

Supplementary Table 1. Outcome of official animal welfare controls of circuses in Sweden, 2010-2014

Control point	Variable	Description	Inspection outcome				Total Inspections	% Non-compliant ¹
			Not applicable	No control	Compliant	Non-compliant		
1	yearlycontrol	An inspection has been made under 36a § of the Animal Welfare Ordinance - A circus that exhibits animals to the public shall be controlled once a year	1	0	30	2	33	6.3%
2	wastecollection	Collection of waste in animal areas is satisfactory	1	3	37	1	42	2.6%
3	<i>generalcondition</i>	The requirements for the care of animals (hooves, claws grooming, etc.) are met	1	4	33	4	42	10.8%
4	<i>bodycondition</i>	Animal body condition is acceptable	1	1	30	1	33	3.2%
5	<i>cleanliness</i>	The animals are kept satisfactorily clean	1	1	31	0	33	0.0%
6	sickanimals	Sick / injured animals treated appropriately. Animals need special care can be taken care of in a designated area	2	8	23	0	33	0.0%
7	documentation	Requirements record keeping are met	1	19	20	2	42	9.1%
8	space	Spaces for animals under current measurement regulations	1	7	23	11	42	32.4%
9	tethering	The requirements around the tethering of animals are met	11	6	24	1	42	4.0%

10	exercise	The requirements for the exercise area of the animals is met	1	6	26	9	42	25.7%
11	stabling	Requirements of stables / display space is met	1	23	18	0	42	0.0%
12	shelter	Animals can get protection against cold, heat, sunlight, rain and wind	1	4	37	0	42	0.0%
13	beddingquality	The requirements for the use bedding and bedding quality are met	1	6	33	2	42	5.7%
14	ventilation	Ventilation requirements are met.	5	12	24	1	42	4.0%
15	interiordesign	The requirements for the design of the interior regarding injury risks etc are met	1	7	28	6	42	17.6%
16	foodwater	The requirements for food and water are met	1	5	36	0	42	0.0%
17	transport	Transport requirements are met	1	19	15	7	42	31.8%
18	otherdeficiency	No other deficiencies found during inspection	0	0	27	6	33	18.2%
Total			32	131	495	53	711	9.7%

CP-3, 4, and 5 written in bold are animal-based. ^a The percentage of non-compliance was calculated as the number of non-compliant inspections divided by the number of both compliant and non-compliant inspections, multiplied by 100.

Supplementary Table 2. Outcome of official animal welfare controls of zoos in Sweden, 2010-2014

Control point	Variable	Description	Control outcome				Total Inspections	% Non-compliant Controls ^a
			Not applicable	No control	Compliant	Non-compliant		
1	permit	Holds a permit to exhibit animals at the facility under 37 § Animal Welfare Ordinance.	45	24	173	76	318	30.5%
2	personnel	Personnel responsible for animal husbandry and care of the animals have adequate training and/or experience in relevant species: Veterinarian, Zoologist	18	60	229	11	318	4.6%
3	maintenance	Daily supervision and maintenance provided for all animals	1	34	273	10	318	3.5%
4	<i>socialcontact</i>	The requirement for social contact including mammals and birds kept in groups is met	54	37	189	38	318	16.7%
5	<i>generalcondition</i>	Hooves, claws and wool are regularly inspected and trimmed / cut as needed.	68	69	162	19	318	10.5%
6	<i>bodycondition</i>	The animals' body condition is acceptable	9	66	230	13	318	5.3%
7	<i>cleanliness</i>	The animals are kept satisfactorily clean	19	44	251	4	318	1.6%
8	sickanimals	Sick / injured animals are treated appropriately. Animals need special care can be taken care of in designated area	20	71	211	16	318	7.0%
9	enrichment	The animals are kept in an	2	18	225	73	318	24.5%

		appropriate and enriched environment						
10	space	Areas where the animal / animals are kept are an adequate size	4	40	180	94	318	34.3%
11	interiordesign	The requirements for the design of the interior regarding injury risks, etc. are fulfilled	5	31	240	42	318	14.9%
12	spacedesign	Space where the animal / animals are kept fulfil the design conditions specified in regulation	2	47	218	51	318	19.0%
13	pettingenclosure	The retreat space available for animals that the public are able to touch and pet	122	43	134	19	318	12.4%
14	climate	The animals are housed in a climate that is customised to each animal's need, and exposed only occasionally for air pollution	7	46	247	18	318	6.8%
15	artificiallight	Artificial lighting is so that supervision and care can be done without difficulty and the ability to dim lights at night	28	57	225	8	318	3.4%
16	naturallight	The requirement for windows for admitting daylight is fulfilled for species where this is required	83	42	186	7	318	3.6%
17	safedesign	Windows, lighting and electrical systems that animals can reach are protected or configured such that there is no injury risk	53	60	179	26	318	12.7%
18	noiselevels	Noise in the enclosure is at an acceptable level and frequency	32	87	192	7	318	3.5%

19	feedwater	The animals are given the opportunity for peaceful and natural intake of feed and water	3	71	242	2	318	0.8%
20	qualityfeed	The animals are given feed that ensure adequate, comprehensive and balanced nutrition	6	73	229	10	318	4.2%
21	qualitywater	The requirements for drinking water are met	29	52	223	14	318	5.9%
22	storage	The storage areas are kept satisfactorily clean and manure handling / cleaning is done so that good hygiene is maintained	14	36	247	21	318	7.8%
23	bedding	The requirements for bedding and nesting materials are met	35	52	209	22	318	9.5%
24	cleaning	Cleaning of equipment, etc. is done so that the spread of infection is prevented	22	138	155	3	318	1.9%
25	outdoors	The requirements for keeping animals outdoors are met	90	31	171	26	318	13.2%
26	exercise	The requirements for pasture, exercise areas, ground surfaces, driving routes and driving, movement and fencing are met	85	42	175	16	318	8.4%
27	wingclipping	The requirements for clipped wings of birds is met	201	99	18	0	318	0.0%
28	surgery	Surgical procedures are performed in an acceptable manner	51	157	110	0	318	0.0%
29	breeding	Animals involved in breeding do not suffer	78	139	99	2	318	2.0%
30	performance	Animals in performances are not	209	76	33	0	318	0.0%

		exposed to risk of injury, danger, pain or unnecessary stress						
31	otherdeficiency	No other deficiencies found	0	0	206	61	267	22.8%
Total			1,395	1,842	5,861	709	9,807	10.8%

CP-4, 5, 6 and 7 written in bold are animal-based. ¹The percentage of non-compliance was calculated as the number of non-compliant inspections divided by the number of both compliant and non-compliant inspections, multiplied by 100.

Supplementary Table 3. Principal component analysis of resource- and management-based control points, with orthogonal varimax rotation, based on official animal welfare inspections of circuses in Sweden, 2010-2014 (blanks are absent (loading) <0.3)

Variable	Component 1	Component 2	Component 3	Component 4	Component 5
space	0.6066				
exercise	0.5954				
yearlycontrol			-0.7307		
transport			0.4663		
wastecollection		0.3774			
beddingquality		0.4762			
ventilation		-0.6472			
interiordesign		0.4061			
documentation				-0.7574	
tethering					-0.7786
otherdeficiency	0.3311		-0.3314		0.3400

Supplementary Table 4. Principal component analysis of resource- and management-based control points, with orthogonal varimax rotation, based on official animal welfare inspections of zoos in Sweden, 2010-2014 (blanks are absent (loading) <0.3)

Variable	Component 1	Component 2	Component 3	Component 4	Component 5
enrichment	0.4123				
space	0.3605				
spacedesign	0.5360				
bedding	0.4134				
cleaning	0.3041		-0.3888		
qualitywater		0.6381			
storage		0.4841			
outdoors		0.3130	0.3094		
exercise			0.5739		
permit			0.4529		
interiordesign			0.3691		
systemaccess				0.6168	
qualityfeed				-0.6720	
sickanimals					0.6090
otherdeficiency					0.5842