

Supplementary information

Preliminary Study of Scent Rolling in Captive Wolves (*Canis lupus* L. 1758) in Response to Olfactory Enrichment

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Table S1. Descriptive statistics of the numbers of responses of captive wolves to various odours from 2021.

	<i>Guinea pig faeces</i>	<i>Vanilla</i>	<i>Oregano</i>	<i>Deer/mouflon faeces</i>	<i>Cinnamon</i>	<i>Llama faeces</i>	<i>Curry</i>	<i>Sheep wool</i>
<i>Number of responses</i>	25	17	9	23	15	26	18	22
<i>Minimum</i>	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
<i>25% Percentile</i>	1.000	1.000	2.000	1.000	1.000	1.000	1.000	1.000
<i>Median</i>	2.000	2.000	3.000	2.000	2.000	2.000	2.000	2.000
<i>75% Percentile</i>	2.000	3.000	4.000	4.000	2.000	3.000	3.000	3.000
<i>Maximum</i>	3.000	12.00	6.000	7.000	4.000	5.000	4.000	5.000
<i>Range</i>	2.000	11.00	5.000	6.000	3.000	4.000	3.000	4.000
<i>Mean</i>	1.760	2.412	3.000	2.870	1.800	2.269	1.944	1.955
<i>Std. Deviation</i>	0.7234	2.647	1.500	1.866	0.9411	1.402	0.9984	1.133
<i>Std. Error of Mean</i>	0.1447	0.6420	0.5000	0.3891	0.2430	0.2749	0.2353	0.2415
<i>Sum</i>	44.00	41.00	27.00	66.00	27.00	59.00	35.00	43.00

Table S2. Descriptive statistics of time [s] spent by captive wolves responding to various odours.

	<i>Guinea pig faeces</i>	<i>Vanilla</i>	<i>Oregano</i>	<i>Deer/mouflon faeces</i>	<i>Cinnamon</i>	<i>Llama faeces</i>	<i>Curry</i>	<i>Sheep wool</i>
<i>Number of responses</i>	25	17	9	23	15	26	18	22
<i>Minimum</i>	2.000	2.000	7.000	2.000	4.000	2.000	5.000	2.000
<i>25% Percentile</i>	5.000	6.000	12.50	12.00	12.00	3.750	13.75	7.750
<i>Median</i>	15.00	12.00	20.00	24.00	16.00	23.50	24.00	13.50
<i>75% Percentile</i>	25.00	27.50	30.00	51.00	33.00	69.75	39.00	29.75
<i>Maximum</i>	60.00	90.00	40.00	123.0	64.00	197.0	120.0	93.00
<i>Range</i>	58.00	88.00	33.00	121.0	60.00	195.0	115.0	91.00
<i>Mean</i>	18.48	23.76	21.89	36.83	22.53	42.00	29.89	21.55
<i>Std. Deviation</i>	15.83	28.57	10.81	34.03	16.01	50.26	26.67	21.76
<i>Std. Error of Mean</i>	3.167	6.930	3.603	7.096	4.134	9.858	6.286	4.640
<i>Sum</i>	462.0	404.0	197.0	847.0	338.0	1092	538.0	474.0

Table S3. The numbers of different behavioural responses of captive wolves (the data obtained for all 4 individuals pooled together) to various odours (the data for all 8 odours pooled).

	<i>Air sniffing</i>	<i>Pawing</i>	<i>Scent rolling</i>	<i>Scattering</i>	<i>Sniffing</i>	<i>Tearing</i>	<i>Urine marking</i>
<i>Number of responses</i>	33	4	12	27	46	21	11
<i>Minimum</i>	1	1	1	1	1	1	1
<i>25% Percentile</i>	1	1	2.25	1	1	1.5	1
<i>Median</i>	1	1	3	2	2	2	1
<i>75% Percentile</i>	2.5	1	4	2	3	3	2
<i>Maximum</i>	6	1	16	4	7	5	3
<i>Range</i>	5	0	15	3	6	4	2
<i>Mean</i>	1.848	1	4.083	1.852	2.413	2.429	1.455
<i>Std. Deviation</i>	1.149	0	3.895	0.864	1.613	1.165	0.6876
<i>Std. Error of Mean</i>	0.2	0	1.125	0.1663	0.2379	0.2542	0.2073
<i>Sum</i>	61	4	49	50	111	51	16

Table S4. Time [s] devoted by captive wolves to different behavioural responses to various odours.

	<i>Air sniffing</i>	<i>Pawing</i>	<i>Scent rolling</i>	<i>Scattering</i>	<i>Sniffing</i>	<i>Tearing</i>	<i>Urine marking</i>
<i>Number of responses</i>	33	4	12	27	46	21	11
<i>Minimum</i>	3	2	9	2	2	2	3
<i>25% Percentile</i>	9	2	12.75	7	13.75	10	4
<i>Median</i>	19	2.5	33	14	28	25	5
<i>75% Percentile</i>	32.5	4.5	84.5	20	50.25	70.5	7
<i>Maximum</i>	78	5	120	60	96	197	12
<i>Range</i>	75	3	111	58	94	195	9
<i>Mean</i>	22.82	3	47	16.26	33.76	46.19	5.545
<i>Std. Deviation</i>	17.27	1.414	39.91	13.04	26.57	54.55	2.622
<i>Std. Error of Mean</i>	3.006	0.7071	11.52	2.51	3.918	11.9	0.7904
<i>Sum</i>	753	12	564	439	1553	970	61