Review of facilities keeping Asian big cats (*Felidae ssp.*) in captivity

Objective:

According to the CITES Decision 17.229 (a), the objective of this report is to provide a review of the number of facilities keeping Asian big cats (*Felidae spp.*) in captivity in the territories of Parties and the number of Asian big cats kept in these facilities. We compiled information from existing databases, published literature, grey literature and contributions from national Governments and CITES observer organizations into a broad set of consistently formatted and standardized database to develop: the *Asian Big Cats in Captivity Database,* for the following species:

- Tiger (*Panthera tigris*)
- Asiatic lion (*Panthera leo persica*)
- Snow leopard (*Uncia uncia*)
- Clouded leopard (*Neofelis nebulosa*)
- Leopard (*Panthera pardus*) of the Asian subspecies (*P. p. nimr*, *P. p. saxicolor*, *P. p. melas*, *P. p. kotiya*, *P. p. fusca*, *P. p. delacouri*, *P. p. japonensis*, *P. p. orientalis*)

Methods

Data sources:

  1. *Data from Species360's Zoos and Aquariums members:*

Records for 535 facilities were extracted from the Species360/ZIMS database. Species360 is a Non-Profit Not-Governmental, international member driven institution, that develops and manages the Zoological Information Management Software (ZIMS)[1.] Species360 has 1,100 member zoos and aquariums institutions across 96 countries, that share standardized records through ZIMS for 10 million historically and living animals across 21,000 species. ZIMS is real-time system with information such as the number of individuals for each species (i.e., species holdings), animal husbandry, medical, and animal care. The data provided here by ZIMS members represent the current status of live animals in those institutions. We consider that the data on the number of Asian Big Cats kept in ZIMS member institutions has a low level of uncertainty, since most institutions enter their records consistently into ZIMS. Note of the 1,100 members in Species360 only 250 are WAZA members, but not all WAZA member facilities are part of Species360 accounting for 87% (250/288) of the total WAZA members. It is important to highlight that there are 44 associations besides WAZA with members as part of Species360 that

have similar codes of conduct and regulations as WAZA and are promoting data sharing across zoos and aquariums (see Appendix A for a list of associations in ZIMS).

2. Data from literature and CITES authorities:

Additionally, records of 244 facilities were provided by the Big Cat Rescue organization (obtained via the CITES Secretariat). These data are based on the publicly available inspection reports from the U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA APHIS) and investigations of Big Cat Rescue[2]. Because data from inspection reports were outdated (2010/2011), we updated existing information with most recent data (2015/2016) for U.S. exhibitors from the USDA APHIS webpage[3]. Numbers in inspection reports are likely an underestimation of the actual number of cats present, because the USDA does not accurately post the census. Inspectors only record the number of animals present on the day of inspection[2].

We further included records of 319 facilities provided by the Environmental Investigation Agency (EIA) and the HSI (Humane Society International). For Thailand, we obtained two sources of records: total numbers of individuals present in Thailand provided by the National CITES authority and a list of facilities and number of individuals provided by the EIA and HSI. The former data did not provide names of facilities; thus we were not able to determine the overlap of the two data sources. To avoid overestimation by counting individuals twice, we thus only included the more detailed information provided by the EIA and HSI. We would like to stress that the total numbers of individuals of both data sources were highly similar (see Appendix B for comparison).

Furthermore, we obtained a list of facilities provided by the national CITES authority Germany and the Central Zoo Authority India, resulting in 66 additional facilities.

For an additional 105 records that only included facility names but no information on the number of individuals present at those facilities, we estimated the numbers of individuals based on grey literature. This included institution webpages, news articles, and regional studbooks. From these sources, it was often impossible to determine the subspecies status of a species. Therefore, for the Asiatic lion we only included sources for which the subspecies status was clear. For leopards we included records of uncertain subspecies status, but analyzed those separately from records that specified the Asian subspecies.

Development of the Asian Big Cats in Captivity Database:

We combined the described data sources into a single consistently formatted and standardized database, in which each record represents the total number of individuals kept in a single facility for a single species or subspecies. When the number of individuals was uncertain for a given facility and given as a range (e.g. "5-10")), we used the mean number of individuals reported. When the number was unknown, we assumed the number of individuals to be "1". Due to this assumption the number of individuals will likely be an underestimation of the total numbers of animals present for those records. When geographical latitudes and longitudes were not provided, we retrieved these data by either using the *Google maps* search[4], or automated - using the *ggmap* R package[5]. We

mapped the data using the R packages *ggmap*, *maps*, *sp*, and *ggplot2*[4,5,6,7]. All calculations, analyses and maps were performed using the R free-open-source software[8].

Table 1. Variable information for the *Asian Big Cats in Captivity database*

Variable	Variable information
Scientific_name	Species scientific name binomial (i.e., genus and species)
Subspecies_name	Species subspecies name, when unavailable scientific name is provided
Common_name	Species common name in English (to subspecies level when available)
Facility	Facility where the species is kept
Address	Address of the facility
City	City of the facility
State_Province	State or province of the facility
Country	County of the facility
iso2c	ISO country code
Region	Region of the facility
Continent	Continent of the facility
Latitude	Latitude of the facility
Longitude	Longitude of the facility
Website	Website of the facility
Owner	Owner of the facility
Phone_Number	Phone number of the facility
Email	Email address of the facility
Nr_ind_min	Minimum number of individuals
Nr_ind_mean	Mean number of individuals
Nr_ind_max	Maximum number of individuals
Nr_ind_orig	Number of individuals reported in the original data file
Year_of_information	Year of information of the source that provides the number of individuals
Ref_of_nr_ind	Reference related to the number of individuals, if this number was estimated based on grey literature
Reference_file	File from which the record was obtained
Implicated_in_Trade	Includes notes on whether the facility has been reported as implicated in trade
Details_Trade	Includes details of the trade (e.g., whether the facility has been selling tiger wine, or the facility has a history of cross-border trade, or if the facility has been reported in the news to do anything illegal).
Notes	Includes general notes
WAZA	Indicates whether the facility is a member of the World Association of Zoos and Aquariums (yes = 1, no = 0)
ZIMS	Indicates whether the facility is a member of the Zoological Information Management Software (yes = 1, no = 0)

Results:

The *Asian Big Cats in Captivity Database* contains a total of 1,960 records, including 1,156 facilities across 73 countries that hold a total of 14,918 Asian big cats (range: 14,856 - 14,963). Of the total number of facilities, 47% (548/1,156) are registered in the Species360/ZIMS real-time database, holding 25% (3,777/14,918) of individuals of Asian

big cats. Of the total number of facilities, 17% (201/1,156) are accredited WAZA member institutions, keeping 11% (1,582/14,918) of the total number of individuals.

1. Tiger (*Panthera tigris*)

An estimated 12,574 individuals of tigers are kept in 1,038 facilities in 68 different countries. 56% (580/1,038) of the facilities are not registered in any Species360 member institution and hold 85% (10,749/12,574) of the individuals. Of the total number of facilities 17% (173/1,038) are accredited WAZA members, holding 6% (764/12,574) of individuals. Divided by regions, most tigers can be found in Eastern Asia (49%), Northern America (22%), South-Eastern Asia (18%), Southern Asia (3%), and Western Europe (3%), followed, to a lesser extent, by other regions (App. Fig. C1). The countries with the largest number of captive individuals are China (48%), USA (22%), Thailand (13%), Laos (3%) and India (2%), followed by other countries with lower numbers (Tab. 2).

2. Leopard (*Panthera pardus*)

An estimated 1,208 individuals of leopards are kept in 369 facilities in 59 different countries. We found that 28% (103/369) of the facilities are not registered in any Species360 member institution and hold 25% (297/1,208) of the individuals. Of the total number of facilities, 28% (103/369) are accredited WAZA members, holding 28% (343/1,208) of individuals. Divided by regions, most leopards can be found in Southern Asia (30%), Northern America (19%), Western Europe (13%), Eastern Europe (9%), Western Asia (7%), South-Eastern Asia (7%) followed, to a lesser extent, by other regions (App. Fig. C2). Countries with the largest number of captive individuals are India (29%), USA (18%), Germany, France, and United Arab Emirates (5% each), Thailand (4%), South Africa, UK, and Russia (3% each), followed by other countries with lower numbers (Tab. 3).

There are 557 individuals that could reliably be identified as Asian subspecies, kept in 201 facilities across 47 countries. 4% (9/201) of the facilities are not registered by any Species360 member institution and hold 3% (17/557) of the individuals. Of the total number of facilities, 41% (83/201) are accredited WAZA members, holding 58% (324/557) of individuals. Divided by regions, Asian subspecies of leopards can be mostly found in Western Europe (23%), Eastern Europe (19%), Northern America (17%), Western Asia (13%) and Northern- and Southern Europe (10% and 7%, respectively), followed by other regions (App. Fig. C2). Countries with the largest number of captive individuals of Asian subspecies are USA (16%), Germany (10%), United Arab Emirates (9%), France (8%), UK (6%), Russia (5%), Czech Republic, India, and Spain (4% each), Hungary and Ukraine (3% each), followed by other countries with lower numbers (Tab. 3).

3. Snow leopard (*Uncia uncia*)

An estimated 438 individuals of snow leopards are kept in 179 facilities in 33 different countries. Here we show that only 6% (11 /179) of the facilities are not registered by any Species360 member institution, with 8% (33/438) of the individuals. Of the total number of facilities, 40% (72/179) are accredited WAZA members, holding 44% (193/438) of

individuals. Regionally, snow leopards can be mostly found in Northern America (42%) and parts of Europe (Western Europe: 22%, Eastern Europe: 12%, Northern Europe: 11%), as well as in Eastern Asia (4%) and Southern Europe (3%) followed, to a lesser extent by other regions in Asia and Oceania (App. Fig. C3). Countries with the largest number of captive individuals are USA (38%), France and Germany (10% each), UK (7%), Russia (5%), Canada (4%), and India (3%), followed by other countries with lower numbers (Tab. 4).

4. Asiatic lion (*Panthera leo persica*)

An estimated 383 individuals of Asiatic lions are kept in 71 facilities in 23 different countries. We found that 10% (7/71) of the facilities are not registered by a Species360 member institution and hold 10% (40/383) of the individuals. Of the total number of facilities, 45% (32/71) are accredited WAZA members, holding 36% (139/383) of individuals. Divided by regions Asiatic lions can be mostly found in the regions Southern Asia (57%) and Europe (Northern and Western Europe: 14%, Eastern Europe: 5%, Southern Europe: 4%), followed, to a lesser extent by other regions in Asia (App. Fig. C4). Overall, countries with the largest number of captive individuals are India (57%), France (7%), UK (7%), Germany, Ireland, and Singapore (3% each), followed by other countries with lower numbers (Tab. 5).

5. Clouded leopard (*Neofelis nebulosa*)

An estimated 315 individuals of clouded leopards are kept in 93 facilities in 29 different countries. Only 11% (10/93) of the facilities are not registered by any Species360 member institution and hold 7% (22/315) of the individuals. Of the total number of facilities, 45% (40/93) are accredited WAZA members, holding 45% (143/315) of individuals. Divided by regions, most clouded leopards can be found in Northern America (34%), South-Eastern Asia (20%), Northern Europe (14%), Western Europe (13%), Southern Asia (5%%), Eastern Europe (4%), and Western Asia (4%) followed, to a lesser extent, by other regions (App. Fig. C5). Countries with the largest number of captive individuals are USA (33%), Thailand (16%), UK (10%), India and Germany (5% each). France and UAE (4% each), followed by other countries with lower numbers (Tab. 6).

Table 2: Number of facilities per country keeping tigers in captivity and the number of individuals kept in these facilities. Numbers provided in parentheses refer to facilities or individuals in ZIMS and in WAZA member institutions.

Region	Country	# Facilities (ZIMS/WAZA)	# Individuals (ZIMS/WAZA)
Africa:			
Northern Africa	Egypt	1 (1/0)	5 (5/0)
Eastern Africa	Mauritius	1 (1/0)	10 (10/0)
Southern Africa	South Africa	36 (6/2)	186 (23/11)
Americas:			
Northern America	Canada	10 (10/4)	30 (30/17)
	USA	355 (118/45)	2729 (387/147)
Central America	Guatemala	3 (1/0)	35 (6/0)

South America	Mexico	7 (6/2)	27 (26/11)
	Argentina	2 (2/1)	12 (12/6)
	Brazil	2 (2/0)	9 (9/0)
	Chile	2 (2/1)	5 (5/3)
	Colombia	7 (7/0)	14 (14/0)
	Peru	1 (1/0)	3 (3/0)
	Canada	1 (1/0)	7 (7/0)
Caribbean	Dominican Republic	3 (1/0)	35 (6/0)
Asia:			
Central Asia	Kazakhstan	3 (3/1)	13 (13/9)
Eastern Asia	China	209 (0/1)	6057 (0/13)
	Japan	7 (7/4)	23 (23/13)
	South Korea	1 (1/1)	21 (21/21)
	Taiwan (Province of China)	1 (1/1)	6 (6/6)
South-Eastern Asia	Indonesia	3 (3/0)	24 (24/0)
	Lao PDR	4 (0/0)	380 (0/0)
	Malaysia	1 (1/0)	16 (16/0)
	Singapore	1 (1/1)	6 (6/6)
	Thailand	46 (8/6)	1595 (105/97)
	Vietnam	13 (1/1)	186 (11/11)
Southern Asia	India	48 (28/7)	309 (266/95)
	Nepal	3 (1/0)	7 (3/0)
	Sri Lanka	1 (1/1)	10 (10/10)
Western Asia	Armenia	1 (1/0)	2 (2/0)
	Cyprus	1 (1/0)	8 (8/0)
	Georgia	1 (1/0)	1 (1/0)
	Israel	3 (3/2)	6 (6/4)
	Turkey	3 (3/0)	9 (9/0)
	UAE	4 (4/0)	20 (20/0)
Europe:			
Northern Europe	Denmark	6 (6/4)	17 (17/13)
	Estonia	1 (1/1)	1 (1/1)
	Finland	1 (1/1)	5 (5/5)
	Ireland	3 (3/1)	10 (10/3)
	Latvia	1 (1/0)	1 (1/0)
	Lithuania	1 (1/0)	2 (2/0)
	Norway	1 (1/1)	3 (3/3)
	Sweden	7 (7/4)	19 (19/13)
	UK	38 (38/12)	112 (112/28)
Eastern Europe	Belarus	1 (1/0)	3 (3/0)
	Bulgaria	1 (1/0)	3 (3/0)
	Czech Republic	11 (11/8)	32 (32/22)
	Hungary	8 (8/3)	33 (33/16)
	Moldova	1 (1/0)	2 (2/0)
	Poland	10 (10/7)	19 (19/14)
	Romania	4 (4/0)	17 (17/0)
	Russia	12 (12/2)	37 (37/17)
	Slovakia	2 (2/0)	3 (3/0)
	Ukraine	7 (7/1)	23 (23/7)

Southern Europe	Croatia	1 (1/0)	1 (1/0)
	Greece	1 (1/0)	2 (2/0)
	Italy	9 (9/4)	24 (24/9)
	Portugal	3 (3/1)	17 (17/9)
	Serbia	2 (2/0)	4 (4/0)
	Slovenia	1 (1/1)	2 (2/2)
	Spain	10 (10/2)	29 (29/5)
Western Europe	Austria	2 (2/2)	4 (4/4)
	Belgium	4 (4/1)	7 (7/2)
	France	29 (29/6)	112 (112/36)
	Germany	52 (26/18)	135 (70/44)
	Luxembourg	1 (1/0)	2 (2/0)
	Netherlands	9 (9/3)	50 (50/10)
	Switzerland	3 (3/2)	9 (9/4)
Oceania:			
Australia & New Zealand	Australia	10 (10/4)	52 (52/11)
	New Zealand	4 (4/3)	11 (11/6)

Table 3: Number of facilities per country keeping leopards in captivity and the number of individuals kept in these facilities. Separate totals are provided for total numbers of *P. pardus* and Asian subspecies only. Numbers provided in parentheses refer to facilities or individuals in ZIMS and in WAZA member institutions.

Region	Country	# Facilities (ZIMS/WAZA)		# Individuals (ZIMS/WAZA)	
		Total leopards	*Asian sub.*	*Total leopards*	*Asian sub.*
Africa:					
Northern Africa	Egypt		-		-
		1 (1/0)		3 (3/0)	
	Morocco	1 (1/0)	-	8 (8/0)	-
Eastern Africa	Uganda	1 (1/1)	-	1 (1/1)	-
	Zimbabwe	1 (0/0)	-	1 (0/0)	-
Southern Africa	South Africa		-		-
		16 (6/2)		40 (12/2)	
Americas:					
Northern America	Canada	3 (3/2)	3 (3/2)	7 (7/6)	7 (7/6)
	USA	97 (51/15)	43 (42/12)	217 (112/33)	87 (86/29)
Central America	Guatemala	1 (1/0)	-	2 (2/0)	-
	Mexico	4 (4/1)	-	11 (11/3)	-
South America	Argentina	1 (1/1)	-	1 (1/1)	-
	Brazil	1 (1/0)	-	1 (1/0)	-
Asia:					
Central Asia	Kazakhstan	1 (1/1)	1 (1/1)	5 (5/5)	2 (2/2)
Eastern Asia	Japan	2 (2/1)	2 (2/1)	4 (4/1)	4 (4/1)
	South Korea	1 (1/1)	1 (1/1)	4 (4/4)	4 (4/4)
	Taiwan (Province of China)	1 (1/1)	1 (1/1)	1 (1/1)	1 (1/1)
South-Eastern Asia	Cambodia	1 (0/0)	-	1 (0/0)	-
	Indonesia	3 (3/0)	2 (2/0)	6 (6/0)	5 (5/0)

	Lao PDR	2 (1/0)	-	2 (1/0)	-
	Malaysia	1 (1/0)	1 (1/0)	7 (7/0)	2 (2/0)
	Singapore	1 (1/1)	1 (1/1)	4 (4/4)	4 (4/4)
	Thailand	9 (6/5)	2 (2/1)	47 (14/8)	4 (4/1)
	Vietnam	11 (1/1)	1 (1/1)	13 (3/3)	2 (2/2)
Southern Asia	India	48 (29/7)	2 (2/1)	346 (254/93)	21 (21/11)
	Nepal	3 (1/0)	-	7 (4/0)	-
	Sri Lanka	1 (1/1)	1 (1/1)	9 (9/9)	9 (9/9)
Western Asia	Georgia	1 (1/0)	1 (1/0)	2 (2/0)	2 (2/0)
	Israel	3 (3/2)	2 (2/1)	5 (5/4)	4 (4/3)
	Saudi Arabia	1 (1/0)	1 (1/0)	13 (13/0)	13 (13/0)
	Turkey	2 (2/0)	2 (2/0)	4 (4/0)	4 (4/0)
	UAE	5 (5/0)	5 (5/0)	57 (57/0)	50 (50/0)
Europe:					
Northern Europe	Denmark	2 (2/1)	2 (2/1)	4 (4/2)	4 (4/2)
	Estonia	1 (1/1)	1 (1/1)	3 (3/3)	3 (3/3)
	Finland	1 (1/1)	1 (1/1)	2 (2/2)	2 (2/2)
	Ireland	1 (1/0)	1 (1/0)	2 (2/0)	2 (2/0)
	Sweden	3 (3/2)	3 (3/2)	13 (13/10)	13 (13/10)
	UK	12 (12/4)	10 (10/4)	36 (36/13)	33 (33/13)
Eastern Europe	Belarus	1 (1/0)	1 (1/0)	3 (3/0)	3 (3/0)
	Bulgaria	1 (1/0)	1 (1/0)	1 (1/0)	1 (1/0)
	Czech Republic	8 (8/7)	8 (8/7)	22 (22/20)	22 (22/20)
	Hungary	7 (7/3)	7 (7/3)	20 (20/9)	19 (19/8)
	Moldova	1 (1/0)	1 (1/0)	2 (2/0)	2 (2/0)
	Poland	5 (5/3)	5 (5/3)	11 (11/8)	11 (11/8)
	Romania	2 (2/0)	2 (2/0)	3 (3/0)	3 (3/0)
	Russia	9 (9/2)	8 (8/2)	31 (31/17)	27 (27/17)
	Slovakia	2 (2/1)	2 (2/1)	5 (5/2)	4 (4/2)
	Ukraine	7 (7/1)	6 (6/1)	15 (15/3)	14 (14/3)
Southern Europe	Croatia	1 (1/1)	1 (1/1)	1 (1/1)	1 (1/1)
	Greece	1 (1/0)	1 (1/0)	4 (4/0)	4 (4/0)
	Italy	6 (6/3)	2 (2/2)	18 (18/9)	8 (8/8)
	Portugal	1 (1/1)	1 (1/1)	2 (2/2)	2 (2/2)
	Serbia	1 (1/0)	1 (1/0)	1 (1/0)	1 (1/0)
	Slovenia	1 (1/1)	1 (1/1)	2 (2/2)	2 (2/2)
	Spain	8 (8/1)	8 (8/1)	22 (22/2)	21 (21/2)
Western Europe	Austria	2 (2/2)	2 (2/2)	5 (5/5)	5 (5/5)
	Belgium	5 (5/2)	4 (4/2)	10 (10/3)	7 (7/2)
	France	21 (21/5)	17 (17/5)	59 (59/14)	47 (47/12)
	Germany	27 (17/14)	25 (17/14)	60 (37/29)	53 (37/29)
	Netherlands	6 (6/3)	5 (5/3)	17 (17/7)	13 (13/7)
	Switzerland	2 (2/1)	2 (2/1)	5 (5/2)	5 (5/2)

Table 4: Number of facilities per country keeping snow leopards in captivity and the number of individuals kept in these facilities. Numbers provided in parentheses refer to facilities or individuals in ZIMS and in WAZA member institutions.

Region	Country	# Facilities (ZIMS/WAZA)	# Individuals (ZIMS/WAZA)
Americas:			
Northern America	Canada	6 (6/4)	17 (17/10)
	USA	68 (60/17)	165 (150/50)
Central America	Mexico	1 (1/1)	2 (2/2)
South America	Argentina	1 (1/1)	1 (1/1)
	Chile	1 (1/0)	1 (1/0)
Asia:			
Central Asia	Kazakhstan	1 (1/0)	1 (1/0)
Eastern Asia	China	1 (0/0)	9 (0/0)
	Japan	3 (3/1)	9 (9/6)
South-Eastern Asia	Indonesia	1 (1/0)	1 (1/0)
Southern Asia	India	2 (2/1)	12 (12/11)
Western Asia	UAE	1 (1/0)	3 (3/0)
Europe:			
Northern Europe	Estonia	1 (1/1)	2 (2/2)
	Finland	2 (2/1)	4 (4/2)
	Ireland	1 (1/1)	2 (2/2)
	Lithuania	1 (1/0)	4 (4/0)
	Sweden	3 (3/2)	6 (6/4)
	UK	13 (13/6)	31 (31/14)
Eastern Europe	Czech Republic	4 (4/3)	9 (9/7)
	Hungary	3 (3/2)	6 (6/4)
	Moldova	1 (1/0)	2 (2/0)
	Poland	6 (6/4)	10 (10/7)
	Romania	2 (2/0)	3 (3/0)
	Russia	6 (6/2)	20 (20/13)
	Ukraine	1 (1/1)	1 (1/1)
Southern Europe	Italy	4 (4/3)	10 (10/6)
	Portugal	1 (1/0)	2 (2/0)
	Spain	1 (1/0)	2 (2/0)
Western Europe	Austria	1 (1/1)	3 (3/3)
	Belgium	3 (3/1)	4 (4/1)
	France	19 (19/7)	42 (42/15)
	Germany	14 (12/8)	42 (33/23)
	Switzerland	3 (3/3)	6 (6/6)
Oceania:			
Australia & New Zealand	Australia	3 (3/1)	6 (6/3)

Table 5: Number of facilities per country keeping Asiatic lions in captivity and the number of individuals kept in these facilities. Numbers provided in parentheses refer to facilities or individuals in ZIMS and in WAZA member institutions.

Region	Country	# Facilities (ZIMS/WAZA)	# Individuals (ZIMS/WAZA)
Asia:			
Eastern Asia	Japan	2 (2/2)	5 (5/5)
South-Eastern Asia	Malaysia	1 (1/0)	4 (4/0)
	Singapore	1 (1/1)	10 (10/10)
Southern Asia	India	23 (16/5)	219 (179/47)
Western Asia	Israel	1 (1/1)	3 (3/3)
Europe:			
Northern Europe	Denmark	1 (1/1)	3 (3/3)
	Estonia	1 (1/1)	3 (3/3)
	Finland	1 (1/1)	3 (3/3)
	Ireland	2 (2/1)	11 (11/5)
	Sweden	1 (1/1)	7 (7/7)
	UK	8 (8/5)	28 (28/14)
Eastern Europe	Czech Republic	2 (2/2)	5 (5/5)
	Hungary	2 (2/1)	6 (6/3)
	Poland	2 (2/2)	5 (5/5)
	Russia	1 (1/1)	3 (3/3)
Southern Europe	Italy	1 (1/1)	4 (4/4)
	Portugal	1 (1/0)	4 (4/0)
	Spain	4 (4/0)	8 (8/0)
Western Europe	Belgium	1 (1/0)	5 (5/0)
	France	9 (9/1)	28 (28/2)
	Germany	4 (4/3)	11 (11/9)
	Netherlands	1 (1/1)	4 (4/4)
	Switzerland	1 (1/1)	4 (4/4)

Table 6: Number of facilities per country keeping clouded leopards in captivity and the number of individuals kept in these facilities. Numbers provided in parentheses refer to facilities or individuals in ZIMS and in WAZA member institutions.

Region	Country	# Facilities (ZIMS/WAZA)	# Individuals (ZIMS/WAZA)
Americas:			
Northern America	Canada	1 (1/1)	4 (4/4)
	USA	32 (26/12)	103 (87/34)
Asia:			
Eastern Asia	Japan	1 (1/1)	6 (6/6)
	Taiwan (Province of China)	1 (1/1)	2 (2/2)
South-Eastern Asia	Indonesia	3 (3/0)	4 (4/0)
	Malaysia	1 (1/0)	4 (4/0)
	Singapore	1 (1/1)	3 (3/3)
	Thailand	4 (4/4)	51 (51/51)
	Vietnam	1 (1/1)	2 (2/2)
Southern Asia	India	5 (3/1)	16 (14/1)
Western Asia	UAE	3 (3/0)	13 (13/0)
Europe:			
Northern Europe	Denmark	1 (1/0)	2 (2/0)
	Norway	1 (1/0)	1 (1/0)
	Sweden	1 (1/1)	7 (7/7)
	UK	6 (6/0)	33 (33/0)
Eastern Europe	Czech Republic	4 (4/4)	6 (6/6)
	Hungary	1 (1/1)	2 (2/2)
	Poland	1 (1/0)	1 (1/0)
	Russia	1 (1/1)	2 (2/2)
	Slovakia	1 (1/1)	1 (1/1)
	Ukraine	1 (1/1)	1 (1/1)
Southern Europe	Italy	2 (2/1)	5 (5/3)
	Portugal	1 (1/1)	2 (2/2)
	Spain	1 (1/0)	3 (3/0)
Western Europe	Belgium	2 (2/1)	6 (6/2)
	France	7 (7/3)	14 (14/6)
	Germany	6 (4/3)	15 (11/8)
	Luxembourg	1 (1/0)	1 (1/0)
	Netherlands	2 (2/0)	5 (5/0)

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Acknowledgements:

Appendix

For easier interpretation of the data, additional information and figures are included in this section, which is additional to the report. This section was developed with additional resources provided by the Species360 Conservation Science Alliance.

A: Zoos and Aquariums Associations that are members of Species360

Box 1. Zoos and Aquariums Associations members of Species360.
Facilities belonging to the following associations are included in this report.

(WAZA) World Association of Zoos and Aquariums, (ABWAK) Association of British and Irish Wild Animal Keepers, (ACOPAZOA) Asociación Columbiana de Parques Zoológicos y Acuarios, (AEZA) Asociación Ecuatoriana de Zoológicos y Acuarios (Ecuador), (AFdPZ) Association Française des Parcs Zoologiques, (AIZA) Iberian Association of Zoos & Aquaria, (ALPZA) Asociación Latinoamericana de Parques Zoológicos y Acuarios, (ALVEFAS) Latin American Association of Zoo & Wildlife Veterinarians, (AMACZOOA) Asociación. Mesoamericana y del Caribe de Zoológicos y Acuarios(Caribbean), (APZA) Associação Portuguesa de Zoos e Aquária, (AVZA) Asociación Venezolana de Parques Zoológicos y Acuarios (Venezuela), (AZA) Association of Zoos & Aquariums, (AZAA) Arabian Zoo and Aquarium Association, (AZCARM) Asociación de Zoológicos Criaderos y Acuarios de México, (BIAZA) British and Irish Association of Zoos and Aquariums, (CAZA) Canadian Accredited Zoos and Aquariums , (CZA) Central Zoo Authority of India (CZA) Central Zoo Authority of India , (DAZA) Danish Association of Zoos and Aquaria, (EARAZA) Eurasian Association of Zoos & Aquariums , (EAZA) European Association of Zoos & Aquaria, (EAZWV) European Association of Zoo and Wildlife Veterinarians, (FAZA) Florida Association of Zoos and Aquariums , (INPA) Israel Nature & Parks Authority, (IZA) Israeli Zoo Association, (IZE) International Zoo Educators, (JAZA) Japanese Association of Zoos and Aquariums, (KAZA) Korean Zoological Association, (MAZPA) Malaysian Association of Zoological Parks & Aquaria, (NVD) Nederlandse Vereniging van Dierentuinen, (PAAZA) Pan-African Association of Zoos and Aquariua. (PKBSI) Indonesian Zoo & Aquarium Association, (PZDA) Polish Association of Directors of Zoos & Aquaria, (RUZA) Russian Union of Zoos and Aquariums, (RZAF) Romanian Zoo & Aquarium Federation, (SAZA) Swedish Association of Zoological Parks & Aquaria, (SEAZA) South-East Asian Zoos Association, (SZB) Sociedade de Zoologicos e Aquarios do Brasil, (UAZA) Ukranian Association of Zoos & Aquariums, (UZAR) Union of Zoos & Aquariums in Russia, (UIZA) Unione Italiana Giardini Zoologici e Acquari, (VdZ) Verband der Zoologischen Gärten – Association of German Zoos, (ZAA) Zoological Association of America, (ZPO) Thai Zoological Park Organization Under The Royal Patronage of HM The King, (ZRA) Zoological Registrars Association
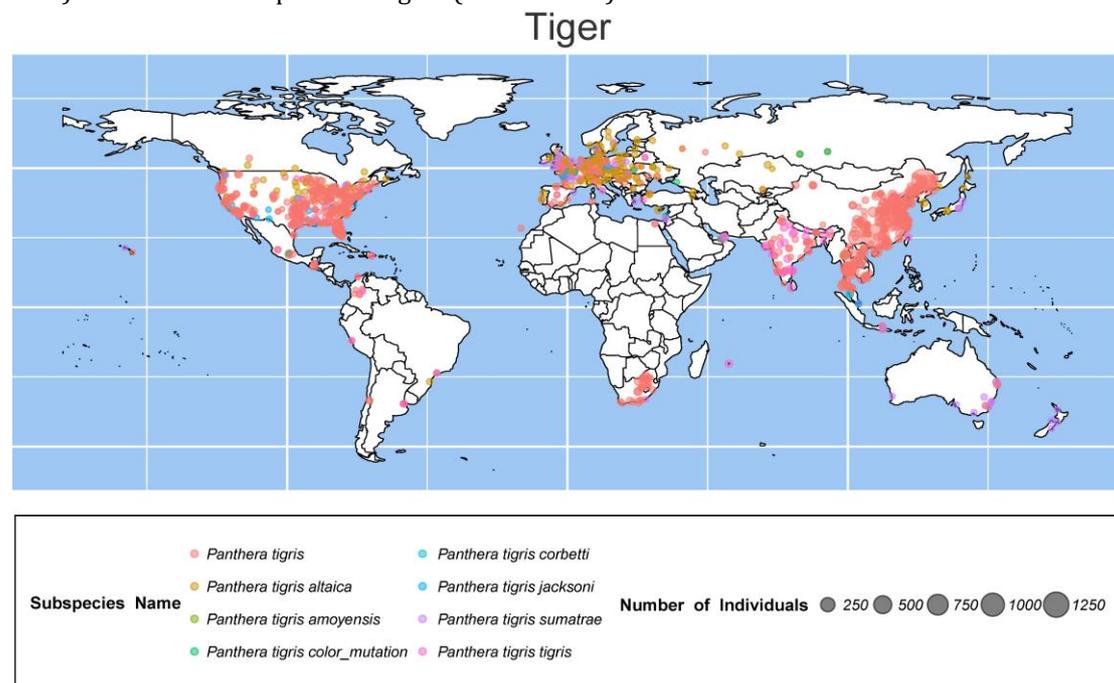
B: Data for Thailand

Table A1: Comparison of numbers of Asian big cats provided by the national CITES authority and the Environmental Investigation Agency (EIA) and the Humane Society International (HIS). Numbers refer to live animals.
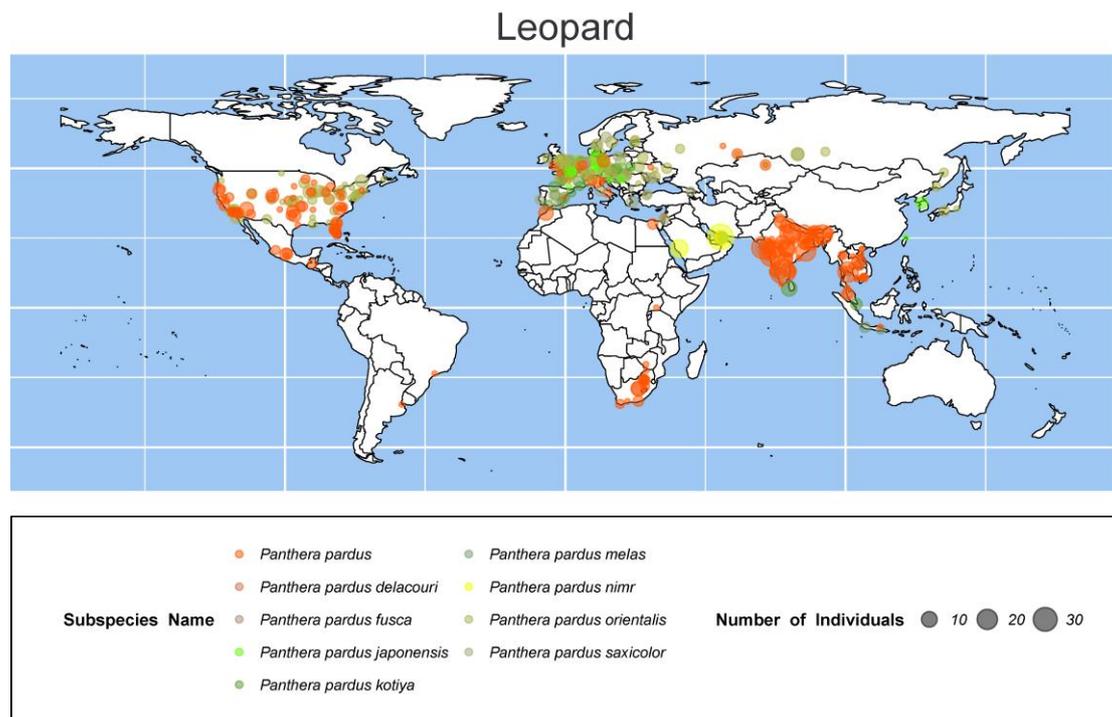
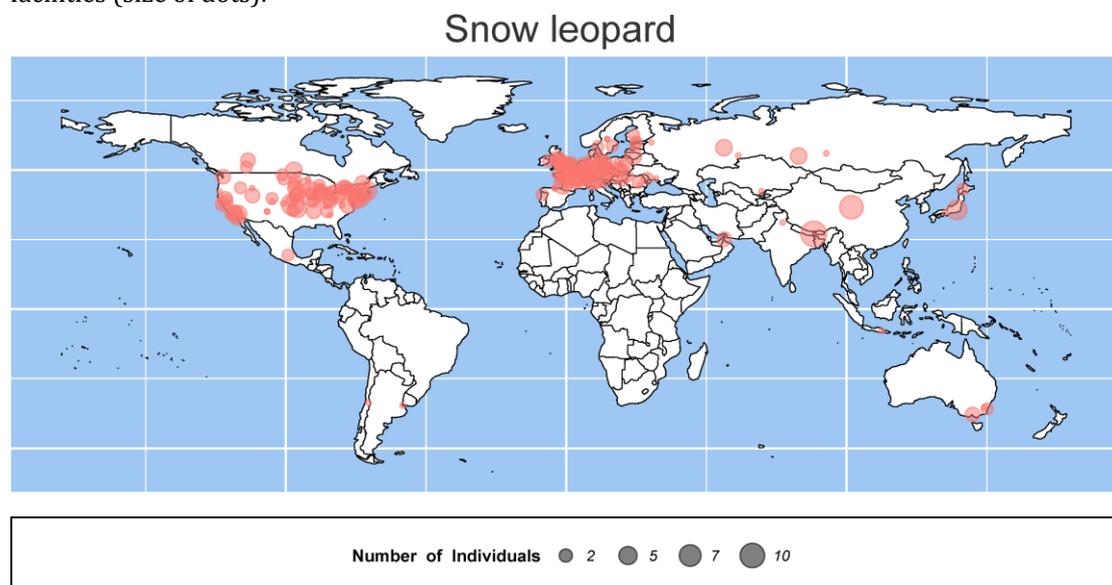| Common name	Scientific name	Government-held (CITES MA)	Privately-held (CITES MA)	Total (CITES MA)	Total (EIA/HIS)
Clouded leopard	*Neofelis nebulosa*	48	5	53	51
Asiatic lion	*Panthera leo persica*				
Leopard	*Panthera pardus*	24	11	35	42
Tiger	*Panthera tigris*	182	1464	1646	1517
Amur tiger	*P. tigris altaica*	6		6	6
Corbett's tiger	*P. tigris corbetti*	24		24	29
Bengal tiger	*P. tigris tigris*	12		12	8
White tiger	*P. tigris tigris*	10		10	
Snow leopard	*Uncia uncia*				

C: World maps of Asian big cats

Figure C1: World map of captive tigers. The map shows the geographical distribution of facilities keeping tigers in captivity (dots) and the number of individuals kept at these facilities (size of dots) for different subspecies of tigers (color of dots).

Figure C2: World map of captive leopards. The map shows the geographical distribution of facilities keeping leopards in captivity (dots) and the number of individuals kept at these facilities (size of dots) for different subspecies of leopards (color of dots).
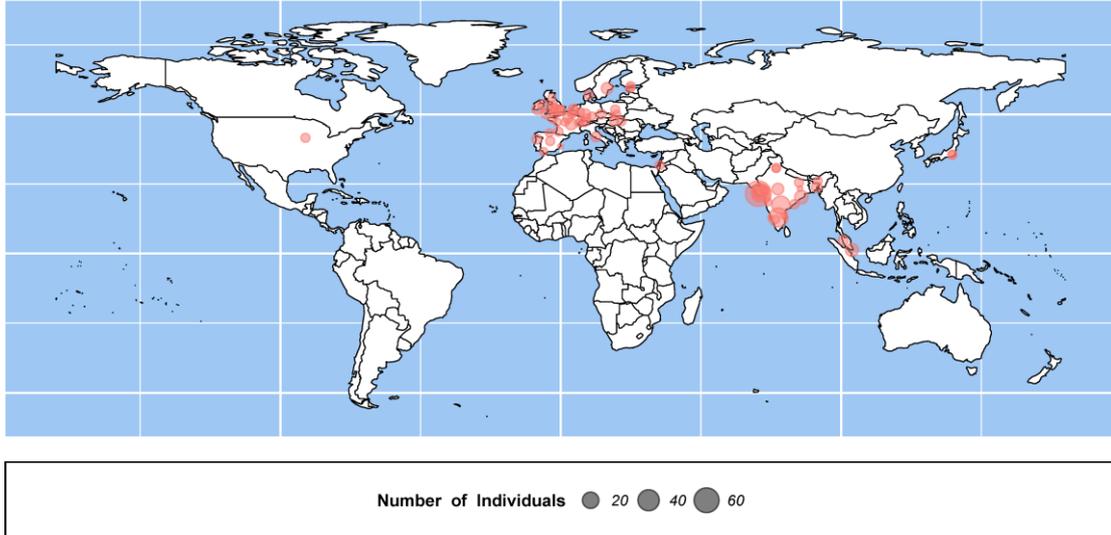

Leopard

Figure C3: World map of captive snow leopards. The map shows the geographical distribution of facilities keeping snow leopards in captivity (dots) and the number of individuals kept at these facilities (size of dots).

Snow leopard

Figure C4: World map of captive Asiatic lions. The map shows the geographical distribution of facilities keeping Asiatic lions in captivity (dots) and the number of individuals kept at these facilities (size of dots).

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Asiatic lion

Number of Individuals ● 20 ● 40 ● 60

Figure C5: World map of captive clouded leopards. The map shows the geographical distribution of facilities keeping clouded leopards in captivity (dots) and the number of individuals kept at these facilities (size of dots) for the two different species of clouded leopards (color of dots).

Clouded leopard

Number of Individuals ● 10 ● 20 ● 30 ● 40