Study of the response to levels of difficulty in obtaining food for predatory birds in rehabilitation centers for wild animals

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Introduction and Objectives

The animal welfare can be defined in different ways according to the emphasis that is placed in the different characteristics of animals. (Duncan & Fraser, 1997). However the fundamental goals of animal welfare can be summarized in: 1) Keep the animal in good physical health and 2) Keep the animal in good psychological health (Young, 2003).

An approach that works both components of animal welfare is environmental enrichment (Forthman-Quick, 1984). Within the five sub-types of environmental enrichment (Bloomsmith et al, 1991) emphasizes the food enrichment taking into account the ecological characteristics of species in relation to their diet and eating habits, which are the proper diet and body size (Illius & Gordon, 1993).

On the other hand, the predatory birds are the group most ecologically sensitive and this group presents a big increased risk of extinction, because they occupy the top position in the food chain (Cabral et al, 2005), and it is on them that accents most of the actions of rehabilitation centers for wild animals in the interior of Portugal (Horta, 2009). This work aims to study the process of difficulty in obtaining food for predatory wild birds in rehabilitation centers, with the aim of optimizing the recovery process.

Methodology

Follow up a methodology based on making the birds, who had entered in the CERVAS (Centro de Ecologia Recuperação e Vigilância de Animais Selvagens, Portugal) overcome each of the 5 levels (Table I) by stimulating them to find / capture food, dead or alive. The experiment took place between the 7th of September 2008 and 30 June 2009. Each level of difficulty lasted about a week for each animal. They only evolved to the next level if they did not lost weight or were damaged and their physical abilities. Whenever they did not meet the above criterion, the animals remained at or regressed to lower levels. The species studied were, Grey Heron, *Ardea cinerea*, Goshawk, *Accipiter gentilis*, Black kite, *Milvus migrans*, Little owl, *Athene noctua*, Tawny owl, *Strix aluco* and Eagle owl, *Bubo bubo,* with 1, 1, 6, 7, 7 and 2 individuals respectively, which could be compared with control animals.

Table I -Levels of food enrichment and description.

Level of food Enrichment	Description
Level 1	"dead food" cut into pieces on the tile
Level 2	"dead food" cut into pieces on the tile and in different places at different altitudes
Level 3	"dead food" cut into pieces in different places at different altitudes with and without pelage / scales, without tile
Level 4	"dead food" cut into pieces in different places at different altitudes with pelage / scales, without tile and prey alive
Level 5	"dead food" cut into pieces in different places at different altitudes with pelage / scales, without tile and prey alive hidden with the help of specific structures (eg shelter for the mouses)

Results

Individuals of experience accounted for 25%, 25%, 43%, 50%, 30%, 33% of all individuals of their species (*Ardea cinerea*, *Accipiter gentilis*, *Milvus migrans*, *Athene noctua*, *Strix aluco* and *Bubo bubo*) that entered in CERVAS during the time of study.

The mean weights were obtained every 7.44 ± 4.94 days, for the 24 individuals.

Between individuals of the species that were subjected to food fortification, stands out the order Strigiformes and in particular *Athene noctua*, because it was the faster one to reach the highest level (table II).

Tabela II - Time in days and number of weightings necessary for individuals of the species studied achieve different levels of enrichment.

	Level of food Enrichment					
	3		4		5	
	Days	Nº of weightings	Days	Nº of weightings	Days	Nº of weightings
Ardea cinerea	4	3	7	4	---	---
Accipiter gentilis	1	1	16	3	31	4
Milvus migrans	27	2	49	4	58	5
Athene noctua	2	1	4	2	8	3
Strix aluco	6	1	19	4	26	5
Bubo bubo	4	1	9	2	14	3

Results (cont.)

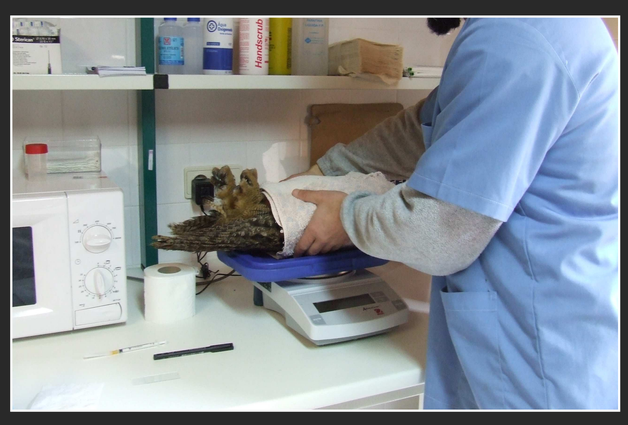
The time needed for reaching the last level, for all the species, was shorter or very close to the average recovery in the exterior cages. We also found out that the index weighting (number of weightings / time) appeared in all cases greater for subjects tested. The number of weights ranged from 5 to 10, while the average weight of the control was 5.58 ± 0.91 (Table III).

Table III - Number of weightings and days, during of time of capacitation of nourishment and conventional recovery process. Weightings Index in the time of capacitation of nourishment and in the recovery time. These results refer to the control and experimental data.

	Experience			Control		
	Number of weightings	Weighting Index in the time of study (weighting/day)	Time of capacitation of nourishment (days)	Number average of weightings	Weighting Index by recovery time (weighting/day)	Average length of recovery (days)
Ardea cinerea	7	0,304	23	6	0,122	49
Accipiter gentilis	6	0,158	38	6	0,176	34
Milvus migrans	--- (10)	--- (0,098)	--- (102)	5,3 ± 2,1	0,241	22,0 ± 5,8
Athene noctua	5	0,500	10	5,5 ± 2,3	0,172	32,3 ± 17,8
Strix aluco	7	0,149	47	6,7 ± 2,5	0,126	53,1 ± 28,7
Bubo bubo	7	0,212	33	4	0,133	30

When comparing the animals that were not food fortificated, with those which were, we can conclude that there was no important weight lost, so causing hardship in obtaining food as feeding technique prepared them efficiently to find food in the wild.


Eagle owl, *Bubo bubo*




Tawny owl, *Strix aluco*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The time it took to reach the level of difficulty was higher for the nocturnal birds of prey (16.00 ± 9.16 days) compared to the daytime ones (44.50 ± 19.09 days). The duration of food training (time it takes to reach the last level and stay on it) ranged between 10 and 47 days (having on mind that during the 102-day study, the individuals of the species *Milvus migrans* failed to capture live food).

Conclusions

It follows, therefore, that this process does not delay recovery, although, in some cases, it increases the manipulations associated with the catch for weight control, which on the one hand may be harmful because of the increased stress imposed by capture but on the other hand it enables greater control of clinical and physical condition of the animals. Finally, the predatory birds after suffering this innovative process of different levels of requirements in obtaining food, in addition to suffering a strong psychological stimulus, also train to look and find food, a process critical to the success in the return to the wild life.

Acknowledgments

Thanks to the CERVAS by giving the facilities and materials for this study.

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