

Insights on morbidity causes of Raptors in Greece through ANIMA rehabilitation center admitted cases

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Introduction

A retrospective study was conducted using the medical records of all raptor species admitted to ANIMA, a wildlife rehabilitation NGO based in Athens, from 2013 to 2020. For the present study on morbidity causes of raptors in Greece and their incidence in the wild populations, data for Strigiformes, Falconiformes and Accipitriformes admitted during 2013-2020 were analyzed, as data for that period were more accurate. In total 5601 cases were examined (Figure 1). For the cumulative incidences in the wild populations, the study is based on the official estimations of wild populations of raptors during 2013-2018 as reported at the European Environment Information and Observation Network (EIONET).

Materials & Methods

The study is focused on raptor species both diurnal and nocturnal including cases from 35 species (3 Accipitriformes, 25 Falconiformes and 7 Strigiformes). Causes of morbidity included are shown in Figure 2. The causes of Trauma are further analyzed in Figure 3. The yearly percentage of the species' population affected was calculated as, cases/population size*1000/8years, termed Cumulative Incidence - CI.

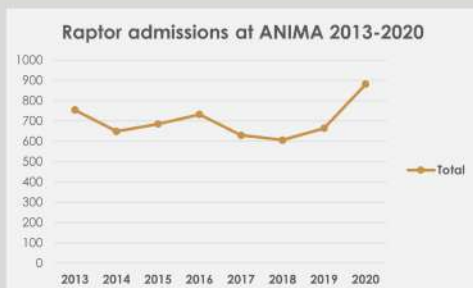


Figure 1: Raptor admissions at ANIMA per year, years 2013-2020

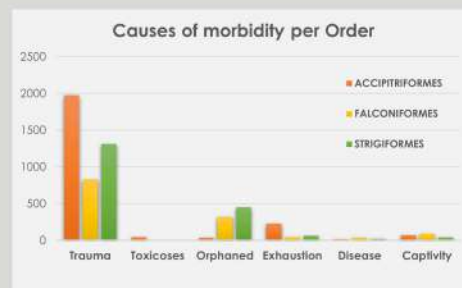


Figure 2: Admitted cases of different morbidity causes per Order

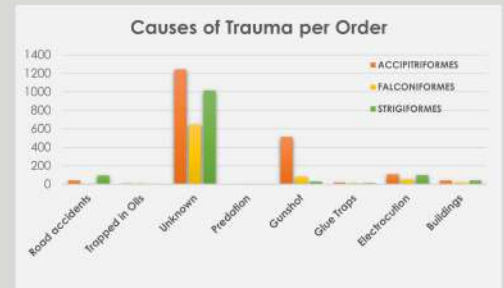


Figure 3: Different causes of Trauma of admitted cases per Order

Results

Primary causes of morbidity for raptors appeared to be Trauma (73,6%) and Orphaned birds (14,4%) while other causes of morbidity represented less than 5% of the total. Cumulative incidences seen in Table 1, give the first insights on morbidity causes of wild raptor populations in Greece. The values on Table 1 indicate the number of individuals suffering each cause of morbidity out of a sample of 1000 individuals of the species per year. Highlighted values are interesting for further studies as they present threats each species could be facing. A close look at Table 1 indicates high electrocution values for Bubo bubo, high gunshot values for Buteo buteo and Accipiter nisus, while toxicoses remains a serious cause of morbidity for Gyps fulvus as previous studies indicate (Xirouchakis et al. 2000).

Species	Estimated population size (EIONET)	Cases	Reason of Admission														
			Overall Reasons									Cause of Trauma					
			Captivity	Disease	Exhaustion	Orphaned	Toxicoses	Trauma Total Cases	Buildings	Electrocution	Glue Traps	Gunshot	Predation	Unknown	Trapped in Oils	Road accidents	
Tyto alba	9000	Cases	281	14	2	12	36	0	217	0	15	3	6	0	185	2	7
		CI	3.10	0.19	0.03	0.17	0.50	0.00	3.01	0.00	0.21	0.04	0.07	0.00	2.57	0.03	0.10
Otus scops	25000	Cases	454	13	4	19	184	0	434	29	0	1	0	5	373	3	23
		CI	3.28	0.07	0.03	0.10	0.92	0.00	2.17	0.15	0.00	0.01	0.00	0.03	1.87	0.02	0.12
Gyps fulvus	800	Cases	143	1	0	40	0	33	49	0	11	0	1	0	57	0	0
		CI	22.34	0.16	0.00	6.25	0.00	5.14	10.78	0.00	1.72	0.00	0.14	0.00	8.91	0.00	0.00
Falco tinnunculus	22000	Cases	810	77	30	31	159	0	513	19	43	12	43	2	380	7	7
		CI	4.60	0.44	0.17	0.18	0.90	0.00	2.91	0.11	0.24	0.07	0.24	0.01	2.14	0.04	0.04
Falco naumanni	14200	Cases	323	7	7	8	160	0	141	1	6	0	7	0	125	1	1
		CI	2.84	0.06	0.06	0.07	1.41	0.00	1.24	0.01	0.05	0.00	0.04	0.00	1.10	0.01	0.01
Buteo buteo	12000	Cases	1407	59	15	149	32	8	1144	1	82	7	365	1	457	4	27
		CI	14.44	0.41	0.16	1.55	0.33	0.08	11.92	0.01	0.85	0.07	3.80	0.01	4.84	0.04	0.28
Bubo bubo	1000	Cases	183	2	2	7	5	0	167	0	77	0	11	0	44	1	12
		CI	22.88	0.25	0.25	0.88	0.63	0.00	20.88	0.00	9.43	0.00	1.38	0.00	8.25	0.13	1.50
Athene noctua	20000	Cases	508	12	6	27	128	0	335	11	3	8	2	3	262	2	44
		CI	3.18	0.08	0.04	0.17	0.80	0.00	2.09	0.07	0.02	0.05	0.01	0.02	1.64	0.01	0.28
Asio otus	7000	Cases	165	2	7	0	58	0	98	1	1	0	11	0	81	0	4
		CI	2.95	0.04	0.13	0.00	1.04	0.00	1.75	0.02	0.02	0.00	0.20	0.00	1.45	0.00	0.07
Accipiter nisus	4000	Cases	580	5	1	6	4	0	544	40	3	12	104	0	391	0	12
		CI	18.13	0.16	0.03	0.19	0.13	0.00	17.43	1.25	0.09	0.38	3.31	0.00	12.22	0.00	0.38

Table 1: Cumulative incidences of each morbidity cause per species

Discussion

Through this study the importance of gathering data from all wildlife rehabilitation centers is highlighted, along with the need for accessible monitoring data for Raptors in Greece. The availability of this combination of data could help determine threats these species are facing. The use of wildlife rescue center data could also give insight to conservation issues and threats for more taxa, as for example data on raptors only represent 17% of the total medical records of wildlife admitted to ANIMA during the period of the study.