<b>Calgary Zoo</b>	stationing/shifting in holding area, train to enter crate
<b>Dallas World Aquarium</b>	Love to have them crate trained to reduce stress of catch up.
<b>Henson Robinson Zoo</b>	crate training for transport and weight checks
<b>Kansas City Zoo</b>	unsure at this time
<b>Lincoln Park Zoo</b>	shifting, crating, and behaviors that will facilitate physical exam (open mouth, eye exam, weights, tactile desense).
<b>Oglebay's Good Zoo</b>	crate, scale
<b>Pittsburgh Zoo</b>	Would initially like to get them more comfortable with human proximity and general interaction. After that, we'll see (they have been progressing!) Targeting and crate training would be useful but are kind of "long-term" goals right now.
<b>St Louis Zoo</b>	if time permits show crew may work on behaviors
<b>Staten Island Zoo</b>	litter box training
<b>The Living Desert</b>	on-stage A to B behaviors
<b>Utah's Hogle Zoo</b>	I would like to get the female trained on all the above behaviors. I would also like to work on alleviating the male's aggressiveness. Currently we have to shift him to clean, enter the exhibit at all and feed. We train him protected contact only. I would like to be able to laser target train him and the female but his may be a challenge as the male has eye problems.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Do you provide your hyraxes with environmental enrichment?**

**61**

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Baltimore Zoo	yes
Brookfield Zoo	yes
Buffalo Zoo	yes
Buffalo Zoo	yes
Caldwell Zoo	yes
Calgary Zoo	yes
Dallas World Aquarium	yes
Dallas Zoo	yes
Henson Robinson Zoo	yes
Jacksonville Zoo	yes
Kansas City Zoo	yes
Lincoln Park Zoo	yes
Oglebay's Good Zoo	yes
Pittsburgh Zoo	yes
San Antonio Zoo	yes
Santa Barbara Zoo	yes
St Louis Zoo	yes
Staten Island Zoo	yes
Tautphaus Park Zoo	yes
The Living Desert	yes
Utah's Hogle Zoo	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

**If yes, please list what you use for enrichment and if possible comment on the success of the items:**

62

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<b>Baltimore Zoo</b>	dustbath twice per week; variety in food offerings; addition of novel stimuli (scents, snakesheds, etc.)
<b>Brookfield Zoo</b>	Edible enrichment: frozen peach nectar, orange juice or water blocks. Maple, elm, mulberry and grapevine browse. They typically eat the leaves of the browse. We often see discolored (reddish) urine after they received grapevine but it is not a medical concern. Applesauce, grapes, steamed sweet potato, and banana are also successful treats and useful for getting the hyrax to accept oral medicine. Non-food enrichment: cardboard boxes, paper bags, rubber tubs and buckets, plastic buckets and balls. Perfume, herbs and spices. Substrates offered in small containers on the floor: bed-o-cob, mulch, bark. We've had a few hyrax that eat newspaper, so we no longer offer that as enrichment. We use the empty square plastic buckets that scoopable kitty litter comes in as cage furniture for the hyrax. The buckets are hung on their sides with cable ties so the hyrax can jump on the top or go inside them. They are cheap and easily kept clean.
<b>Buffalo Zoo</b>	popcorn & peanuts, trail mix - good; browse, maple & bamboo - good; ornamental grasses - so-so; boxes w/hay & goodies hidden in them - good; pinecones w/peanut butter - good; cardboard tubes - so-so
<b>Buffalo Zoo</b>	different substrates - since animals are housed in rock/concrete exhibit they are given trays w/ straw, timothy, alfalfa or shaving to lie in/eat. This is not done daily. Also their waterfall/stream water source is occasionally run warm rather than cold and they enjoy sitting in warm running water.
<b>Caldwell Zoo</b>	bamboo & willow
<b>Calgary Zoo</b>	suspend whole food items on bungee cord; boxes with treats inside to be torn apart; fresh browse; novel food items (raisins, yams, popcorn); grass flats; fresh grass clippings; dirt and other substrates for digging and hiding food items in
<b>Dallas World Aquarium</b>	Branches for climbing, bamboo browse, watermelon and other seasonal fruit snacks, "monkey cake". Other browse that is grown here in our rainforest. The success of item really depends on day and method of administering enrichment.
<b>Dallas Zoo</b>	browse - many different kinds, they love any thing; pans of sand; new/different hiding boxes/bags; branches, deadfall
<b>Henson Robinson Zoo</b>	Used a variety of scents & substrates with positive reaction. Burlap seems to be a favorite. Diet is scattered occasionally, mulch piles and ice treats. Ice treats not very successful.
<b>Jacksonville Zoo</b>	Various types of browse are given daily; particularly bamboo, wax myrtle, banana leaves, mulberry, etc. Most enrichment is food - pumpkins, popcorn, etc. Some spices and scents - cinnamon, vanilla, etc.
<b>Kansas City Zoo</b>	browse eaten daily; large PVC tubes to hide in - used often
<b>Lincoln Park Zoo</b>	The enrichment provided is for all animals in the exhibit, and generally includes novel food presentation, including hanging produce, and scents. He also enriches himself by climbing the mesh and stretching as far as he can to try to reach the lovebirds' food. His dust bath is not considered enrichment, but is part of his enclosure.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

<b>Oglebay's Good Zoo</b>	Most successful: bamboo, banana, boxes, cornstalks, paper bags, pumpkins, willow. Also given: banana chips, boomer ball, catnip spray, logs, feathers, grapes, hay, straw, lemon balm, mint, exhibit misting, orange, paper mache, paper towel tubes with food inside, peanut butter, pears, sage, sandcastles, snow and thyme.
<b>Pittsburgh Zoo</b>	Seem to enjoy a variety of "cage furniture", esp. stuff they can hide under or climb on: logs, crates, boxes, "ladders", etc. So far not much interest in "toys" that they've been presented with. Have been presenting them with small amounts of novel food items - am hoping to find some that motivate them, in preparation for some basic training. These animals have been managed in a very "hands off" environment for most of their lives, so there are currently a lot of challenges to overcome.
<b>San Antonio Zoo</b>	browse and scents
<b>Santa Barbara Zoo</b>	We will give novel food items, shredded newspaper, sod, substrates like straw or wood shavings or mulch, just about anything we would give to other animals. Nothing seems to be of great interest to them.
<b>St Louis Zoo</b>	furniture changes, boxes, paper, browse, food changes
<b>Staten Island Zoo</b>	browse, hay, seasonal fruits, gourds and pumpkins
<b>Tautphaus Park Zoo</b>	Browse including willow branches, rearrange perching, rocks, etc.
<b>The Living Desert</b>	furniture (logs, rocks, etc.), frozen plastic bottles of water - hyrax enjoy resting on them when hot, browse, scents (perfume, spices, urine from other species), pine cones, fur/hair from other species
<b>Utah's Hogle Zoo</b>	<p>Our hyrax are on a twice a week enrichment schedule rotating between our 5 categories of behavioral, environmental, foods and feeding, manipulative and sensory. I tend to give them enrichment more often than that to keep them entertained and in the view of the public. Since initiating their training program, I have seen a much better response with enrichment from the pair. We have a rope strung across the exhibit which is utilized quite often to hang enrichment devices from. They seem to enjoy hanging enrichment as opposed to enrichment just being placed on the floor of the exhibit. Below is our list of approved enrichment for hyrax along with comments on specific items and favorites or problem enrichment is discussed following that. Starred items are favorites or get the best responses.</p> <p>Sensory: shake shed (watch for ingestion), spices, herbs, diluted extracts and essential oils, urines/trapping lures, perfumes and lotions, music*, pictures* (magzine, calendar, other animals), camel hair/wool* (watch for ingestion), non-toxic bubbles*, mirror*, sun catcher (outside exhibit), recordings of other animals*, window treatments* (outside of glass), window walker*, laser pointer* (avoid eyes), hides (watch for ingestion), feathers (watch for ingestion), squirrel call. FOODS AND FEEDING: peanut butter/honey/molasses/applesauce* (in small amounts and in feeders only), ice blocks, frozen Kool-Aid, frozen Jell-O, approved browse* (favorites are cornstalks, box elder, willow and elm), puzzle feeders*, Buster cube, cardboard box/tube puzzle feeder*, egg carton/paper bag puzzle feeder*, Kong feeder, foraging tub*. MANIPULATIVE ITEMS/TOYS: coconut balls, paper products* (watch for ingestion), cardboard products*, pinecones, ferret ball, Boomer ball, plastic jugs*, Kong Toy (large), pinatas, phone books, sticks*, corncobs*, antlers, healthy edibles, Nyla-bones (no more than once/month), Boomerball bobbin, bones.</p>

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Utah's Hogle Zoo

CONT (Starred items are favorites or get the best responses): PHYSICAL ENVIRONMENT: snow\*, straw (watch for ingestion), grass hay, wood shavings\*, bark chips, leaves (from approved browse), sand\*, branches\*, shredded paper\* (watch for ingestion), tree stumps, black tub filled with water, rearrange exhibit, excelsior (watch for ingestion), dirt\*, sod pieces\*, visual barriers\*, misting. BEHAVIORAL: view of artificial animals\* (decoys, remote control/battery operated toys, scarecrow, pink flamingo, piggy bank painted to resemble hyrax), view of another animals\* (education animal, snakes/reptiles, handleable parrots, swan, prehensile-tailed porcupine, degu), The hyrax respond very well to almost all behavioral enrichment. The female vocalizes and the male comes right up to the window and tries to get at the enrichment. The piggy bank is a big hit. The male basically attacks it for ~10-15 minutes and then will come back periodically during the day to check it out again, sometimes attack it or pulling it around the exhibit. Our main concern with giving enrichment to the hyrax is ingestion. They tend to eat anything that appears to be food in any form so we have to be careful when giving certain items.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Have you ever shipped a hyrax?**

**63**

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Brookfield Zoo	yes
Buffalo Zoo	no
Buffalo Zoo	yes
Calgary Zoo	yes
Dallas World Aquarium	yes
Dallas Zoo	yes
Henson Robinson Zoo	no
Jacksonville Zoo	yes
Oglebay's Good Zoo	yes
Pittsburgh Zoo	yes
San Antonio Zoo	no
Santa Barbara Zoo	no
St Louis Zoo	no
Staten Island Zoo	yes
Tautphaus Park Zoo	yes
The Living Desert	yes
Utah's Hogle Zoo	yes

## AZA Hyrax Husbandry Survey Results / Sorted by Question

### Question:

**If yes, please describe your shipping crate (dimensions, construction, etc.)**

**64**

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<b>Brookfield Zoo</b>	We use the small size rigid plastic vari-kennel with mesh doors and mesh ventilation openings on the sides. They measure 21" x 16" x 15" high. Burlap cloth is placed over the door and side vents for travel. Bedding of straw or pine shavings is provided in crate for warmth and absorption.
<b>Buffalo Zoo</b>	200 sized plastic sky kennel or similarly sized aluminum kennel
<b>Calgary Zoo</b>	used IATA standards and sized crate for the individual
<b>Dallas World Aquarium</b>	Medium Vari-Kennel 200 with shavings or shredded newspaper bedding, meshed doors and sides with a small burlap curtain over the front door. Door zip-tied shut.
<b>Dallas Zoo</b>	standard small or medium size kennel crate
<b>Jacksonville Zoo</b>	We've transported a pair inside a medium air kennel using a personal vehicle.
<b>Oglebay's Good Zoo</b>	medium deluxe pet porter 27.3" x 21.8" x 20"
<b>Pittsburgh Zoo</b>	It has been a number of years since we've shipped hyraxes but I believe we just used kennel cabs, with appropriate reinforcements to door and burlap over "open" areas (door, windows)
<b>Staten Island Zoo</b>	medium sized vari kennel with shade cloth over openings
<b>Tautphaus Park Zoo</b>	Plastic sky kennel - either small or medium depending on age and distance travelling. All metal mesh doors and windows covered with burlap and hay substrate on floor.
<b>The Living Desert</b>	100-size kennel
<b>Utah's Hogle Zoo</b>	We use a standard pet carrier that is plastic with metal "windows" and door. We use either a 100 or a 200 size carrier per animal. The windows and door are covered with burlap or mealworm bags or bed sheet cut to fit the outside of the crate. A full diet is provided in the crate along with a water bottle to attach to the crate and grass hay in the crate.

## AZA Hyrax Husbandry Survey Results / Sorted by Question

**Question:**

**Comments or ideas to include in the Husbandry Standards:**

**65**

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<b>Baltimore Zoo</b>	Hyraxes are crated and weighed at least every two months and food intake monitored and recorded.
<b>Calgary Zoo</b>	At the time we were looking to acquire a display group, as is so often the case, there were many males available and very few females. The best advice seemed to be for a bachelor group to be successful was to form it from juvenile animals of the same age and allow them to mature together in the exhibit. Having done this, we are still concerned that the level of aggression seems to continue with one animal taking the brunt of the aggression from the rest of the group.
<b>Lincoln Park Zoo</b>	If there are not guidelines for social grouping, that would be a nice thing to add. We have a single hyrax right now, but I would like to change that in the near future, I would much prefer to have a social group of hyrax.
<b>Oglebay's Good Zoo</b>	Possibly address jumping and climbing ability for new exhibit. Ours have easily jumped 3' barriers from a stand still, and they commonly scale up a 10' window with their back pushed against a support beam.
<b>Santa Barbara Zoo</b>	Introduction guidelines as well as family management guidelines. Dietary guidelines would also be extremely helpful.
<b>Utah's Hogle Zoo</b>	There are a few things that I feel are essential to successfully keeping healthy hyrax on exhibit: protected access to a heat lamp, an exhibit with plenty of ledges and hiding spots, a well balanced diet with adjustments to prevent iron storage disease and obesity, fresh browse offered on a regular basis, enrichment and operant conditioning program (most importantly for low stress catch-ups).