

Porcupine Husbandry Survey	<i>Hystrix africaeaustralis</i>
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Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

Are your porcupines housed primarily indoors?

Response

no
 no
 yes
 No
 Yes
 no
 no
 no
 no
 no
 no
 No
 no

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

What are the dimensions of your indoor exhibit?

Response

8' x 6'
 163' Wide x 9.5' deep, 12' high
 12'6'6' concrete den
 24' X 10 'X 7'

 N/A

Question:

Institution

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 The Living Desert Zoo and Gardens

 Wildlife World Zoo

Is there shifting capability?

Response

yes
 yes
 yes
 Yes
 Yes

 no
 yes
 no
 Yes
 yes
 Not in the traditional sense. This individual is trained to go into a crate with trainer present. There is no shift section attached.
 no

Question:

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Alexandria Zoological Park
Busch Gardens, Tampa

Central Florida Zoological Park

Glen Oak Zoo

Honolulu Zoo

Sacramento Zoo

San Diego Wild Animal Park

San Diego Zoo

San Diego Zoo

Santa Barbara Zoo

The Living Desert Zoo and Gardens

Wildlife World Zoo

Please describe the general design of your indoor exhibit?

Response

concrete slab, cinder block walls, water bowls

large viewing window for guests; cement rock work on back and side walls; nesting area is a large hollow log that 1.1 sleep in together; there are several large rocks and dead fall in habitat for climbing

Our 1.1 Hystrix have an indoor den which they are allowed access to at night.

Exhibit is outdoors with attached block den

Three solid block walls (one was wooden, but later had to be blocked over due to chewing) the "viewing wall" has four windows for public viewing.

N/A

they are in an outdoor exhibit

Question:

Institution

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Alexandria Zoological Park
Busch Gardens, Tampa

Central Florida Zoological Park

Glen Oak Zoo

Honolulu Zoo

Sacramento Zoo

San Diego Wild Animal Park

San Diego Zoo

San Diego Zoo

Santa Barbara Zoo

The Living Desert Zoo and Gardens

Wildlife World Zoo

What type of substrate do you use in your porcupine exhibit?

Response

none, all concrete

pine shavings and browse bedding

River Rock

Mulch

earth, sand

cement floor and dirt

cement

Dirt and Cedar chips, gunnite and concrete, mulch.

sand, dirt, rock mix

2-3 ft of natural dirt, found on grounds. Entire enclosure is lined under the dirt layer.

dirt

Question:

Institution

Albuquerque Biological Park
Alexandria Zoological Park
Busch Gardens, Tampa

Central Florida Zoological Park

Glen Oak Zoo

Honolulu Zoo

Sacramento Zoo

San Diego Wild Animal Park

San Diego Zoo

San Diego Zoo

Santa Barbara Zoo

What cage furniture do you use?

Response

sky kennel, natural limbs

dead fall, large rocks, and tree limbs

bones, logs (oak, sweet gum, bamboo mostly) Cave-like structure

Large branches.

live trees, rocks, tree branches

logs, branches, "dogloo" x-tra large size for den box, litter pan

logs, pieces of wood, pines

Tree stumps, pine branches, rocks, waterfall, pool

deadfall (fig), large rocks, dirt pile

The Living Desert Zoo and Gardens

Tree stump, heavy plastic dog house, heavy synthetic tunnel always present.

Wildlife World Zoo

Sometimes present: 1/2 vari-kennel, other items for enrichment
we put various logs throughout the exhibit for their enrichment

Question:

What type of heating and ventilation system do you use?

Institution

Response

Albuquerque Biological Park

forced air (holding cage/den)

Alexandria Zoological Park

central air and heat are used in their temporary housing

Busch Gardens, Tampa

there is a fan in the top front corner; A/C heat system vent in ceiling

Central Florida Zoological Park

small space heater or hay for den area during winter

Glen Oak Zoo

Forced air heating. The exhibit has poor ventilation. Fans are used to aid in circulation.

Honolulu Zoo

none

Sacramento Zoo

San Diego Wild Animal Park

industrial air-circulation fan and radiant heat lamp, misters for hot days

San Diego Zoo

heating lamp (outdoor exhibit)

San Diego Zoo

Heat lamp in ceiling of cage/bed area. No vent system - outside.

Santa Barbara Zoo

The Living Desert Zoo and Gardens

Heat lamp directed into dog house; mist, swamp cooler, shade from trees and shade cloth

Wildlife World Zoo

none

Question:

What is the average temperature range of your indoor exhibit?

Institution

Response

Albuquerque Biological Park

holding cage- 75 degrees F

Alexandria Zoological Park

75 degrees F

Busch Gardens, Tampa

78-82 degrees F

Central Florida Zoological Park

Glen Oak Zoo

68F-85F

Honolulu Zoo

70-88 degrees F

Sacramento Zoo

San Diego Wild Animal Park

not controlled

San Diego Zoo

N/A

San Diego Zoo

Santa Barbara Zoo

The Living Desert Zoo and Gardens

Wildlife World Zoo

n/a

Question:

Is the exhibit on a light cycle?

Institution

Response

Albuquerque Biological Park

no

Alexandria Zoological Park

no

Busch Gardens, Tampa

yes

Central Florida Zoological Park

No

Glen Oak Zoo

Yes

Honolulu Zoo

no

Sacramento Zoo

San Diego Wild Animal Park

no

San Diego Zoo

no

San Diego Zoo

Yes

Santa Barbara Zoo	
The Living Desert Zoo and Gardens	No
Wildlife World Zoo	natural

Wildlife World Zoo	the exhibit is oval shaped and is bordered with telephone poles; the base is cement with poles cemented in; then there is a large layer of dirt over the cement; there is a shelter in the SE corner that provides shade if needed
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If so, what is the day/night cycle?

Response

day 7am-7pm, night 7pm-7am

 8:00am-5:00pm (light) ; 5:00 pm-8:00am (dark)

 Natural (outside)

 n/a

Question:

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 Wildlife World Zoo

Do your porcupines have an outdoor exhibit?

Response

yes
 yes
 no
 yes
 No
 yes
 yes
 yes
 yes
 yes
 yes
 Yes
 yes

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo

Do you have temperature restrictions for them to be outside?

Response

yes
 no

 No
 N/A
 no
 no
 no
 no

San Diego Zoo	No
Santa Barbara Zoo	no
The Living Desert Zoo and Gardens	No, the enclosure is only outdoors
Wildlife World Zoo	no

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 Wildlife World Zoo

If so, what are your temperature guidelines?

Response

below 50 degrees, has access into holding

 N/A
 none

 temp at Wild Animal Park: summer high= 105 F, winter low= 33 F

 Heat lamp is turned on when night-time lows reach 60', 50's. Swamp cooler is turned on when temp reaches 90. Mist is turned on when temp reaches 95

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 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

Do you have an indoor holding area?

Response

yes
 yes
 yes
 Yes
 Yes

 yes

 yes
 Yes
 yes
 No
 no

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo

What is the dimension of your indoor holding space?

Response

6 ft x 4 ft
 6' x 8'
 25' long x 5' wide x 12' high (hallway)
 12'x6'x6'
 4ft X 10ft X 6ft

 3' x 4' cement den, used only to shift them into when cleaning
 5' x 6'
 4' x 4' x 8' bedroom

San Diego Zoo 2 faceted: indoor holding space = 4'10"x3'3"x5'2" Outdoor yard (incorporated w/holding) off exhibit=9'8"x4'3"x5'5" Concrete and chain-link

Santa Barbara Zoo 4' x 2', holding is not inside a building- more of an enclosed den shelter area

The Living Desert Zoo and Gardens
Wildlife World Zoo

Question:

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

Institution

Response

Albuquerque Biological Park

cement floor, cinder block walls

Alexandria Zoological Park

see previous section

Busch Gardens, Tampa

it is a back area hallway we shift them into only when changing substrate or disinfecting

Central Florida Zoological Park

Indoor den which they are allowed access to at night.

Glen Oak Zoo

One block wall, one barred wall, two walls chain link. Cement floor.

Honolulu Zoo

Sacramento Zoo

cement den with radiant heat fixture

San Diego Wild Animal Park

cement floor with solid walls that are 4.5 ft high with wire extended above the wall to the ceiling; the wire dimension is 3" x .5"; there is a slide door entrance to the main enclosure; the floor is cement which we line with hay and her dogloo is in thi

San Diego Zoo

small bedroom with a shelf and one small galatine door

San Diego Zoo

Enter from exhibit through a guillotine door into an area with a concrete floor and gunnite and chain link walls, no roof.

Santa Barbara Zoo

metal guillotine door, concrete floor and walls, roof has a fold-back door for keepers to service (door is 1' x 2')

The Living Desert Zoo and Gardens
Wildlife World Zoo

Question:

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

Institution

Response

Albuquerque Biological Park

forced air

Alexandria Zoological Park

central air and heat

Busch Gardens, Tampa

same AC/heating system as habitat

Central Florida Zoological Park

Forced air heating. The exhibit has poor ventilation. Fans are used to aid in circulation.

Glen Oak Zoo

none

Honolulu Zoo

radiant heat lamp

Sacramento Zoo

San Diego Wild Animal Park

radiant heat lamp, 1/2 way up wall is wire

San Diego Zoo

heat lamp

San Diego Zoo

Natural

Santa Barbara Zoo

none in holding- radiant heating outside (on exhibit)

The Living Desert Zoo and Gardens

Wildlife World Zoo

Question:

What are the dimensions of your outdoor exhibit?

Institution

Response

Albuquerque Biological Park

30 x 30

Alexandria Zoological Park

6' x 8'

Busch Gardens, Tampa	
Central Florida Zoological Park	about 20'x15'
Glen Oak Zoo	N/A
Honolulu Zoo	18 x 25
Sacramento Zoo	30' x 10'
San Diego Wild Animal Park	15' x 12'
San Diego Zoo	15' x 15' x 15'
San Diego Zoo	18'x27'x4 1/2' Glass viewing panels along front
Santa Barbara Zoo	10' x 20' oval shape
The Living Desert Zoo and Gardens	
Wildlife World Zoo	25' x 40'

Question:
Institution

Albuquerque Biological Park

Alexandria Zoological Park

Busch Gardens, Tampa

Central Florida Zoological Park

Glen Oak Zoo

Honolulu Zoo

Sacramento Zoo

San Diego Wild Animal Park

San Diego Zoo

San Diego Zoo

Santa Barbara Zoo

The Living Desert Zoo and Gardens

Please describe your outdoor exhibit.

Response

dirt substrate, shallow pool, a few trees and shrubs planted in it; gunnite rock to hide the keeper door; there is a pile of branches for him to chew on and dig under; the front of the exhibit is chain link with the other 3 walls being gunnite

no substrate, concrete floor, 1" x 1" wire sides and ceiling, bahlen panel sides and ceiling (2 different cages)

Open top exhibit surrounded by concrete wall and windows, substrate is river rock and sand. They have a cave-like structure to avoid sun or rain. Provided lots of browse.

N/A

earth, rock, sand substrate; natural earth floor with two trees growing inside; gunnite walls with grass growing/leaning into exhibit from outside; porcupines trim the elephant grass on a daily basis

mixture of sand and dirt substrate; rocks, branches spread throughout, some living plants, until they are destroyed;

dirt substrate to a depth of 2 ft on 1/2 of the floor; the exhibit is 1/2 d.g. and 1/2 cement; there is a full size door leading into the safety cage and a sliding door leading into the holding area; there is a solid roof over approx. 3/4 of the exhibit-

cement substrate; 4 different level floors and all cement with chain link around the whole cage, also ceiling; one large cement tree in the middle of exhibit; very old style housing here on Dog and Cat Canyon

Waterfall ending in a pool in 1/2 of exhibit. Shelter cave on back wall next to waterfall has heat lamp capability for cold weather w/ small bark chips for substrate. Rest of exhibit dirt plus small bark chips. Metal bowl in concrete base provided for

sand, dirt rock mix substrate; open topped with concrete walls; guest viewing from 2 ground level areas, one viewing area from a slightly elevated deck; fig deadfall throughout exhibit; 1"x2" mesh below substrate

Square enclosure, one door large enough for trainer/keeper, made of welded wire. Top is covered, heavily shaded on the sides.

Question:
Institution

Albuquerque Biological Park

Alexandria Zoological Park

Busch Gardens, Tampa

Central Florida Zoological Park

Glen Oak Zoo

Are your porcupines part of a mixed species exhibit?

Response

no

no

yes

No

Not currently

Honolulu Zoo	no
Sacramento Zoo	no
San Diego Wild Animal Park	no
San Diego Zoo	no
San Diego Zoo	No
Santa Barbara Zoo	yes
The Living Desert Zoo and Gardens	No, housed singly, trained and used for education programs.
Wildlife World Zoo	no

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

If so, what species are they mixed with?

Response

white back vultures

 We would like to mix them with a hornbill species.

 meerkats 2.1

Question:

Institution

Busch Gardens, Tampa
 San Diego Zoo
 San Diego Zoo

 Santa Barbara Zoo

Mixed Species / Comments:

Response

they did well together- no problems with quills
 1.2 Northern and Southern Crested Porcupines
 0.1 Northern Crested Porcupine 1.1 So. African Crested Porcupine (3 1/2 yrs. Old)
 siblings
 they have been together a short time and the meerkats give the porc a hard time but
 the porc will stick up for herself

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

Are your porcupines singly housed?

Response

yes- we have only 1 male
 yes, at this time
 no
 No
 No
 no
 no
 yes
 no
 No
 yes
 Yes
 no

Question:

Institution

If not, how many animals are housed together?

Response

Albuquerque Biological Park	
Alexandria Zoological Park	
Busch Gardens, Tampa	1.1
Central Florida Zoological Park	1.1
Glen Oak Zoo	1.1.1
Honolulu Zoo	0.2.0
Sacramento Zoo	2
San Diego Wild Animal Park	
San Diego Zoo	2 siblings
San Diego Zoo	1 to 2
Santa Barbara Zoo	
The Living Desert Zoo and Gardens	
Wildlife World Zoo	1 male and 1 female

Question:

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

Institution

Response

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa

 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

we introduced a young male to an older female with no problems- they seemed to enjoy the interaction

Our introduction of the male to the female went very smoothly.
 these are sisters, have been together from birth

Question:

Do you separate animals at night?

Institution

Response

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

no
 No
 No
 no
 no
 no
 no
 no
 No

 no

Question:

Please describe your porcupine diet:

Institution

Response

Albuquerque Biological Park

rat chow, monkey chow, lemur biscuits, assorted fruit and vegetables

Alexandria Zoological Park	zupreem primate biscuits, mazuri rodent chow, apple, orange, banana, sweet potato, carrot
Busch Gardens, Tampa	daily: 2 corn, 1 sweet potato, 1 white potato, 1 cup red grapes, 2 carrots, 2 apples; 3x/week: 2 cups Mazuri rodent pellets; daily: enrichment
Central Florida Zoological Park	Alternate between Mazori Rodent Chow and Mazori Monkey Chow every other day. Two cups of produce are given on rodent chow days.
Glen Oak Zoo	For 1.1: 2 apples, 1/2 orange, 1 banana, 2 carrots, 2 sweet potatoes, 12 pieces monkey chow, 4 c. rodent block, 2 c. dry dog food, 1 head lettuce
Honolulu Zoo	for 0.2: 1/2 cup HMS, 12 whole monkey chow, 3 whole carrots (cut in 3" pieces), 3 whole apples (quartered), 1 whole orange (peeled and quartered), 1 whole potato (quartered); Wed and Sat: 1.5 whole sweet potato (quartered), 2 bones; place all but monkey
Sacramento Zoo	procupines receive a mixture of veggies and fruit- veggies include yams, corn, carrots, spinach, and 1 special veggie per day; fruits include apples, banana, and 1 special fruit per day; each porc receives 1 cup of leafeater chow per day
San Diego Wild Animal Park	a.m. and p.m. each: 1 cup high fiber pellets, 1/2 ear corn on the cob, varied greens approx. 100g (kale, spinach, collards, romaine), 40g folioure biscuits, approx. 80g root veg (carrot, sweet potato, turnip); the biscuits and root veg are used for train
San Diego Zoo	cabbage, kale, greens, 10 pieces leafeater, 1/2 ear of corn, carrots, yams
San Diego Zoo	Daily: 2 cups 1/2" high fiber herbivore pellet, 10 pcs. Lagrge (gorilla size) dry folivore, 1/2 ear corn on the cob; One of these items daily: 1/5 head cabbage, 12 kale leaves, 8 leaves collard greens, 8 bunches spinach, 8 leaves dandelion greens, 2 car
Santa Barbara Zoo	yam, carrot, banana, orange, primate maintenance chow, dog kibble; occassionally substitute items with cucumber, zucchini, apple, etc.
The Living Desert Zoo and Gardens	Approximately 1/3 rodent chow (lab blocks), 2/3 various fruits and vegetables, total approximately 500g per day, plus browse lettuce
Wildlife World Zoo	they get a combination of rat pellets, monkey biscuits, and assorted fruits and vegetables

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo

How is the diet presented?

Response

in a small dish
 placed on ground or left in bowl
 scattered/hidden throughout habitat
 Metal bowl on exhibit floor.
 Banana used for shifting rewards, apples and oranges are scattered on cage furniture to increase movement around the exhibit, Other items are placed in a pan in the holding area and animals have access to the area 5:00pm to 9:00am.

Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

some in bowls, some spread around for forage
 in pans
 in a dish or scattered
 on one large tray for both
 Large rectangular shallow metal pan
 scattered on concrete floor or in bowl
 During shows or training session: on stage or in crate. Otherwise, scattered around enclosure, hidden in cardboard boxes.
 we spread it out on top of the ground

Question:

Institution

How many times per day are the animals fed?

Response

Albuquerque Biological Park	twice
Alexandria Zoological Park	once
Busch Gardens, Tampa	once at 8 am, enrichment at 2 pm
Central Florida Zoological Park	One
Glen Oak Zoo	1
Honolulu Zoo	one
Sacramento Zoo	once
San Diego Wild Animal Park	twice
San Diego Zoo	once
San Diego Zoo	Once
Santa Barbara Zoo	2
The Living Desert Zoo and Gardens	2-3 times
Wildlife World Zoo	once

Question:

Institution

Albuquerque Biological Park
Alexandria Zoological Park
Busch Gardens, Tampa
Central Florida Zoological Park
Glen Oak Zoo
Honolulu Zoo
Sacramento Zoo
San Diego Wild Animal Park
San Diego Zoo
San Diego Zoo
Santa Barbara Zoo
The Living Desert Zoo and Gardens
Wildlife World Zoo

How are your porcupines restrained for medical procedures?

Response

Albuquerque Biological Park	haven't had to restrain him yet- he is an education animal so he is handled daily- he allows nail trims and body checks
Alexandria Zoological Park	haven't yet
Busch Gardens, Tampa	brooms/push boards; 55 gal garbage can works well
Central Florida Zoological Park	Porcupines are shifted into a metal restraint cage. The floor of the box is wire with 4" and 2" holes. Once the porcupine is inside the cage may be lifted and the animals legs will come out of the bottom, allowing the vet staff to safely inject the leg
Glen Oak Zoo	Have not restrained them as of yet but we plan to use the squeeze cage, then sedate them.
Honolulu Zoo	placed in a kennel, moved to clinic; squeezed against hollow tile wall with pushboard
Sacramento Zoo	they are shifted into a squeeze cage
San Diego Wild Animal Park	haven't encountered this yet with our porcupine
San Diego Zoo	taken to hospital if any problem; crated
San Diego Zoo	Anesthesia
Santa Barbara Zoo	gased with isoflurane in a metal trashcan
The Living Desert Zoo and Gardens	Nitrous oxide
Wildlife World Zoo	we round them up in a trash can ; then we have to use long snake tongs to take care of the problems we have had

Question:

Institution

Albuquerque Biological Park
Alexandria Zoological Park
Busch Gardens, Tampa
Central Florida Zoological Park
Glen Oak Zoo
Honolulu Zoo
Sacramento Zoo
San Diego Wild Animal Park

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

Response

Albuquerque Biological Park	haven't yet
Alexandria Zoological Park	telazol: adequate, but has long recovery time; telazol and butorphanol: smooth and safe; medetomidine and ketamine: nice but need experience; isoflurane used for gas anesthesia: excellent
Busch Gardens, Tampa	Ketamine and medetomidine for immobilization; atipamezole for recovery
Central Florida Zoological Park	
Glen Oak Zoo	
Honolulu Zoo	
Sacramento Zoo	hand injection of ketamine IM and medetomidine; immobilization was maintained with isoflurane via a facemask or endotracheal intubation; atipamezole for reversal
San Diego Wild Animal Park	at this time N/A

San Diego Zoo none
San Diego Zoo Consult vets
Santa Barbara Zoo isoflurane
The Living Desert Zoo and Gardens
Wildlife World Zoo isoflurane

Question:

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

Institution

Response

Albuquerque Biological Park
Alexandria Zoological Park
Busch Gardens, Tampa
Central Florida Zoological Park
Glen Oak Zoo
Honolulu Zoo
Sacramento Zoo

San Diego Wild Animal Park
San Diego Zoo
San Diego Zoo
Santa Barbara Zoo

The Living Desert Zoo and Gardens
Wildlife World Zoo

none seen that would be particular to this species

sometimes the trachea tube might slide out- slightly prolonged recovery with a tendency to thrash in recovery cage

difficulty with initial immobilization, once immobilized and on the table, no problems

Question:

What routine medical procedures do you perform on your porcupines?

Institution

Response

Albuquerque Biological Park
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Busch Gardens, Tampa
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Glen Oak Zoo
Honolulu Zoo
Sacramento Zoo
San Diego Wild Animal Park
San Diego Zoo
San Diego Zoo
Santa Barbara Zoo

The Living Desert Zoo and Gardens
Wildlife World Zoo

none
fecals
no routine protocols in place
annual exam
They are scheduled to be weighed, CBC, and general exam.

annual physical exams

annual exams- vaccines, teeth check, eyes, ears, nose, body condition, blood draw, feet check, radiographs, etc.
annual exam

Question:

What vaccinations do you use?

Institution

Response

Albuquerque Biological Park
Alexandria Zoological Park
Busch Gardens, Tampa
Central Florida Zoological Park
Glen Oak Zoo
Honolulu Zoo
Sacramento Zoo

none
none
none routinely
rabies every year

rabies

San Diego Wild Animal Park	none
San Diego Zoo	
San Diego Zoo	
Santa Barbara Zoo	we have not given vaccinations yet
The Living Desert Zoo and Gardens	
Wildlife World Zoo	none

Question:

What health concerns do you have that are specific to porcupines?

Institution

Response

Albuquerque Biological Park	overgrown teeth
Alexandria Zoological Park	none
Busch Gardens, Tampa	salmonella in "Coendu"
Central Florida Zoological Park	
Glen Oak Zoo	Recently our young male (2 mos.) has lost quills on his back
Honolulu Zoo	none
Sacramento Zoo	
San Diego Wild Animal Park	mainly diet- weight, we don't want to have obesity issues; no problems to date
San Diego Zoo	overgrown teeth, but the two in my area did not have any medical problems
San Diego Zoo	
Santa Barbara Zoo	
The Living Desert Zoo and Gardens	
Wildlife World Zoo	our porcupines are kept in a single species exhibit so we don't have many health concerns; the only problems we have had are quills in the face; we have used snake tongs to pull them out

Question:

Have you successfully bred this species at your institution?

Institution

Response

Albuquerque Biological Park	no
Alexandria Zoological Park	no
Busch Gardens, Tampa	no
Central Florida Zoological Park	Yes
Glen Oak Zoo	Yes
Honolulu Zoo	no
Sacramento Zoo	no
San Diego Wild Animal Park	no (San Diego Zoo- yes)
San Diego Zoo	no
San Diego Zoo	Yes
Santa Barbara Zoo	no
The Living Desert Zoo and Gardens	No
Wildlife World Zoo	yes

Question:

Do you keep the sexes together at all times?

Institution

Response

Albuquerque Biological Park	
Alexandria Zoological Park	no, not yet
Busch Gardens, Tampa	yes
Central Florida Zoological Park	Yes
Glen Oak Zoo	Yes

Honolulu Zoo	
Sacramento Zoo	yes
San Diego Wild Animal Park	
San Diego Zoo	yes
San Diego Zoo	Yes
Santa Barbara Zoo	
The Living Desert Zoo and Gardens	
Wildlife World Zoo	yes

Question:

Institution

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 Alexandria Zoological Park
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 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

Do you introduce the sexes for breeding?

Response

not yet
 no
 No
 N/A

 no
 No

 no, kept together at all times

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

If you introduce the sexes for breeding, please describe your introduction protocol:

Response

N/A

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo

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

Response

No
 No

Sacramento Zoo	
San Diego Wild Animal Park	
San Diego Zoo	
San Diego Zoo	N/A
Santa Barbara Zoo	
The Living Desert Zoo and Gardens	
Wildlife World Zoo	no

Question:

Do you make any special preparations for the birth?

Institution

Response

Albuquerque Biological Park	
Alexandria Zoological Park	
Busch Gardens, Tampa	yes
Central Florida Zoological Park	No
Glen Oak Zoo	No
Honolulu Zoo	
Sacramento Zoo	
San Diego Wild Animal Park	
San Diego Zoo	
San Diego Zoo	n/a
Santa Barbara Zoo	
The Living Desert Zoo and Gardens	
Wildlife World Zoo	no

Question:

If yes, what are they?

Institution

Response

Albuquerque Biological Park	
Alexandria Zoological Park	
Busch Gardens, Tampa	we stuff thenesting log with coastal hay
Central Florida Zoological Park	
Glen Oak Zoo	N/A
Honolulu Zoo	
Sacramento Zoo	
San Diego Wild Animal Park	
San Diego Zoo	
San Diego Zoo	
Santa Barbara Zoo	
The Living Desert Zoo and Gardens	
Wildlife World Zoo	

Question:

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

Institution

Response

Albuquerque Biological Park	
Alexandria Zoological Park	
Busch Gardens, Tampa	
Central Florida Zoological Park	
Glen Oak Zoo	We pulled our first offspring for handrearing, after no maternal behavior was observed. Our second offspring was born in May 2003, and is still on exhibit with parents.
Honolulu Zoo	
Sacramento Zoo	

San Diego Wild Animal Park	
San Diego Zoo	
San Diego Zoo	We housed Dam and female offspring for (?) yrs.
Santa Barbara Zoo	
The Living Desert Zoo and Gardens	
Wildlife World Zoo	4-5 months

Question:

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

Institution

Response

Albuquerque Biological Park	
Alexandria Zoological Park	
Busch Gardens, Tampa	
Central Florida Zoological Park	we separate them out about 4-6 months of age
Glen Oak Zoo	We pulled our first offspring for handrearing, after no maternal behavior was observed. Our second offspring was born in May 2003, and is still on exhibit with parents.
Honolulu Zoo	
Sacramento Zoo	
San Diego Wild Animal Park	
San Diego Zoo	
San Diego Zoo	See above
Santa Barbara Zoo	
The Living Desert Zoo and Gardens	
Wildlife World Zoo	4-5 months

Question:

What concerns do you have when housing the group together?

Institution

Response

Albuquerque Biological Park	
Alexandria Zoological Park	
Busch Gardens, Tampa	
Central Florida Zoological Park	We've had some aggression problems with juveniles being in exhibit once another litter is born. The older offspring we're removed.
Glen Oak Zoo	None yet.
Honolulu Zoo	
Sacramento Zoo	
San Diego Wild Animal Park	
San Diego Zoo	
San Diego Zoo	Frequent weights taken (monthly if stable, weekly if fluctuating). All fed together so we need to confirm that everyone is getting their share.
Santa Barbara Zoo	
The Living Desert Zoo and Gardens	
Wildlife World Zoo	the only concern we have is aggression; we have not witnessed any with our pair

Question:

Have you ever had to pull offspring for any reason?

Institution

Response

Albuquerque Biological Park	
Alexandria Zoological Park	
Busch Gardens, Tampa	no
Central Florida Zoological Park	Yes

Glen Oak Zoo	Yes, we pulled our first offspring for handrearing, after no maternal behavior was observed.
Honolulu Zoo	
Sacramento Zoo	
San Diego Wild Animal Park	
San Diego Zoo	no
San Diego Zoo	
Santa Barbara Zoo	
The Living Desert Zoo and Gardens	
Wildlife World Zoo	yes
Wildlife World Zoo	

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

Have you hand reared offspring?

Response

yes
 Yes
 Yes, we pulled our first offspring for handrearing, after no maternal behavior was observed. The infant died after 1 week.

no
 no
 no
 no
 no

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park

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

Response

formula was asbilac and pedialyte 1cc -3cc first day, 5cc-7cc 2-4 days and increased 1-2cc per day as needed. Fed about every 3 hrs. for first 12 days. At 4 weeks offered baby food items (i.e. carrots)
 Formula: 2 parts water to 1 part esbilac. Fed every three hours, baby was kept in a small kennel crate with heating pad on bottom.

Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

Question:

Have you used any type of contraception for your porcupines?

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

Response

No
 no

 no
 no

 no

Question:**Institution**

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

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

N/A

Question:**Institution**

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

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

yes
 no
 yes
 No
 No
 no
 no
 yes
 no
 No
 no
 Yes
 no

Question:**Institution****If yes, how is the porcupine used?****Response**

Albuquerque Biological Park	he has a halter put on him and the docents take him out to a designated area; small groups are also brought into his cage on hallway outside the cage and he is allowed to walk around the group while they are sitting down; they can pet him in this situati
Alexandria Zoological Park Busch Gardens, Tampa	keepers provide enrichment and talk to guests about porcupines; guests are amazed at their size and we talk about conservation
Central Florida Zoological Park Glen Oak Zoo Honolulu Zoo Sacramento Zoo San Diego Wild Animal Park	N/A
San Diego Zoo San Diego Zoo Santa Barbara Zoo The Living Desert Zoo and Gardens	our porcupine is used for school tour presentations, offsite assemblies, and presentations, night events, local news and other P.R. and media events, "animal encounters" for general public visiting the Wild Animal Park.
Wildlife World Zoo	He walks from enclosure into crate. He is released behind stage, walks through hole in stage backdrop, stations at stumps (one on right side and one on left side of stage), then walks back through hole and into crate..

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

Do you consider it a successful outreach animal?

Response

yes
 yes
 N/A
 no
 yes
 no
 Yes

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park

What behaviors have you trained?

Response

halter, up (he puts his front legs up on a log, rock, step, etc.), belly, foot- for nail trims, follow, come
 N/A
 walks on a leash/harness, backs up, turning in either direction, picks up objects and drops them on command, places front paws in trainers' hands, will place front feet on various objects (stump, box, rock, short wall, etc.), walks up and down a ramp, wa

San Diego Zoo

San Diego Zoo
Santa Barbara Zoo
The Living Desert Zoo and Gardens
Wildlife World Zoo

He walks out of enclosure and onto weighing station each morning.

Question:

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

Institution

Response

Albuquerque Biological Park
Alexandria Zoological Park
Busch Gardens, Tampa
Central Florida Zoological Park
Glen Oak Zoo
Honolulu Zoo
Sacramento Zoo
San Diego Wild Animal Park
San Diego Zoo
San Diego Zoo
Santa Barbara Zoo
The Living Desert Zoo and Gardens
Wildlife World Zoo

yes

Yes
Yes
no

no
No
yes

no

Question:

If yes, what behaviors have you trained?

Institution

Response

Albuquerque Biological Park
Alexandria Zoological Park
Busch Gardens, Tampa
Central Florida Zoological Park
Glen Oak Zoo
Honolulu Zoo
Sacramento Zoo
San Diego Wild Animal Park

San Diego Zoo
San Diego Zoo

Santa Barbara Zoo
The Living Desert Zoo and Gardens

0.1 will shift for cleaning

To shift onto exhibit
Shifting for management purposes.

shifting, crate trained, can be picked up and held, opens mouth and allows teeth to be touched (no fingers lost to date!)

Will stand on chain link wall for food to provide visual of front foot pads and abdomen

we are working on shifting in/out of den

Question:

Do you have any plans for future training ?

Institution

Response

Albuquerque Biological Park
Alexandria Zoological Park
Busch Gardens, Tampa
Central Florida Zoological Park
Glen Oak Zoo
Honolulu Zoo
Sacramento Zoo
San Diego Wild Animal Park
San Diego Zoo
San Diego Zoo
Santa Barbara Zoo

no
yes
No
No
no

yes
no
No
yes

The Living Desert Zoo and Gardens
Wildlife World Zoo

no

Question:

Institution

Albuquerque Biological Park
Alexandria Zoological Park
Busch Gardens, Tampa
Central Florida Zoological Park
Glen Oak Zoo
Honolulu Zoo
Sacramento Zoo
San Diego Wild Animal Park

San Diego Zoo
San Diego Zoo
Santa Barbara Zoo
The Living Desert Zoo and Gardens
Wildlife World Zoo

What behaviors would you most like to train?

Response

we plan to train them to go inside a transport crate

N/A

stations with holding, stepping into her harness when it's presented (we physically put it on her now)

crate and scale

Question:

Institution

Albuquerque Biological Park
Alexandria Zoological Park
Busch Gardens, Tampa
Central Florida Zoological Park
Glen Oak Zoo
Honolulu Zoo
Sacramento Zoo
San Diego Wild Animal Park
San Diego Zoo
San Diego Zoo
Santa Barbara Zoo
The Living Desert Zoo and Gardens
Wildlife World Zoo

Do you provide your porcupines with environmental enrichment?

Response

yes
yes
yes
Yes
Yes
yes
yes
yes
yes
Yes
Yes
yes

Question:

Institution

Albuquerque Biological Park

Alexandria Zoological Park

Busch Gardens, Tampa

Central Florida Zoological Park

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

Response

branches- good; assorted dog toys: kong, plush toys, balls (he played with these more when he was young); rawhides, bones: okay; treats hidden in bags, boxes: good; he is allowed out of his exhibit to explore the keeper area

natural limbs, bamboo, boomer spindle; no activity during day but there is evidence of activity at night

cardboard boxes/tubes stuffed with food and hay; mixed nuts, peanuts, cooking extracts, pinecones stuffed with food, peanutbutter, honey, bread; browse: banana leaves, palm leaves, weeping elm, HongKong orchid, bamboo, hibiscus; whole oranges, bananas, a

Fruits, vegetables, shelled and unshelled nuts, frozen treats, perfume/spices on props, seeds, sprinklers, bones Favorites = browse, whole coconuts, peanut butter

Glen Oak Zoo	New logs - Very successful, evergreen branches - very successful, coconuts- very successful, nyla bones- mildly successful, Broowse-very successful, change in substrate- successful, assorted fruits and vegetables, paper towel rolls- successful.
Honolulu Zoo	scents, soil, different types of browse items on a daily basis
Sacramento Zoo	
San Diego Wild Animal Park	all types of browse, esp. acacia are offered; branches, usually chewed up by the morning; dirt in enclosure, she loves to dig; hide food, a school group made "burritos" by wrapping her food in timothy hay that was secured with acacia twigs- loved to tear
San Diego Zoo	mostly pine wood for chewing
San Diego Zoo	Most enrichment provided is gnawing materials. They do enjoy digging in the dirt to the point where it occasionally needs replenishing.
Santa Barbara Zoo	various browse and scents
The Living Desert Zoo and Gardens	Training: successful; food hidden in cardboard boxes: greeted with much enthusiasm; wood for chewing: great interest; extra lettuce scattered about enclosure: a big hit; mud wallow: little to no response; boomer ball: met with sexual enthusiasm
Wildlife World Zoo	we have put various types of logs in the exhibit for their enrichment; we have found that the fresher the log, the more the porcupines enjoy them; after a month the logs are replaced with new ones

Question:
Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo
 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo
 The Living Desert Zoo and Gardens
 Wildlife World Zoo

Have you ever shipped a porcupine?
Response

no
 no
 Yes
 No
 yes
 no
 no
 no
 Yes
 yes
 no

Question:

Institution

Albuquerque Biological Park
 Alexandria Zoological Park
 Busch Gardens, Tampa
 Central Florida Zoological Park
 Glen Oak Zoo
 Honolulu Zoo

 Sacramento Zoo
 San Diego Wild Animal Park
 San Diego Zoo
 San Diego Zoo
 Santa Barbara Zoo

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

Response

they both arrived in a standard sky kennel

 standard extra large kennel, with wire "frame" inside
 N/A
 we used a standard dog shipping kennel approx. 24"W x 40" L x 30" H; small mesh welded wire was in place of door and window openings, then covered with one layer of burlap; this was an intrastate shipment

 hard plastic crate, but only moved them to another area of the zoo
 For transport to hospital we use a metal crate w/ removable doors.
 metal crate (we don't have it anymore so I don't have dimensions)

The Living Desert Zoo and Gardens

when shipping other porcupines, metal crates have been used, approximately 3'x1.5'x2'

Wildlife World Zoo

Question:

Comments or ideas to include in the Husbandry Standards:

Institution

Response

Albuquerque Biological Park

nothing to add but anxious to see the results due to this being a new species for us

Alexandria Zoological Park

Busch Gardens, Tampa

Central Florida Zoological Park

Glen Oak Zoo

Do keepers go in with porcupines? When? Problems?

Honolulu Zoo

Sacramento Zoo

San Diego Wild Animal Park

They are very eager to learn and learn new behaviors very quickly

San Diego Zoo

San Diego Zoo

Santa Barbara Zoo

management: animal is fed in am (locked in den), locked on exhibit (out of den) during the day, locked in den for pm feeding, given access to exhibit and den overnight
diet recommendations (nutritionally c

The Living Desert Zoo and Gardens

Wildlife World Zoo