



## **MIXED-SPECIES EXHIBITS WITH CARNIVORANS VIII.**

### **Mixed-species exhibits with Weasels and relatives (*Mustelidae*) and Skunks (*Mephitidae*)**

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## INTRODUCTION

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As many articles and other publications deal with the subject of general advantages and disadvantages of the mixed-species exhibits, instead of this, here I will assemble a detailed list of mixed exhibits involving at least one member of *Mustelidae* and *Mephitidae*.

This document purposefully focuses on creating a list of mixed-species exhibits with Weasels and relatives and Skunks, for further and detailed information it is worth contacting the institutions mentioned below. Only a short summary of the general experiences is given here. Many of the listed coexistences are still ongoing at present; many of them are not anymore.

In the list below you can see which species have been kept in mixed exhibits in captivity:

### **Weasels and relatives, *Mustelidae***

**European Polecat**, *Mustela putorius* Linnaeus, 1758

**Zorilla**, *Ictonyx striatus* Perry, 1810

**European Mink**, *Mustela lutreola* Linnaeus, 1761

**American Mink**, *Neovison vison* Schreber, 1777

**European Pine Marten**, *Martes martes* Linnaeus, 1758

**Tayra**, *Eira barbara* Linnaeus, 1758

**Wolverine**, *Gulo gulo* Linnaeus, 1758

**Eurasian Otter**, *Lutra lutra* Linnaeus, 1758

**North American River Otter**, *Lontra canadensis* Schreber, 1777

**Smooth-coated Otter**, *Lutrogale perspicillata* I. Geoffroy Saint-Hilaire, 1826

**Spotted-necked Otter**, *Hydricteis maculicollis* Lichtenstein, 1835

**Asian Small-clawed Otter**, *Aonyx cinereus* Illiger, 1815

**African Clawless Otter**, *Aonyx capensis* Schinz, 1821

**Giant Otter**, *Pteronura brasiliensis* Gmelin, 1788

**Sea Otter**, *Enhydra lutris* Linnaeus, 1758

**European Badger**, *Meles meles* Linnaeus, 1758

**Hog Badger**, *Arctonyx collaris* F.G. Cuvier, 1825

**Large-toothed Ferret-badger**, *Melogale personata* I. Geoffroy Saint-Hilaire, 1831

**American Badger**, *Taxidea taxus* Schreber, 1777

### **Skunks, *Mephitidae***

**Striped Skunk**, *Mephitis mephitis* Schreber, 1776



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**LIST OF SPECIES COMBINATIONS - *MUSTELIDAE***

**The list shows examples of species combinations with at least one mustelid species combined with the taxa below**

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**European Polecat, *Mustela putorius*** (Photo © Peter Trimming)

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European Rabbit, *Oryctolagus cuniculus*  
Northern Raccoon, *Procyon lotor*



**Zorilla, *Ictonyx striatus*** (Photo © Alexander Meyer)

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Tree Shrew, *Tupaia sp.*  
Bushbaby, *Galago sp.*  
Crested Porcupine, *Hystrix cristata*



**European Mink, *Mustela lutreola*** (Photo © Paco Gómez)

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Northern Raccoon, *Procyon lotor*





**American Mink, *Neovison vison*** (Photo © British Wildlife Centre)

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Raccoon Dog, *Nyctereutes procyonoides*  
Northern Raccoon, *Procyon lotor*



**European Pine Marten, *Martes martes*** (Photo © Ellis Lawrence)

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European Badger, *Meles meles*



**Tayra, *Eira barbara*** (Photo © Krisztián Svábik)

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Black-capped Capuchin, *Sapajus apella*

South American Coati, *Nasua nasua*

Crab-eating Raccoon, *Procyon cancrivorus*



**Wolverine, *Gulo gulo*** (Photo © Tamás Boros)

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Brown Bear, *Ursus arctos*



**Eurasian Otter, *Lutra lutra*** (Photo © Peter Trimming)

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Francois' Langur, *Trachypithecus francoisi*  
White-handed Gibbon, *Hylobates lar*  
Siamang, *Symphalangus syndactylus*  
Indian Giant Flying Squirrel, *Petaurista philippensis*  
Alpine Marmot, *Marmota marmota*  
Red Fox, *Vulpes vulpes*  
Striped Skunk, *Mephitis mephitis*  
Northern Raccoon, *Procyon lotor*  
Chamois, *Rupicapra rupicapra*  
Mute Swan, *Cygnus olor*



**North American River Otter, *Lontra canadensis*** (Photo © Krisztián Svábik)

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North American Porcupine, *Erethizon dorsatum*

Canadian Beaver, *Castor canadensis*

Grey Seal, *Halichoerus grypus*



**Smooth-coated Otter, *Lutrogale perspicillata*** (Photo © Krisztián Svábik)

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Bornean Gibbon, *Hylobates muelleri*  
Binturong, *Arctictis bintong*



**Spotted-necked Otter, *Hydrictis maculicollis*** (Photo © Derek Keats)

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Allen's Swamp Monkey, *Allenopithecus nigroviridis*  
Schmidt's Guenon, *Cercopithecus ascanius schmidtii*  
De Brazza's Monkey, *Cercopithecus neglectus*  
Spot-nosed Monkey, *Cercopithecus petaurista*  
Francois' Langur, *Trachypithecus francoisi*  
Red River Hog, *Potamochoerus porcus*  
African Forest Buffalo, *Syncerus caffer nanus*  
Goliath Heron, *Ardea goliath*  
Fish, *Pisces*





**Asian Small-clawed Otter, *Aonyx cinereus*** (Photo © Krisztián Svábik)

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Red Ruffed Lemur, *Varecia rubra*  
Black-and-white Ruffed Lemur, *Varecia variegata*  
Brown-headed Spider Monkey, *Ateles fusciceps*  
Black-capped Capuchin, *Sapajus apella*  
Black-and-gold Howler Monkey, *Alouatta caraya*  
Crab-eating Macaque, *Macaca fascicularis*  
Celebes Crested Macaque, *Macaca nigra*  
Bonnet Macaque, *Macaca radiata*  
Lion-tailed Macaque, *Macaca silenus*  
Barbary Macaque, *Macaca sylvanus*  
Tonkean Macaque, *Macaca tonkeana*  
Northern Plains Grey Langur, *Semnopithecus entellus*  
Javan Langur, *Trachypithecus auratus*  
Silvery Langur, *Trachypithecus cristatus*  
Francois' Langur, *Trachypithecus francoisi*  
Dusky Leaf Monkey, *Trachypithecus obscurus*  
Northern White-cheeked Gibbon, *Nomascus leucogenys*  
White-handed Gibbon, *Hylobates lar*  
Pileated Gibbon, *Hylobates pileatus*  
Siamang, *Symphalangus syndactylus*  
Proboscis Monkey, *Nasalis larvatus*  
Bornean Orangutan, *Pongo pygmaeus*  
Sumatran Orangutan, *Pongo abelii*  
Capybara, *Hydrochoerus hydrochaeris*  
Prevost's Squirrel, *Callosciurus prevostii*  
Black Giant Squirrel, *Ratufa bicolor*  
Indian Giant Flying Squirrel, *Petaurista philippensis*  
Indian Crested Porcupine, *Hystrix indica*  
Lesser Dog-faced Fruit Bat, *Cynopterus brachyotis*  
Island Flying Fox, *Pteropus hypomelanus*  
Rodrigues Flying Fox, *Pteropus rodricensis*  
Lion, *Panthera leo*  
Binturong, *Arctictis binturong*  
Common Palm Civet, *Paradoxurus hermaphroditus*  
Corsac Fox, *Vulpes corsac*  
Sloth Bear, *Melurus ursinus*  
Andean Bear, *Tremarctos ornatus*  
Red Panda, *Ailurus fulgens*  
Northern Raccoon, *Procyon lotor*  
South American Coati, *Nasua nasua*  
South American tapir, *Tapirus terrestris*  
Malayan Tapir, *Tapirus indicus*  
Greater One-horned Rhinoceros, *Rhinoceros unicornis*



Sulawesi Babirusa, *Babyrousa celebensis*  
Visayan Warty Pig, *Sus cebifrons*  
Lesser Oriental Chevrotain, *Tragulus kanchil*  
Reeves' Muntjac, *Muntiacus reevesi*  
Lowland Anoa, *Bubalus depressicornis*  
Aoudad, *Ammotragus lervia*  
Southern Cassowary, *Casuarius casuarius*  
Green-backed Heron, *Butorides striata*  
Green Peafowl, *Pavo muticus*  
Great Hornbill, *Buceros bicornis*  
Black Hornbill, *Anthracoceros malayanus*  
Blue-bellied Roller, *Coracias cyanogaster*  
Black-naped Oriole, *Oriolus chinensis*  
Black-hooded Oriole, *Oriolus xanthornus*  
Oriental Magpie-robin, *Copsychus saularis*  
Brahminy Starling, *Temenuchus pagodarum*  
Black-capped Bulbul, *Pycnonotus melanicterus*  
Blue-winged Pitta, *Pitta moluccensis*  
Asian Fairy-bluebird, *Irena puella*  
Golden-fronted Leafbird, *Chloropsis aurifrons*  
Pale-bellied White-eye, *Zosterops consobrinorum*  
Common Hill Myna, *Gracula religiosa*  
Northern River Terrapin, *Batagur baska*  
Slender-snouted Crocodile, *Mecistops cataphractus*  
Common Water Monitor, *Varanus salvator*  
Tilapia, *Oreochromis sp.*  
Giant Pangasius, *Pangasius sanitwongsei*  
Red-bellied Pacu, *Piaractus brachypomus*  
*Hemiodus sp.*  
*Leporinus sp.*  
Butterflies, *Lepidoptera*



**African Clawless Otter, *Aonyx capensis*** (Photo © Steve Hofhine)

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Guenon, *Cercopithecus* sp.

De Brazza's Monkey, *Cercopithecus neglectus*



**Giant Otter, *Pteronura brasiliensis*** (Photo © Krisztián Svábik)

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Silvery Marmoset, *Mico argentatus*  
Spider Monkey, *Ateles sp.*  
White-faced Saki, *Pithecia pithecia*  
Capybara, *Hydrochoerus hydrochaeris*  
South American tapir, *Tapirus terrestris*  
Caiman, *Caiman sp.*



**See Otter, *Enhydra lutris*** (Photo © Marshal Hedin)

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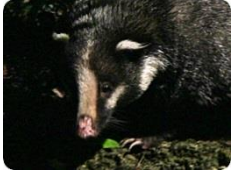
Harbor Seal, *Phoca vitulina*



**European Badger, *Meles meles*** (Photo © Anita Mazács)

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Red Fox, *Vulpes vulpes*  
European Pine Marten, *Martes martes*  
Common Raven, *Corvus corax*



**Hog Badger, *Arctonyx collaris*** (Photo © Alexander Meyer)

---

Binturong, *Arctictis binturong*  
Masked Palm Civet, *Paguma larvata*  
Northern Raccoon, *Procyon lotor*  
Striped Skunk, *Mephitis mephitis*



**Large-toothed Ferret-badger, *Melogale personata*** (Photo © Alexander Meyer)

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Common Palm Civet, *Paradoxurus hermaphroditus*





**American Badger, *Taxidea taxus*** (Photo © James Perdue)

---

Northern Raccoon, *Procyon lotor*



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**LIST OF SPECIES COMBINATIONS - *MEPHITIDAE***

**The list shows examples of species combinations with at least one skunk species combined with the taxa below**

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**Striped Skunk, *Mephitis mephitis*** (Photo © Krisztián Svábik)

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Opossum, *Didelphis sp.*  
Southern Hairy-nosed Wombat, *Lasiorhinus latifrons*  
Southern Three-banded Armadillo, *Tolypeutes matacus*  
Northern Tree Shrew, *Tupaia belangeri*  
Black-and-white Ruffed Lemur, *Varecia variegata*  
Garnett's Greater Galago, *Otolemur garnettii*  
Nancy Ma's Night Monkey, *Aotus nancymae*  
Eurasian Red Squirrel, *Sciurus vulgaris*  
American Red Squirrel, *Tamiasciurus hudsonicus*  
Southern Flying Squirrel, *Glaucomys volans*  
Black-tailed Prairie Dog, *Cynomys ludovicianus*  
Woodchuck, *Marmota monax*  
Crested Porcupine, *Hystrix sp.*  
North American Porcupine, *Erethizon dorsatum*  
Agouti, *Dasyprocta sp.*  
Masked Palm Civet, *Paguma larvata*  
Red Fox, *Vulpes vulpes*  
Northern Raccoon, *Procyon lotor*  
South American Coati, *Nasua nasua*  
White-nosed Coati, *Nasua narica*  
Ringtail, *Bassariscus astutus*  
Eurasian Otter, *Lutra lutra*  
Hog Badger, *Arctonyx collaris*  
Golden Pheasant, *Chrysolophus pictus*  
Sandhill Crane, *Antigone canadensis*  
Domestic Pigeon, *Columba livia f. domestica*  
Burrowing Parrot, *Cyanoliseus patagonus*  
Eastern Box Turtle, *Terrapene carolina*



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**LIST OF MIXED-SPECIES EXHIBITS WITH LOCATIONS - *MUSTELIDAE***

**The list shows specific examples of mixed-species exhibits involving at least one mustelid species combined with the taxa below, with indication of the institution(s) where they have been tried out**

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**European Polecat, *Mustela putorius***

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Combined species:

- European Polecat, *Mustela putorius*
- European Rabbit, *Oryctolagus cuniculus*

unknown institution

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Combined species:

- European Polecat, *Mustela putorius*
- Northern Raccoon, *Procyon lotor*

Institution(s): Tierpark Gotha (Germany), Tierpark Hexentanzplatz (Thale, Germany)

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Combined species:

- Ferret, *Mustela putorius f. furo*
- Northern Raccoon, *Procyon lotor*

Institution(s): Wildpark Bad Mergentheim (Germany), Wildparadies Tripsdrill (Cleebronn, Germany)

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**Zorilla, *Ictonyx striatus***

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Combined species:

- Zorilla, *Ictonyx striatus*
- Tree Shrew, *Tupaia sp.*
- Bushbaby, *Galago sp.*
- Crested Porcupine, *Hystrix cristata*

unkown institution

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**European Mink, *Mustela lutreola***

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Combined species:

- European Mink, *Mustela lutreola*
- Northern Raccoon, *Procyon lotor*

Institution(s): Zoo Heidelberg (Germany)

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**American Mink, *Neovison vison***

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Combined species:

- American Mink, *Neovison vison*
- Northern Raccoon, *Procyon lotor*

Institution(s): Parc Animalier des Pyrénées (Ayzac-Ost, France)

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Combined species:

- American Mink, *Neovison vison*
- Raccoon Dog, *Nyctereutes procyonoides*
- Northern Raccoon, *Procyon lotor*

Institution(s): Wildpark Mölln (Germany)

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**European Pine Marten, *Martes martes***

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Combined species:

- European Pine Marten, *Martes martes*
- European Badger, *Meles meles*

Institution(s): Alpenzoo Innsbruck (Austria)

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**Tayra, *Eira barbara***

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Combined species:

- Tayra, *Eira barbara*
- Black-capped Capuchin, *Sapajus apella*
- South American Coati, *Nasua nasua*

Institution(s): Parque de las Leyendas (Lima, Peru)



**Tayra (*Eira barbara*) and Black-capped Capuchins (*Sapajus apella*)  
Parque de las Leyendas, Lima, Peru  
Photo © Nick Hadad**

Combined species:

- Tayra, *Eira barbara*
- Crab-eating Raccoon, *Procyon cancrivorus*

Institution(s): Eco Zoológico San Martín (Banos, Ecuador)



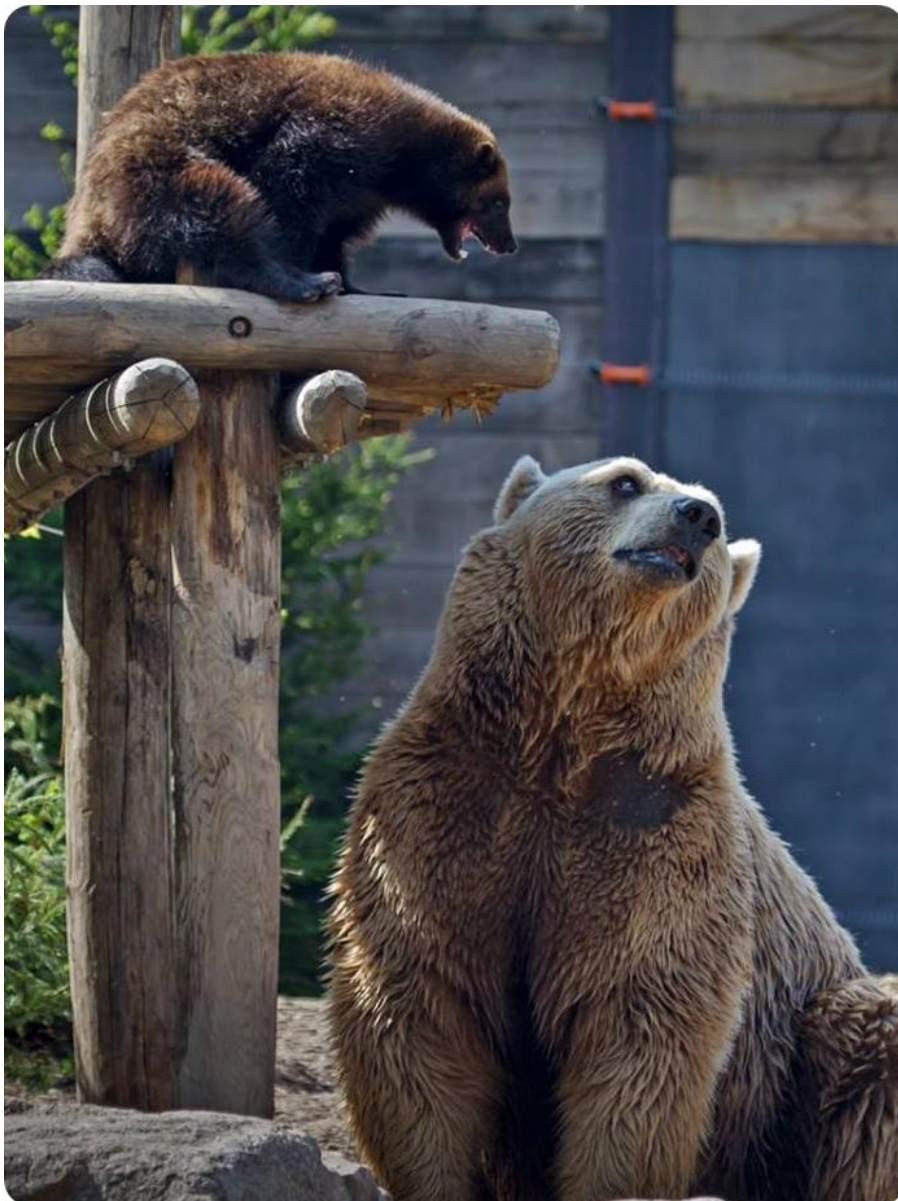
**Wolverine, *Gulo gulo***

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Combined species:

- Wolverine, *Gulo gulo*
- Brown Bear, *Ursus arctos*

Institution(s): Tierpark Dählhölzli (Bern, Switzerland), Skansen (Stockholm, Sweden), Zoo d'Amnéville (France)



**Wolverine (*Gulo gulo gulo*) and European Brown Bear (*Ursus arctos arctos*)  
Zoo d'Amnéville, France  
Photo © Ingrid Klaus**



**Wolverine (*Gulo gulo gulo*) and European Brown Bear (*Ursus arctos arctos*)  
Zoo d'Amnéville, France  
Photo © Ingrid Klaus**

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**Eurasian Otter, *Lutra lutra***

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Combined species:

- Eurasian Otter, *Lutra lutra*
- Francois' Langur, *Trachypithecus francoisi*
- Indian Giant Flying Squirrel, *Petaurista philippensis*

Institution(s): San Diego Zoo (California, United States of America)

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Combined species:

- Eurasian Otter, *Lutra lutra*
- White-handed Gibbon, *Hylobates lar*
- Siamang, *Symphalangus syndactylus*

Institution(s): San Diego Zoo (California, United States of America)

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Combined species:

- Eurasian Otter, *Lutra lutra*
- Alpine Marmot, *Marmota marmota*
- Chamois, *Rupicapra rupicapra*

Institution(s): Zoo Salzburg Hellbrunn (Austria)

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Combined species:

- Eurasian Otter, *Lutra lutra*
- Red Fox, *Vulpes vulpes*
- Northern Raccoon, *Procyon lotor*
- Striped Skunk, *Mephitis mephitis*

Institution(s): Zoo sauvage de Saint-Félicien (Quebec, Canada)



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Combined species:

- Eurasian Otter, *Lutra lutra*
- Northern Raccoon, *Procyon lotor*

Institution(s): Tierpark Görlitz (Germany), Zoo Rostock (Germany), Tierpark Niederfischbach(Germany)

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Combined species:

- Eurasian Otter, *Lutra lutra*
- Mute Swan, *Cygnus olor*

Institution(s): Tierpark Görlitz (Germany)

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**North American River Otter, *Lontra canadensis***

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Combined species:

- North American River Otter, *Lontra canadensis*
- North American Porcupine, *Erethizon dorsatum*

Institution(s): Zoo New England, Stone Zoo (Stoneham, Massachusetts, United States of America)

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Combined species:

- North American River Otter, *Lontra canadensis*
- Canadian Beaver, *Castor canadensis*

unknown institution

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Combined species:

- North American River Otter, *Lontra canadensis*
- Grey Seal, *Halichoerus grypus*

Institution(s): Los Angeles Zoo (California, United States of America)

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**Smooth-coated Otter, *Lutrogale perspicillata***

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Combined species:

- Smooth-coated Otter, *Lutrogale perspicillata*
- Bornean Gibbon, *Hylobates muelleri*

Institution(s): Lok Kawi Wildlife Park (Penampang, Malaysia)

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Combined species:

- Smooth-coated Otter, *Lutrogale perspicillata*
- Binturong, *Arctictis binturong*

Institution(s): Zoologická zahrada hl. m. Prahy (Czech Republic)

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**Spotted-necked Otter, *Hydrictis maculicollis***

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Combined species:

- Spotted-necked Otter, *Hydrictis maculicollis*
- Allen's Swamp Monkey, *Allenopithecus nigroviridis*
- Schmidt's Guenon, *Cercopithecus ascanius schmidtii*

Institution(s): San Diego Zoo (California, United States of America)



**Spotted-necked Otter (*Hydrictis maculicollis*) and Schmidt's Guenon (*Cercopithecus ascanius schmidtii*)**

**San Diego Zoo, California, United States of America**

**Photo © San Diego Zoo**

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Combined species:

- Spotted-necked Otter, *Hydrictis maculicollis*
- Allen's Swamp Monkey, *Allenopithecus nigroviridis*
- Schmidt's Guenon, *Cercopithecus ascanius schmidtii*
- Spot-nosed Monkey, *Cercopithecus petaurista*

Institution(s): San Diego Zoo (California, United States of America)

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**Spotted-necked Otter (*Hydrictis maculicollis*) and Allen's Swamp Monkey  
(*Allenopithecus nigroviridis*)  
San Diego Zoo, California, United States of America  
Photos © MaryAnn Fuller**



**Spotted-necked Otter (*Hydrictis maculicollis*) and Allen's Swamp Monkey (*Allenopithecus nigroviridis*)  
San Diego Zoo, California, United States of America  
Photo © Michelle Leppert**



**Spotted-necked Otter (*Hydrictis maculicollis*) and Allen's Swamp Monkey (*Allenopithecus nigroviridis*)  
San Diego Zoo, California, United States of America  
Photo © John Wright**



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Combined species:

- Spotted-necked Otter, *Hydrictis maculicollis*
- De Brazza's Monkey, *Cercopithecus neglectus*
- Red River Hog, *Potamochoerus porcus*
- African Forest Buffalo, *Syncerus caffer nanus*

Institution(s): San Diego Zoo (California, United States of America)



**Spotted-necked Otter (*Hydrictis maculicollis*) and Red River Hog (*Potamochoerus porcus*)**

**San Diego Zoo, California, United States of America**

**Photo © Brent Huffman**

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Combined species:

- Spotted-necked Otter, *Hydrictis maculicollis*
- Allen's Swamp Monkey *Allenopithecus nigroviridis*
- De Brazza's Monkey, *Cercopithecus neglectus*
- African Forest Buffalo, *Syncerus caffer nanus*

Institution(s): San Diego Zoo (California, United States of America)



**Asian Small-clawed Otter, *Aonyx cinereus***

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Red Ruffed Lemur, *Varecia rubra*
- Black-and-white Ruffed Lemur, *Varecia variegata*

Institution(s): Memphis Zoo (Tennessee, United States of America)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Black-and-gold Howler Monkey, *Alouatta caraya*
- Andean Bear, *Tremarctos ornatus*
- South American Coati, *Nasua nasua*

Institution(s): Jersey Zoo (Trinity, Channel Islands)



**Asian Small-clawed Otter (*Aonyx cinereus*) and Andean Bear (*Tremarctos ornatus*)  
Jersey Zoo, Trinity, Channel Islands  
Photo © Jersey Zoo**



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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Brown-headed Spider Monkey, *Ateles fusciceps*
- Black-capped Capuchin, *Sapajus apella*
- Capybara, *Hydrochoerus hydrochaeris*
- Andean Bear, *Tremarctos ornatus*
- South American Tapir, *Tapirus terrestris*

Institution(s): South Lakes Safari Zoo (Dalton-in-Furness, United Kingdom)



**Asian Small-clawed Otters (*Aonyx cinereus*), Andean Bear (*Tremarctos ornatus*) and Capybaras (*Hydrochoerus hydrochaeris*)  
South Lakes Safari Zoo, Dalton-in-Furness, United Kingdom  
Photo © Ben Gilbert**



**Asian Small-clawed Otter (*Aonyx cinereus*) and Andean Bear (*Tremarctos ornatus*)**  
**South Lakes Safari Zoo, Dalton-in-Furness, United Kingdom**  
**Photo © South Lakes Safari Zoo**

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Crab-eating Macaque, *Macaca fascicularis*

Institution(s): Brookfield Zoo (Illinois, United States of America)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Sulawesi Crested Macaque, *Macaca nigra*

Institution(s): ZOO Planckendael (Mechelen, Belgium)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Bonnet Macaque, *Macaca radiata*

Institution(s): Auckland Zoo (New Zealand), Tokiwa Zoo (Japan)

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**Asian Small-clawed Otters (*Aonyx cinereus*) and Bonnet Macaques (*Macaca radiata*)  
Tokiwa Zoo, Japan  
Photo © Kenji Wako**



**Asian Small-clawed Otters (*Aonyx cinereus*) and Bonnet Macaques (*Macaca radiata*)  
Tokiwa Zoo, Japan  
Photo © Noriko Kawanabe**





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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Tonkean Macaque, *Macaca tonkeana*

Institution(s): Brookfield Zoo (Illinois, United States of America)

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Combined species:

- Asian Small-clawed Otter *Aonyx cinereus*
- Barbary Macaque, *Macaca sylvanus*

unknown institution

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Barbary Macaque, *Macaca sylvanus*
- Aoudad, *Ammotragus lervia*

unknown institution

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Northern Plains Grey Langur, *Semnopithecus entellus*
- Sumatran Orangutan, *Pongo abelii*

Institution(s): ZOOM Erlebniswelt (Gelsenkirchen, Germany)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Javan Langur, *Trachypithecus auratus*

Institution(s): Bronx Zoo (New York, United States of America)



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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Silvery Langur, *Trachypithecus cristatus*

Institution(s): Bronx Zoo (New York, United States of America), Brookfield Zoo (Illinois, United States of America)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Silvery Langur, *Trachypithecus cristatus*
- Binturong, *Arctictis binturong*

Institution(s): Colchester Zoo (United Kingdom)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Francois' Langur, *Trachypithecus francoisi*
- Indian Giant Flying Squirrel, *Petaurista philippensis lylei*

Institution(s): San Diego Zoo (California, United States of America)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Francois' Langur, *Trachypithecus francoisi*
- Binturong, *Arctictis binturong*

Institution(s): Colchester Zoo (United Kingdom)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Dusky Leaf Monkey, *Trachypithecus obscurus*

Institution(s): Brookfield Zoo (Illinois, United States of America)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Dusky Leaf Monkey, *Trachypithecus obscurus*
- Malayan Tapir, *Tapirus indicus*

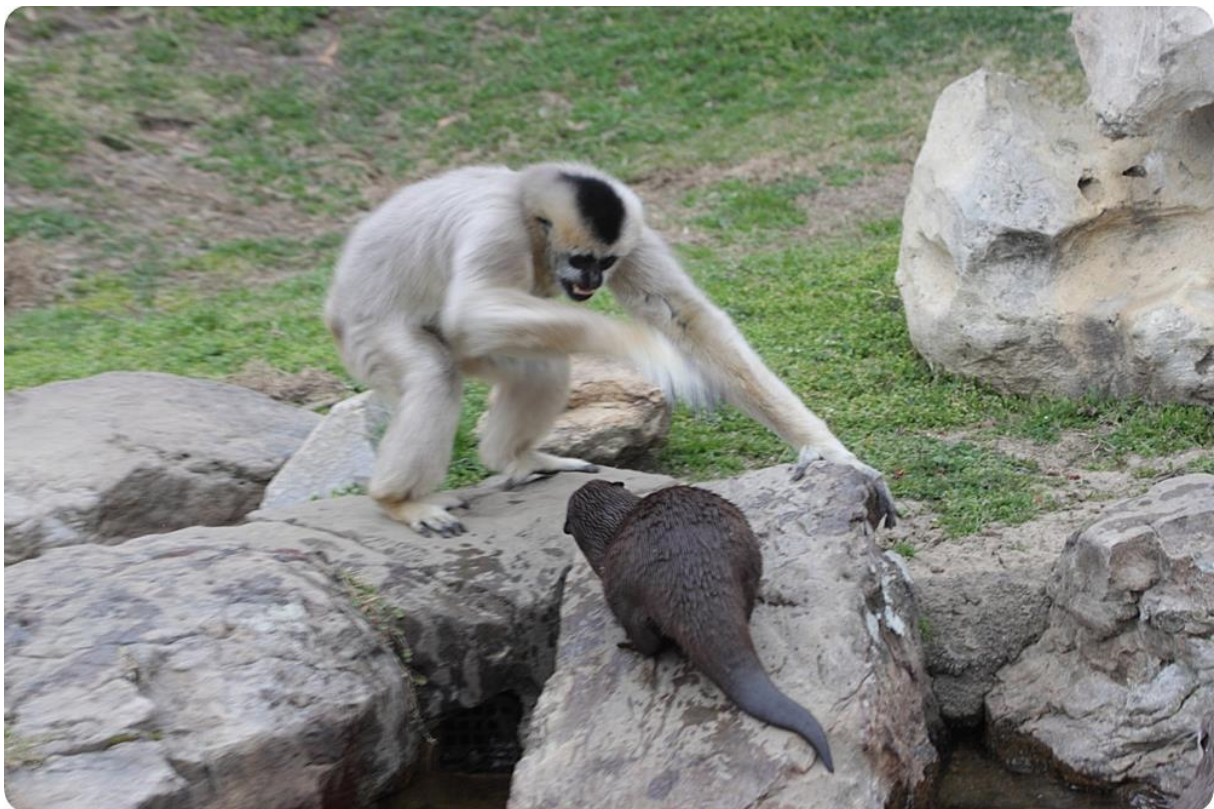
Institution(s): Adelaide Zoo (South Australia, Australia)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Northern White-cheeked Gibbon, *Nomascus leucogenys*

Institution(s): Brookfield Zoo (Illinois, United States of America), Memphis Zoo (Tennessee, United States of America), Virginia Zoological Park (Norfolk, Virginia, United States of America), Kansas City Zoo (Missouri, United States of America)



**Asian Small-clawed Otter (*Aonyx cinereus*) and Northern White-cheeked Gibbon (*Nomascus leucogenys*)**  
**Memphis Zoo, Tennessee, United States of America**  
**Photo © Brent Huffman**



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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Northern White-cheeked Gibbon, *Nomascus leucogenys*
- Reeves' Muntjac, *Muntiacus reevesi*

Institution(s): San Antonio Zoo (Texas, United States of America)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Northern White-cheeked Gibbon, *Nomascus leucogenys*
- Lowland Anoa, *Bubalus depressicornis*

Institution(s): Point Defiance Zoo & Aquarium (Tacoma, Washington, United States of America)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- White-handed Gibbon, *Hylobates lar*

Institution(s): Brookfield Zoo (Illinois, United States of America), Omaha's Henry Doorly Zoo and Aquarium (Nebraska, United States of America), Indianapolis Zoo (Indiana, United States of America), Parken Zoo (Eskilstuna, Sweden), Randers Regnskov (Denmark)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Pileated Gibbon, *Hylobates pileatus*

Institution(s): Randers Regnskov (Denmark)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Siamang, *Symphalangus syndactylus*

Institution(s): Marwell Zoo (Winchester, United Kingdom), Brookfield Zoo (Illinois, United States of America), Adelaide Zoo (South Australia, Australia)

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Combined species:

- Asian Small-clawed Otter *Aonyx cinereus*
- Proboscis Monkey, *Nasalis larvatus*

Institution(s): Bronx Zoo (New York, United States of America)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Sumatran Orangutan, *Pongo abelii*

Institution(s): Tierpark Hagenbeck (Hamburg, Germany), Zoo Dortmund (Germany), Pairi Daiza (Brugellette, Belgium), Zoo d'Amnéville (France)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Bornean Orangutan, *Pongo pygmaeus*

Institution(s): Allwetterzoo Münster (Germany), Bioparc Fuengirola (Spain)



**Asian Small-clawed Otters (*Aonyx cinereus*) and Bornean Orangutans (*Pongo pygmaeus*)**

**Allwetterzoo Münster, Germany  
Photo © dr. Simone Schehka**



**Asian Small-clawed Otters (*Aonyx cinereus*) and Bornean Orangutans (*Pongo pygmaeus*)**

**Allwetterzoo Münster, Germany  
Photo © dr. Simone Schehka**



**Asian Small-clawed Otter (*Aonyx cinereus*) and Sumatran Orangutan (*Pongo abelii*)  
Pairi Daiza, Brugelette, Belgium  
Photos © Christine Leroy**



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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Sumatran Orangutan, *Pongo abelii*
- White-handed Gibbon, *Hylobates lar*

Institution(s): Chester Zoo (United Kingdom), Jersey Zoo (Trinity, Channel Islands), Zoo La Boissière du Doré (France), Fort Worth Zoo (Texas, United States of America)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Bornean Orangutan, *Pongo pygmaeus*
- White-handed Gibbon, *Hylobates lar*

Institution(s): Chester Zoo (United Kingdom)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Bornean Orangutan, *Pongo pygmaeus*
- Lion-tailed Macaque, *Macaca silenus*
- Black-hooded Oriole, *Oriolus xanthornus*
- Oriental Magpie-robin, *Copsychus saularis*
- Brahminy Starling, *Temenuchus pagodarum*
- Asian Fairy-bluebird, *Irena puella*
- Black-capped Bulbul, *Pycnonotus melanicterus*
- Golden-fronted Leafbird, *Chloropsis aurifrons*
- Pale-bellied White-eye, *Zosterops consobrinorum*

Institution(s): Allwetterzoo Münster (Germany)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Prevost's Squirrel, *Callosciurus prevostii*

Institution(s): Brookfield Zoo (Illinois, United States of America), Houston Zoo (Texas, United States of America), Lincoln Park Zoo (Chicago, Illinois, United States of America)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Prevost's Squirrel, *Callosciurus prevostii*
- Blue-bellied Roller, *Coracias cyanogaster*

Institution(s): Houston Zoo (Texas, United States of America)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Indian Crested Porcupine, *Hystrix indica*

Institution(s): Point Defiance Zoo & Aquarium (Tacoma, Washington, United States of America), Newport Aquarium (Kentucky, United States of America)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Black Giant Squirrel, *Ratufa bicolor*

Institution(s): Brookfield Zoo (Illinois, United States of America), Lincoln Park Zoo (Chicago, Illinois, United States of America)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Black Giant Squirrel, *Ratufa bicolor*
- Lesser Dog-faced Fruit Bat, *Cynopterus brachyotis*
- Island Flying Fox, *Pteropus hypomelanus*
- Lesser Oriental Chevrotain, *Tragulus kanchil*
- Green-backed Heron, *Butorides striata*
- Green Peafowl, *Pavo muticus*
- Black-naped Oriole, *Oriolus chinensis*
- Blue-winged Pitta, *Pitta moluccensis*
- Leafbird, *Chloropsis sp.*
- Common Hill Myna, *Gracula religiosa*
- Northern River Terrapin, *Batagur baska*
- Tilapia, *Oreochromis sp.*

Institution(s): Zoo Taiping & Night Safari (Malaysia)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Rodrigues Flying Fox, *Pteropus rodricensis*

unknown institution

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Asiatic Lion, *Panthera leo persica*

Institution(s): Zoo Zürich (Switzerland)

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Combined species:

- Asian Small-clawed Otter *Aonyx cinereus*
- Binturong, *Arctictis binturong*

Institution(s): Zoologická zahrada hl. m. Prahy (Czech Republic), Zoologická zahrada Ostrava (Czech Republic), Hamerton Zoo Park (Huntingdon, United Kingdom), Colchester Zoo (United Kingdom), Longleat (Warminster, United Kingdom), Zoo de Lille (France), Zoo Vivarium Darmstadt (Germany), Zoo Heidelberg (Germany), Parco Faunistico La Torbiera (Agrate Conturbia, Italy), ZooParc Overloon (the Netherlands), Singapore Zoo (Singapore), Singapore Night Safari (Singapore), Khao Kheow Open Zoo (Si Racha, Thailand), Melbourne Zoo (Victoria, Australia), Loveland Living Planet Aquarium (Draper, Utah, United States of America)



**Asian Small-clawed Otters (*Aonyx cinereus*) and Binturong (*Arctictis binturong*)**  
**Zoologická zahrada Ostrava, Czech Republic**  
**Photo © Tamás Boros**



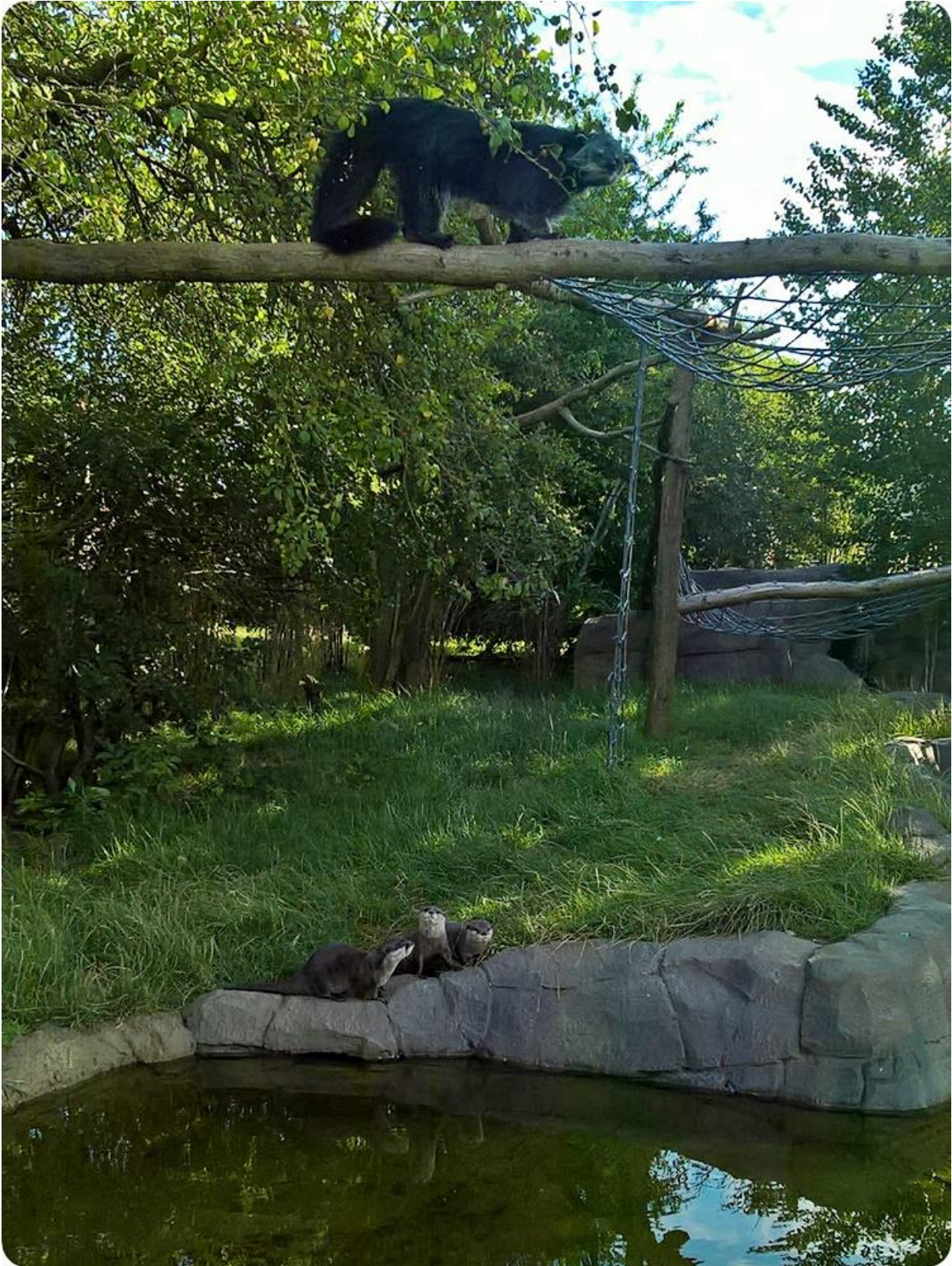
**Asian Small-clawed Otters (*Aonyx cinereus*) and Binturong (*Arctictis binturong*)  
Zoologická zahrada Ostrava, Czech Republic  
Photos © Tamás Boros**



**Asian Small-clawed Otters (*Aonyx cinereus*) and Binturongs (*Arctictis binturong*)**  
**Zoologická zahrada Ostrava, Czech Republic**  
**Photo © Krisztián Svábik**



**Asian Small-clawed Otter (*Aonyx cinereus*) and Binturong (*Arctictis binturong*) mixed exhibit**  
**Zoologická zahrada Ostrava, Czech Republic**  
**Photo © Pavel Vlček**



**Asian Small-clawed Otters (*Aonyx cinereus*) and Binturong (*Arctictis binturong*)  
Hamerton Zoo Park, Huntingdon, United Kingdom  
Photo © Amy Beardmore**



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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Binturong, *Arctictis binturong*
- Prevost's Squirrel, *Callosciurus prevostii*

Institution(s): Brookfield Zoo (Illinois, United States of America)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Binturong, *Arctictis binturong*
- Common Palm Civet, *Paradoxurus hermaphroditus*

Institution(s): Wild Zoological Park (Bobbington, United Kingdom)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Binturong, *Arctictis binturong*
- Reeves' Muntjac, *Muntiacus reevesi*

Institution(s): AquaZoo Friesland (Leeuwarden, the Netherlands)

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Combined species:

- Asian Small-clawed Otter *Aonyx cinereus*
- Binturong, *Arctictis binturong*
- Common Water Monitor, *Varanus salvator*

Institution(s): Singapore Zoo (Singapore)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Corsac Fox, *Vulpes corsac*
- Sloth Bear, *Melurus ursinus*

Institution(s): Safaripark Beekse Bergen (Hilvarenbeek, the Netherlands)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Western Red Panda, *Ailurus fulgens fulgens*

Institution(s): Welsh Mountain Zoo (Colwyn Bay, United Kingdom), ZooParc Overloon (the Netherlands), AquaZoo Friesland (Leeuwarden, the Netherlands)



**Asian Small-clawed Otter (*Aonyx cinereus*) and Western Red Panda (*Ailurus fulgens fulgens*) mixed exhibit**  
Welsh Mountain Zoo, Colwyn Bay, United Kingdom  
Photo © Ben Gilbert

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Western Red Panda, *Ailurus fulgens fulgens*
- Reeves' Muntjac, *Muntiacus reevesi*

Institution(s): Parc Zoologique et Botanique de Mulhouse (France)



**Asian Small-clawed Otter (*Aonyx cinereus*) and Reeves' Muntjac (*Muntiacus reevesi*)  
Parc Zoologique et Botanique de Mulhouse, France  
Photo © Dominique Villiseck**

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Western Red Panda, *Ailurus fulgens fulgens*
- Southern Cassowary, *Casuarius casuarius*

Institution(s): Bioparc Fuengirola (Spain)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Northern Raccoon, *Procyon lotor*

Institution(s): Aachener Tierpark Euregiozoo (Germany)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- South American Coati, *Nasua nasua*

Institution(s): Apenheul (Apeldoorn, the Netherlands)





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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Malayan tapir, *Tapirus indicus*

Institution(s): Point Defiance Zoo & Aquarium (Tacoma, Washington, United States of America)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Greater One-horned Rhinoceros, *Rhinoceros unicornis*
- Reeves' Muntjac, *Muntiacus reevesi*

Institution(s): Zoo Basel (Switzerland)

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Greater One-horned Rhinoceros, *Rhinoceros unicornis*
- Visayan Warty Pig, *Sus cebifrons negrinus*
- Reeves' Muntjac, *Muntiacus reevesi*

Institution(s): Zoo Basel (Switzerland)



**Asian Small-clawed Otters (*Aonyx cinereus*) and Visayan Warty Pig (*Sus cebifrons negrinus*)**

**Zoo Basel, Switzerland  
Photo © Zoo Basel**



**Asian Small-clawed Otters (*Aonyx cinereus*) and Greater One-horned Rhinoceroses (*Rhinoceros unicornis*)**  
**Zoo Basel, Switzerland**  
**Photos © Zoo Basel**



**Asian Small-clawed Otters (*Aonyx cinereus*) and Greater One-horned Rhinoceroses (*Rhinoceros unicornis*)  
Zoo Basel, Switzerland  
Photos © Zoo Basel**



**Asian Small-clawed Otter (*Aonyx cinereus*) and Greater One-horned Rhinoceros (*Rhinoceros unicornis*)**  
Zoo Basel, Switzerland  
Photo © Wikimedia Commons



**Asian Small-clawed Otter (*Aonyx cinereus*) and Reeves' Muntjac (*Muntiacus reevesi*)**  
Zoo Basel, Switzerland  
Photo © Zoo Basel



**Asian Small-clawed Otters (*Aonyx cinereus*) and Reeves' Muntjac (*Muntiacus reevesi*)  
Zoo Basel, Switzerland  
Photo © Krisztián Svábik**

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Sulawesi Babirusa, *Babyrousa celebensis*

Institution(s): Audubon Nature Institute (New Orleans, Louisiana, United States of America), Jacksonville Zoo and Gardens (Florida, United States of America), Chester Zoo (United Kingdom)



**Asian Small-clawed Otters (*Aonyx cinereus*) and Sulawesi Babirusa (*Babyrousa babyrussa*)**

**Jacksonville Zoo and Gardens, Florida, United States of America**

**Photo © Curby Simerson**



**Asian Small-clawed Otters (*Aonyx cinereus*) and Sulawesi Babirusa (*Babyrousa babyrussa*)**

**Jacksonville Zoo and Gardens, Florida, United States of America**

**Photo © Fred Hood**



**Asian Small-clawed Otters (*Aonyx cinereus*) and Sulawesi Babirusa (*Babyrousa babyrussa*)**

**Chester Zoo, United Kingdom**

**Photo © Christopher Holland**

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Reeves' Muntjac, *Muntiacus reevesi*

Institution(s): Zoo Atlanta (Georgia, United States of America)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Lowland Anoa, *Bubalus depressicornis*

Institution(s): Point Defiance Zoo & Aquarium (Tacoma, Washington, United States of America)



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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Greater Hornbill, *Buceros bicornis*

unknown institution

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Black Hornbill, *Anthracoceros malayanus*

unkown institution

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Slender-snouted Crocodile, *Mecistops cataphractus*

unknown institution

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Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Giant Pangasius, *Pangasius sanitwongsei*
- Red-bellied Pacu, *Piaractus brachypomus*
- *Hemiodus sp.*
- *Leporinus sp.*

Institution(s): Disney's Animal Kingdom Theme Park (Orlando, Florida, United States of America)

---

Combined species:

- Asian Small-clawed Otter, *Aonyx cinereus*
- Butterflies, *Lepidoptera*

unknown institution

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**African Clawless Otter, *Aonyx capensis***

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Combined species:

- African Clawless Otter, *Aonyx capensis*
- Guenon, *Cercopithecus sp.*

unkown institution

---

Combined species:

- African Clawless Otter, *Aonyx capensis*
- De Brazza's Monkey, *Cercopithecus neglectus*

unknown institution

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**Giant Otter, *Pteronura brasiliensis***

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Combined species:

- Giant Otter, *Pteronura brasiliensis*
- White-faced Saki, *Pithecia pithecia*

Institution(s): Aquazoo Friesland (Leeuwarden, the Netherlands)

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Combined species:

- Giant Otter, *Pteronura brasiliensis*
- Silvery Marmoset, *Mico argentatus*
- White-faced Saki, *Pithecia pithecia*

Institution(s): Zoo Leipzig (Germany)

---

Combined species:

- Giant Otter, *Pteronura brasiliensis*
- Spider Monkey, *Ateles sp.*
- Capybara, *Hydrochoerus hydrochaeris*
- South American Tapir, *Tapirus terrestris*

Institution(s): Zoológico da UFMT (Cuiabá, Mato Grosso, Brazil)

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Combined species:

- Giant Otter, *Pteronura brasiliensis*
- Caiman, *Caiman sp.*

unknown institution

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**See Otter, *Enhydra lutris***

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Combined species:

- See Otter, *Enhydra lutris*
- Harbor Seal, *Phoca vitulina*

Institution(s): Franklin Park Zoo (Boston, Massachusetts, United States of America)

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**European Badger, *Meles meles***

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Combined species:

- European Badger, *Meles meles*
- Red Fox, *Vulpes vulpes*

Institution(s): Natur- und Tierpark Goldau (Switzerland), Zoo am Meer Bremerhaven (Germany)

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Combined species:

- European Badger, *Meles meles*
- European Pine Marten, *Martes martes*

Institution(s): Alpenzoo Innsbruck (Austria)

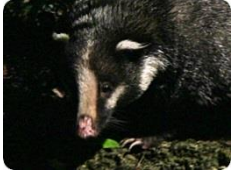
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Combined species:

- European Badger, *Meles meles*
- Common Raven, *Corvus corax*

Institution(s): Miskolci Állatkert és Kultúrpark (Hungary)

---



**Hog Badger, *Arctonyx collaris***

---

Combined species:

- Hog Badger, *Arctonyx collaris*
- Binturong, *Arctictis binturong*
- Masked Palm Civet, *Paguma larvata*

Institution(s): Shanghai Zoo (China)

---

Combined species:

- Hog Badger, *Arctonyx collaris*
- Masked Palm Civet, *Paguma larvata*
- Northern Raccoon, *Procyon lotor*
- Striped Skunk, *Mephitis mephitis*

Institution(s): Shanghai Zoo (China)

---



**Large-toothed Ferret-badger, *Melogale personata***

---

Combined species:

- Large-toothed Ferret-badger, *Melogale personata*
- Common Palm Civet, *Paradoxurus hermaphroditus*

Institution(s): Yadanabon Zoological Gardens (Mandalay, Myanmar)

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**American Badger, *Taxidea taxus***

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Combined species:

- American Badger, *Taxidea taxus*
- Northern Raccoon, *Procyon lotor*

Institution(s): Los Angeles Zoo (California, United States of America)

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**LIST OF MIXED-SPECIES EXHIBITS WITH LOCATIONS - *MEPHITIDAE***

**The list shows specific examples of mixed-species exhibits involving at least one skunk species combined with the taxa below, with indication of the institution(s) where they have been tried out**

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**Striped Skunk, *Mephitis mephitis***

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Southern Hairy-nosed Wombat, *Lasiorhinus latifrons*
- Southern Three-banded Armadillo, *Tolypeutes matacus*
- Garnett's Greater Galago, *Otolemur garnettii*
- Agouti, *Dasyprocta sp.*

Institution(s): Memphis Zoo (Tennessee, United States of America)

---

Combined species:

- Striped Skunk, *Mephitis mephitis*
- Northern Tree Shrew, *Tupaia belangeri*

Institution(s): Yekaterinburgskiy Zoopark (Jekatyerinburg, Russia)

---

Combined species:

- Striped Skunk, *Mephitis mephitis*
- Black-and-white Ruffed Lemur, *Varecia variegata*

Institution(s): Spaycific' Zoo (Spay, France)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Nancy Ma's Night Monkey, *Aotus nancymaae*

Institution(s): Faunia (Madrid, Spain)



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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Eurasian Red Squirrel, *Sciurus vulgaris*

Institution(s): Tropical Wings Zoo (South Woodham Ferrers, United Kingdom)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- American Red Squirrel, *Tamiasciurus hudsonicus*

Institution(s): Lo Zoo di Napoli (Naples, Italy)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Southern Flying Squirrel, *Glaucomys volans*

Institution(s): Zoologischer Garten Berlin (Germany)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Black-tailed Prairie Dog, *Cynomys ludovicianus*

Institution(s): Ree Park Safari (Ebeltoft, Denmark), Folly Farm Adventure Park and Zoo (Kilgetty, United Kingdom)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Woodchuck, *Marmota monax*

Institution(s): Brookfield Zoo (Illinois, United States of America)



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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Crested Porcupine, *Hystrix sp.*

unknown institution

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- North American Porcupine, *Erethizon dorsatum*

Institution(s): Ree Park Safari (Ebeltoft, Denmark), ZOOM Erlebniswelt (Gelsenkirchen, Germany), Zoo Braunschweig „Arche Noah” (Germany), Exotic Zoo (Priorslee, United Kingdom), Turtle Bay Exploration Park (Redding, California, United States of America), Los Angeles Zoo (California, United States of America)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Northern Raccoon, *Procyon lotor*

Institution(s): AquaZoo Friesland (Leeuwarden, the Netherlands), Dierenrijk (Mierlo, the Netherlands), GaiaZOO (Kerkrade, the Netherlands), ARTIS Amsterdam Royal Zoo (the Netherlands), ZOO Antwerpen (Belgium), Zoo Braunschweig „Arche Noah” (Germany), Zoo Stralsund (Germany), Heythrop Zoological Gardens (Chipping Norton, United Kingdom), Tayto Park (Ashbourne, Ireland), Kecskeméti Vadaskert (Hungary), Bronx Zoo (New York, New York, United States of America)

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**Striped Skunk (*Mephitis mephitis*) and North American Porcupine (*Erethizon dorsatum*)**

**Zoo Braunschweig „Arche Noah”, Germany**

**Photo © Zoo Braunschweig „Arche Noah”**



**Striped Skunk (*Mephitis mephitis*) and Northern Raccoon (*Procyon lotor*)**

**ZOO Antwerpen, Belgium**

**Photo © Tom Van Deuren**



**Striped Skunk (*Mephitis mephitis*) and Northern Raccoons (*Procyon lotor*)**  
GaiaZOO, Kerkrade, the Netherlands  
Photo © GaiaZOO



**Striped Skunks (*Mephitis mephitis*) and Northern Raccoons (*Procyon lotor*)**  
GaiaZOO, Kerkrade, the Netherlands  
Photo © Örs Görög



**Striped Skunks (*Mephitis mephitis*) and Northern Raccoons (*Procyon lotor*)  
GaiaZOO, Kerkrade, the Netherlands  
Photo © Mario Berndtgen**



**Striped Skunk (*Mephitis mephitis*) and Northern Raccoon (*Procyon lotor*)  
Heythrop Zoological Gardens, Chipping Norton, United Kingdom  
Photo © Paul Irvén**



**Striped Skunks (*Mephitis mephitis*) and Northern Raccoons (*Procyon lotor*)  
Zoo Braunschweig „Arche Noah”, Germany  
Photos © Zoo Braunschweig „Arche Noah”**



**Striped Skunks (*Mephitis mephitis*) and Northern Raccoons (*Procyon lotor*)  
Zoo Braunschweig „Arche Noah”, Germany  
Photos © Zoo Braunschweig „Arche Noah”**





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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Northern Raccoon, *Procyon lotor*
- Opossum, *Didelphis sp.*

unknown institution

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Northern Raccoon, *Procyon lotor*
- Woodchuck, *Marmota monax*

unknown institution

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Red Fox, *Vulpes vulpes*
- Northern Raccoon, *Procyon lotor*
- Eurasian Otter, *Lutra lutra*

Institution(s): Zoo sauvage de Saint-Félicien (Quebec, Canada)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Masked Palm Civet, *Paguma larvata*
- Northern Raccoon, *Procyon lotor*
- Hog Badger, *Arctonyx collaris*

Institution(s): Shanghai Zoo (China)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- South American Coati, *Nasua nasua*

Institution(s): Opel-Zoo (Kronberg, Germany)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- White-nosed Coati, *Nasua narica*

Institution(s): Keepers of the Wild (Valentine, Arizona, United States of America)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Ringtail, *Bassariscus astutus*

Institution(s): Koninklijke Burgers' Zoo (Arnhem, the Netherlands)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Golden Pheasant, *Chrysolophus pictus*
- Domestic Pigeon, *Columba livia f. domestica*
- Burrowing Parrot, *Cyanoliseus patagonus*

Institution(s): Tier- und Freizeitpark Eichholz (Oranienburg-Germendorf, Germany)

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Combined species:

- Striped Skunk, *Mephitis mephitis*
- Sandhill Crane, *Antigone canadensis*
- Florida Box Turtle, *Terrapene carolina bauri*
- Three-toed Box Turtle, *Terrapene carolina triunguis*

Institution(s): ZooTampa at Lowry Park (Florida, United States of America)

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## SUMMARIZE THE EXPERIENCES

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This document purposefully focuses on creating a list of mixed-species exhibits with family *Mustelidae*, for further and detailed information it is worth contacting the institutions mentioned above. Only a short summary of the general experiences is given here. Worth mentioning again that many of the above-mentioned coexistences are still ongoing at present but many of them are historical examples.

According to the Mustelid (*Mustelidae*) Care Manual (AZA Small Carnivore TAG 2010) in general, mustelids are not good candidates for mixed species exhibits. Skunks may be a possible exception, but there is no information on successful mixed exhibits for these species. Irrespectively of this statement some well managed combinations have also been reported beforehand.

Martens can be very aggressive towards the other species. First care should be taken that not too small species are socialized with them to avoid predation. Furthermore, bigger species, which does not fit into the pattern of prey could also be killed by them (HAMMER 2002).

### Weasels and relatives

According to an early record from the 1950s a **European Polecat** and European Rabbit shared an exhibit in one institution: in a wooden shed of plant an escaped rabbit lived together with a male polecat, they both used the same entrance. This unusual community lasted for two years, then the shed was pulled down (HAMMER 2002).

In a coexistence with **Zorilla**, bushbaby, tree shrew and crested porcupine was also tried out in one institution. Since predation by zorillas on bushbabies was occurred, the Zorillas had to be removed. Worth mentioning that predation by tree shrews on bushbaby young and vica versa was also reported (THOMAS & MARUSKA 1996).

Zoo Heidelberg has created a mixed exhibit with their Northern Raccoons: the procyonids share their enclosure with a far smaller carnivore species. The coexistence with **European Mink** is without any problems, the mink is the dominant species, but no experience with breeding until now. The park has wooden boxes for the minks, which are not accessible for the raccoons (REICHLER-DANIELOWSKI 2018, pers. comm.).

The Animal Park Bern in Switzerland has a long history of mixing their **Wolverines** with Brown Bears, the first introduction was done in 1993. Initially two old Syrian Brown Bears lived in the 3600 m<sup>2</sup> sized enclosure and showed no significant interest for the Wolverines. The mustelids had smaller „bear-proof” areas protected by electric fence. In 2004 the situation was totally changed as two young female European Brown Bears arrived and shared the exhibit with the breeding pair of Wolverines and the curious bears showed significant interest for the other species. The electric fence was no more enough to protect the Wolverines in their own territory, so a rised, two meter high platforms and shelters were created for them which was unsafe for the bears due to their bigger body weight. During the female Wolverine was raising cubs the two species were separated. Carcass feeding was also proved to an appropriate behavioural enrichment for both species: at daytime



principally the bears owned it but after locked them inside during the night the mustelids have the opportunity to acquired that. The Wolverines ate from the carcass and partially dug it inside the enclosure which was proved to be a good activity for the bears to find it next day. According to dr. Marc ROSSET serious accidents or injuries have not been reported during the cohabitation (ROSSET 2007, 2012, pers. comm.).

A 1600 m<sup>2</sup> sized mixed exhibit with Brown Bears and Eurasian Lynxes was tried out in Zoo Salzburg Hellbrunn. Worth mentioning that Wolverines, which inhabit the neighbouring enclosure dug themselves through the enclosure for the bears, so sometimes all three species of carnivorans can be observed in the same exhibit (HAMMER 2002).

Zoo Sauvage de Saint-Félicien in Canada has had a unique combination with four carnivores – **Eurasian Otter**, Red Fox, Northern Raccoon and Striped Skunk – were exhibited together in a 3500 m<sup>2</sup> sized enclosure. The cohabitation started in 1995 and it was doing very well (HAMMER 2002).

Another combination with Eurasian Otters was also reported from Zoo Salzburg Hellbrunn. The mustelids lived together with Alpine Marmots and Chamois in a big, 1,5 hectare sized exhibit. Further on otters killed adult marmots and even a Chamois died after a bite in the nose (fish-toxins), so otters were removed from the exhibit (HAMMER 2002).

Form Los Angeles Zoo a **North American River Otter** and Grey Seal combination was reported. First the otters avoided the water, but in the meantime they swam around and between the seals. Exhibit area was 144 m<sup>2</sup> (CROTTY 1981, HAMMER 2002).

In Zoo New England the North American River Otter (0.1) and North American Porcupine (1.0) coexistence did not work because the porcupine intimidated the otter by "appropriating" the exhibit and the otter stopped eating. No fighting reported (PETEFISH 2004).

The Minnesota Zoo on its Minnesota Trail (North American Native species) currently has Northern Raccoon and Red Fox mixed exhibit. These two animals were wild orphan animals that were confiscated from a private individual; both animals were raised in the person's house with domestic dogs and cats as well as a North American River Otter. This has worked well for the park as the fox frequently plays with the raccoon, but it is not known that they would repeat this again given the unique background of these two animals being raised in a human environment and very imprinted (NESS 2018, pers. comm.).

Furthermore, North American River Otter has been been successfully exhibited with beaver. There are unsubstantiated reports of exhibiting them with deer and fox in large naturalistic exhibits, but these have not been confirmed. Any attempt at mixed species exhibits with the species should take into account their natural inquisitiveness, their semi-aquatic nature, their inclination to climb and dig, and their carnivorous diet (AZA Small Carnivore TAG 2009).

**Spotted-necked Otters** were housed successfully for an extended period with Schmidt's Guenon, Allen's Swamp Monkey and François' Langur. While food was placed in species appropriate locations, the otters did eat some of the monkeys' food. There were some reports of intermittent interspecific aggression, generally initiated by the otters in these groupings. An unusual aggressive event by a young otter in one of these mixed-exhibits lead to the death of a newborn monkey and several days later, the death of the aggressing otter. In this case, the exhibit was re-evaluated and discontinued. It should be noted that the otters and monkeys had been exhibited together for several years, but the unexpected birth of the guenon infant altered an



un-easy truce established between the otters and monkeys (AZA Small Carnivore TAG 2009).

Additionally Spot-necked Otter has been successfully housed with African Forest Buffalo, Forest Hog, Red River Hog, with the abovementioned Schmidt's Guenon, Allen's swamp monkey, Francois langur, furthermore with various bird species (some not successfully, e.g. Goliath Heron) and fish in very large, multi-level exhibits. There were some reports of intermittent aggression usually initiated by the otters (BENZA, D., CANTABENE, S., FOLAND, N., SEARS, R. & REED-SMITH, J. 2009).

Actually, San Diego Zoo has created two mixed species exhibits in the Ituri Forest complex. The first one had African Forest Buffaloes, Red River Hogs, De Brazza's Guenons and Spotted-necked Otters, this side of the pathway had an otter pool with underwater viewing. On the other side of the pathway, there was another exhibit with otters mixed with Allen's Swamp Monkeys and Schmidt's Guenons. The two sides were designed to feel like they were one space, but probably there is a wall separating the sides (HUFFMAN 2019, pers. comm.).

**Asian Small-clawed Otter** is the most popular „attendant” of mixed-species exhibits with mustelids. This species has been exhibited successfully with Barbirusa, Binturong, Muntjac, Black Hornbill, Great Hornbill, Gibbons, Proboscis Monkey, Prevost's Squirrel, Asian Giant Squirrels, Rodrigues Flying Fox, Peafowl, Slender-snouted Crocodiles and butterflies. Water Monitors were tried, but were not successful (AZA Small Carnivore TAG 2009).

Brookfield Zoo combined its Asian Small-clawed Otters together with several species of primates – like Crab-eating Macaque, Tonkean Macaque, Silver Langur, Dusky Leaf Monkey, White-haded Gibbon, White-cheeked Gibbon and Siamang – and the overall experience were that otters were dominant over primates (HAMMER 2002).

In the early 2000s the Bronx Zoo in New York added a troop of Javan Langurs to Jungle World and mixed them with Asian Small-clawed Otters. The otters had previously mixed with other primate species in the enclosure without any problems. However, the new langurs made a habit of constantly bothering and attacking the otters. In June 2007 the otters grabbed a langur that was sitting at the water's edge and proceeded to drown it in full view of visitors.

Colchester Zoo had a mix of Asian Small-clawed Otter, two species of langur and Binturong together. Otters and langurs were largely successful, however, the keepers found the langurs eating the faeces of the Binturong and they became infected with salmonella and the two elderly langurs both died despite treatment. Therefore the institution has not maintained any primate with the binturong and otters (BARWICK 2018, pers. comm.)

In San Diego Zoo the Asian Small-clawed Otters, Francois' Langurs and Giant Flying Squirrels were always together. The fact that the langurs and the otters are diurnal and the flying squirrel are nocturnal contribute to the success of this combination by reducing the likelihood aggression between them. All at once only one specimen of otter was present. A female otter and the young langurs were playing with each other. The langurs have raised young while otter with them. The exhibit area was about 300 m<sup>2</sup> (HAMMER 2002).

In Randers Regnskov the Asian-small-clawed Otter and the Pileated Gibbons still coexist in the same enclosure. The two species do not seem to bother each other as long as they stay in their respective territories – the gibbons at the top and the otters at the bottom. The only confrontations the institution experience with the two species is when the otters steal food from the gibbons (they occasionally climb up the mesh). Then the male gibbon will grab them or throw them away from the food (WINTHER LASSEN 2018, pers. comm.)



Adelaide Zoo kept the Asian Small-clawed Otters and Siamangs together. The primates were housed on an island. Looking through the records – eye issues were the main factor for the otters removal due to the water quality of the lake water. They were housed together for approximately 5- 6 years though. The otters bred in a nest box on the island and pups were reared. The otters did have a separate off limit area. The zoo has also had experinece keeping their otters together with Dusky Leaf Monkey and Malayan Tapir which lasted for about a year. The tapirs and langurs were locked in their off limit areas of a night and the otters were free to roam the exhibit overnight. The otters were removed due to eye issues again (GUY 2018, pers. comm.).

Allwetterzoo Münster created a mixed exhibit with Asian Small-clawed Otter (1.1), Bornean Orangutan (1.3.1) and Lion-tailed Macaque (3.0), later on the development of the group structure was: otter (5.3), orangutan (1.4) and macaques were removed. The outdoor enclosure is 500 m<sup>2</sup>, the indoor facility is 160 m<sup>2</sup> plus additional indoor enclosures to keep species separately is provided. Before orangutans and otter were associated, both species were habituated to the enclosure separately. With regard to otters, introduction of Lion-tailed Macaques proved difficult. Thus the macaques were first introduced to adult female orangutans, then to male and juvenile orangutans and finally, all three species were associated. Orangutans and otters are predominantly involved in intraspecific interactions. When interspecific (playful teasing) behaviours can be observed, species generally respect each other. During interspecific interactions otters show a behavioural mixture of impudence and caution. Otters manage to steel vegetable food items from orangutans, wash them in water moats and feed on it. Therefore they do not need supplemental vitamins to be added to their normal diet. This association obviously represents an enrichment for both species. Several weeks after the introduction of Lion-tailed Macaques, first sociopositive (physical) contacts between individuals of macaques and orangutans could be observed. Relationships vary from friendship and playing partners to avoidance, depending on the individuals involved. Hostile relationship between Lion-tailed Macaques and otters was also reported. On one occasion a male macaque killed an infant otter, confirming that Lion-tailed Macaques also prey upon small mammals and reptiles. After that otters with infants did not get associated with Lion-tailed Macaques. When young otters reach a certain body size they do not run the risk of being attacked anymore. Protection of living trees had to be improved when macaques were introduced. A big group of otters can cause some difficulties in shifting the animals from one enclosure to another. Association can be recommended (ZIEGLER 2002). Currently the mixed exhibit with otters, orangutans as well some bird species still exist, but without the Lion-tailed Macaques. The institution stopped holding the macaques beause of the limited space, that was the only reason. The mix between otters and orangutans is great and functioning very well (SCHEHKA 2018, pers. comm.)

ZOOM Erlebniswelt Gelsenkirchen keeps together successfully their Asian Small-clawed Otters, Northern Plains Grey Langurs and Sumatran Orangutans. We can read a detailed article about this cohabitation in the journal *Der Zoologische Garten* 82(1-2):Pp. 40-59. (BUCKEN, S. M. & GÜRTLER, W. D. 2013.).

Some examples of Asian Small-clawed Otters and different squirrel species kept together has also been reported. In Lincoln Park Zoo the otters lived together with Black Giant Squirrel. Squirrels occasionally stole fish from otters, otters occasionally ate rat chow. Altercation was noted only one occasion in eight years, when one of the otters degloved last inch of squirrel's tail (PETEFISH 2004).



In an other institution Prevost's Squirrels developed ulcers due to stress caused by the Asian Small-clawed Otters (THOMAS & MARUSKA 1996).

The combination of Asian Small-clawed Otters and Asiatic Lions in Zoo Zürich was stopped as one of the female lions was able to catch the otters. At moment the institution is planning to introduce some bird species into the lion indoor exhibit (LODDENKEMPER 2018, pers. comm.).

The most frequent association is the Asian Small-clawed Otter & Binturong coexistence which have been tried in many institutions. In Parco Faunistico La Torbiera a pair of Binturong lived together with an otter family in a 1600 m<sup>2</sup> size exhibit. As the viverrids were being molested by the otters the exhibit was not suitable for breeding the Binturongs so it had to be given up (ROCCA 2018, pers. comm.). In Zoo Ostrava each species occupies a different niche in the exhibit: the otters on the ground with a large pool and waterfall, and the Binturongs above the otters in the trees, branches and platforms for resting. Their relationship is also without any major problems: otters are very curious of course and Binturongs have learnt that it is better for them to stay up on the perches. It is important to install the upper part for Binturongs high enough, so that otters can not reach them and also can not climb up the trees (which they can if not too high and the access is possible). The access to their indoor enclosures is also separate for both species, in lower level for the otters and higher for the Binturongs (OBRAČAJOVÁ 2018, pers. comm.). In Zoo Heidelberg the Binturong and otter combination works also well. According to the experiences the otters climb really well and they are dominant over the viverrids, so the keepers have to feed them separately (REICHLER-DANIELOWSKI 2018, pers. comm.). In Hamerton Zoo Park the same combination has gone successful in that the individuals live well together, however, its very very rare that the Binturongs and otters are seen sharing the same space (BEARDMORE 2018, pers. comm.).

In Singapore Zoo Asian Small-clawed Otters lived together not just with Binturongs, but subadult Common Water Monitors have also been integrated into the mixed exhibit. After the lizards have reached a certain length were removed from the exhibit.

ZooParc Overloon does not have the former Asian Small-clawed Otter & Binturong coexistence anymore as the viverrids always escaped. Now the zoo changed this combination to Asian Small-clawed Otters and Red Pandas which goes quite well together (HEUVEL 2018, pers. comm.).

In Mulhouse two female Red Pandas share their exhibit with a group of Asian Small-clawed Otter and with Reeves' Muntjacs. The cohabitation is going quite well and sometimes the park have funny situations. The otters tend to be a pain for the Red Pandas because they love to climb in the trees and disturb them sometimes but nothing really problematic. There was electric fence but the otters would climb anyway so they removed it. For the food the keepers sometimes have to be careful as one female Red Pandas like to go down into the muntjacs' holdings to steal some apple pieces (BACONNAIS 2018, pers. comm.).

Bioparc Fuengirola has a unique mixed exhibit system. There are a Red Panda & Southern Cassowary mixed exhibit and a Bornean Orangutan enclosure next to each other. The Asian Small-clawed Otters are using daily the orangutan enclosure at the same time without problems. The otters can use also the adjacent enclosure where the Red Pandas and cassowaries live but as this enclosure does not have a large pond, they prefer to spend most of the time in the orangutan enclosure. There is a small otter-sized door hidden on the rocks, so the otter can go from one enclosure to the other. The cassowaries sometimes chase the otters, but the much more clever otters just avoid them easily. The Red Pandas rarely came to the ground and so far the staff



have not seen a problem with the cassowaries or with the otters. This pair of cassowaries are extraordinarily peaceful even with the keepers, so it might be difficult with other specimens (RECUERO 2018, pers. comm.).

In the recent past Safaripark Beekse Bergen introduced Asian Small-clawed Otters and Corsac Foxes into the new enclosure of their Sloth Bears. The exhibit is not for breeding purposes so male groups were created from each species (VERSTEEGE 2018, pers. comm.).

In Apenheul Primate Park Asian-Smal-clawed Otters mixed with South American Coatis in a 500 m<sup>2</sup> size exhibit. The species were separated over night. After six month of peace they suddenly started to fight, where as the otters dragged one coati into the water moat in an attempt to drown him. It could be possible that they wanted to use a parental behaviour (as teach their young to swim and dive by a very brutal mode) on the coatis as well. But if the reasons for this behaviour have been aggressive or parental-educating against the coatis for the poor coatis the result was the same, so the species had to be separated again (HAMMER 2002).

Some years beforehand Jersey Zoo has mixed their female group of South American Coatis with a breeding pair of Andean Bear and also with a big group of Black-and-gold Howler Monkeys. Before that Asian Small-clawed Otters also housed with these species (COWAN et al. 1999). The institution has had very few problems with these species mixing together, although there was one occurrence where an otter died from being hit by the bear (the otter was trying to steal the bears food) but this happened in the early stages of the mixed exhibit. The total outside area of the enclosure is 1700 m<sup>2</sup> with the inside building partially buried in the middle. The outside enclosure is designed so that it can either be used as one large area or be split into two separate areas using gates at both the front and back of the enclosure. There is also a moat which surround the outside enclosure which the bears enjoy swimming in and was also utilised by the otters when they were present in the enclosure. The outside has been designed to accommodate all of our animals with large tree trunks for the bears to climb and smaller trees and rope for the monkeys and coatis to use. The inside enclosure is split into six dens, each den has both a large sliding door for the bears and a smaller door with a tunnel exit for the coatis and otter when they were mixed. The howlers shut into their den in overnight as a precaution but the coatis have outside access continuously. The bears get most of their feeds outside on the west side of the enclosure (if weather is very bad they will receive their food inside), although do get some scatter on the east side for enrichment. Coatis receive their feeds on the east side of the enclosure (again inside in their den if the weather is bad), they do always get fed their protein inside so that we can check them closely once a day. Howler monkeys have their main feed at the end of the day when they are shut into their den; in summer they spend a large portion of their day outside browsing on the trees, during the winter they share the inside with the coatis and get their leafy greens inside. The coatis and howlers are fairly tolerant of each other and can be seen feeding near each other. They do get the occasional quarrel, but this is usually the juvenile howler monkeys annoying the coatis like poking and jumping on them. They have had several occurrences now of the female howler monkeys giving birth whilst with the coatis and all has been well. The coatis and the howlers are quite watchful of the bears and often retreat to the trees when the bears get too close. Usually if the bears show too much interest in the howler monkeys the group start to display and the bears loose interest and walk off. The most interaction they had was between the bears and the otter, the female otter was especially naughty and loved to sneak up behind the bears and bite their bottom or ankles. Luckily she was too quick for them





to retaliate and just ran away. She could also be seen during the winter to sleep inside with the bears quite close (HUNT 2012, pers. comm.).

In Zoo Atlanta Asian Small-clawed Otters and Reeves' Muntjacs were kept together: A great care was taken in the introduction process. The male muntjac was put in alone first to establish a territory. Then the adult female and a young female offspring were added. They were allowed to settle in for a few weeks and then the otters were introduced with lots of supervision. Exhibit area was 1200 m<sup>2</sup> (HAMMER 2002).

One of the most shocking combination of species was established in 2004 in South Lakes Safari Zoo in the United Kingdom where Asian Small-clawed Otters, Andean Bears, Capybaras and South American Tapirs coexisted. Afterwards Black-capped Capuchins and Brown-headed Spider Monkeys have also been introduced into the exhibit, the later ones could climb on ropes from their own enclosure to the bears. According to WARD (2012, pers. comm.) the exhibit is still very successful, the park has yet to experience any problems between the different species. For the majority of the time, the animals keep to themselves and they have worked out which areas of the exhibit are for which species. However, they tolerate each other very well when they do come in close range. The institution believes that the secret to mixed species exhibits is ample space. If the animals have enough space to enable them distance between themselves and others, there should be no problem. Size of the mixed exhibit was around 3500 m<sup>2</sup>. The animals are fed separately for the majority of the time so that keepers can monitor diets but in the summer there is an additional mixed scatter feed during the keepers conservation talk. This encourages the animals to forage for seeds, fruits throughout the rest of the day. Strangely enough, it seems that bears are almost the bottom of the hierarchy within the enclosure as they move away from some of the other species keeping their own space. Every animal has a specific protected area to retreat to if they choose that other species are not able or comfortable getting to.

Zoo Basel has a unique multi-species exhibit with four mammal species: the Greater One-horned Rhinoceroses share their enclosure with Visayan Warty Pigs, Reeves' Muntjacs and a group of Asian Small-clawed Otter. The two female Visayan Warty Pigs have been introduced to the exhibit in 2017. The otters were very daring at first and behaved provocatively towards the pigs, which did not bat an eyelid at their behaviour. The otters soon gave up this act and the warty pigs now get on well with them and other species as well sharing the exhibit (ZOO BASEL 2017).

The Asian Forest Sanctuary at Point Defiance Zoo & Aquarium has six different exhibit spaces and utilizes rotational and mixed species exhibitry. The same animals are not always mixed together and are not in the same exhibit daily. Two mixed-species exhibits with carnivorans have been created in this area: a pair of Asian Small-clawed Otters associated with a female Lowland Anoa or with a male Malayan Tapir. The animals are all shifted off exhibit at night so they never stay out together with other species overnight. Otters can breed at any time, so the colleagues will sometimes see breeding activity when they are out with one of the hoofstock. The institution tried the otters with the male anoa as well, and he kept trying to stomp on them, so it stopped. The zoo has been able to pair otters with multiple Malayan Tapirs over the years, both male and female (AZA Ungulate TAGs 2017).

Worth mentioning as temporary combination during show that Asian Small-clawed Otter and California Sea Lion performed together in SeaWorld San Diego.

Guenons were housed with **African Clawless Otter** unsuccessfully at one facility; another facility housed them successfully with DeBrazza's Guenon, with occasional interspecific aggression (R. Willison, pers. comm.) (AZA Small Carnivore TAG 2009).



According to the AZA Small Carnivore TAG (2009) **Giant Otter** should not be kept in mixed-species exhibits due to their highly territorial and aggressive nature. There is a record of one unsuccessful attempt at housing Giant Otter with caiman, which was abandoned when a caiman attacked an injured otter and was subsequently removed.

In the Gondwanaland in Zoo Leipzig Giant Otters, White-faced Sakis and Silvery Marmosets can be observed within the same exhibit. This combination works very well, because the otters do not care about the monkeys in trees, and the monkeys do not come down from the trees when the otters are around. It is essential that there are tall living trees – Black olive of 7-10 meters height – inside the enclosure. This also means that otters and saki are usually vertically quite far away, so normally there is no interaction between the species. The institution had one issue, when an otter was found carrying through the water a dead subadult saki in its mouth. It was not eaten by the otter, so the zoo could send it to the pathology. The necropsy reports suggest that the saki was not killed by the otter but died naturally and fell from the tree and was already dead when found by the otter. In Gondwanaland free-flying tropical birds, fruit bats and free-ranging reptiles can enter open-top enclosures for Giant Otters and Asian Small-clawed Otters. In fact there are Pied Imperial Pigeon nesting in the tall olive trees of the Giant Otter exhibit (SCHMIDT 2018, pers. comm.).

In the 1980s Los Angeles Zoo **North American Badgers** and Northern Raccoons were mixed in a 70 m<sup>2</sup> enclosure but the badgers were separated over night. A fight between the males caused injuries, but the animals were integrated again successfully (CROTTY 1981, HAMMER 2002).

## Skunks

**Striped Skunks**, Woodchucks and Northern Raccoons have been housed together successfully with very little aggressive interaction. It is important that appropriate shelter and denning facilities be provided for each species, and that feeding/watering stations are established to minimize aggression over food (G. Granat, unpublished information, 2003) (AZA Small Carnivore TAG 2010), furthermore one old coati was housed with a pair of Striped Skunks (K. Schilling, personal experience). These animals were introduced as adults (AZA Small Carnivore TAG 2010).

In the 1970s Zoo Berlin had a mixed exhibit in the nocturnal house for Striped Skunks and Southern Flying Squirrels which was unsuccessful as the skunks ate five of the squirrels (AMEND 2018).

Zoo Braunschweig has been keeping Striped Skunks and Northern Raccoons together successfully in an enclosure since 2002. There are currently 10 raccoons (all castrated) along with 5 male skunks (uncastrated and stink glands present). When their raccoons had raised offspring, the skunks were not a problem, even though they had contact with the offspring. Furthermore, the zoo has a mixed exhibit with Striped Skunk and North American Porcupine since 2017 where female skunks and breeding pair of porcupines live together. So far, the husbandry of the two species is without problem and offsprings has also raised successfully (WILHELM 2018, pers. comm.).

Many years beforehand Opel-Zoo in Kronberg kept together their Striped Skunks with South American Coatis in a 77 m<sup>2</sup> size enclosure. There were no overt aggression, but after two months skunks only became active at night (HAMMER 2002).

Burgers' Zoo in Arnhem tried to keep together their Striped Skunks with Ringtails in a 50 m<sup>2</sup> exhibit since 1994. The combination worked very well. Ringtails were



separated during mating season (HAMMER 2002). The interaction with the Ringtail was very limited, but the species tolerated each other. The only issue was the feeding: the Ringtails are more shy so the keepers needed to feed them separate. This is very easy by creating places where the skunks could not reach (HUIZINGA 2018, pers. comm.).

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