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A STUDY OF PARASITES OF HOUBARA BUSTARD IN PUNJAB, PAKISTAN

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Abstract. Houbara Bustard is trapped (illegally) during their migration to wintering areas. They are smuggled to the Middle Eastern States, where falcons are trained utilizing the Houbara as quarry. The operation being illegal, the Government functionaries confiscate such illegal consignments. The birds, thus caught due to crowded conditions, poor husbandry and insufficient food supply are usually sick and diseased. To rehabilitate such birds Houbara Foundation International Pakistan (HFIP) established a Houbara Research and Rehabilitation Center (HRRC) in 1996. Droppings of healthy, weak and sick birds were collected and studied for parasites. The eggs of different parasitic species were observed in different groups of Houbara. Sixty percent of the freshly arrived birds in 1999 were infested with trematodes, cestodes and nematodes. Birds which, were already in captivity (1997), showed 53 % infestation of cestodes, trematodes and nematodes. Similarly 40 % healthy, 55 % ophthalmic, 47 % weak and 60 % birds arrived from Karachi were found infested with eggs of different parasites in their dropping. Eighty percent birds recovered from different diseases at HRRC were also found harbouring endoparasites. Only 6 Houbara (13.6 %) out of 44 collected from the wild were infested with eggs of endoparasites.

Key words: Houbara Bustard, *Chlamydotis undulata macqueenii*, Pakistan, parasite.

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Изучение паразитов джека в Пенджабе, Пакистан. - М.С. Надим, А. Танвир, М.С. Ахтар. - Беркут. 13 (1). 2004. - В 1996 г. в Пакистане был организован Центр по исследованию и реабилитации джека для реабилитации птиц, изъятых у контрабандистов, переправлявших их в страны Ближнего Востока для соколиной охоты. Паразитов изучали как у здоровых, так и у больных и ослабленных птиц. 60 % поступивших в 1999 г. джеков были инфицированы трематодами, цестодами и нематодами. Птицы, уже содержавшиеся в неволе, были инфицированы в 53 % случаев. 80 % джеков, излеченных от различных болезней в Центре, были заражены также эндопаразитами. Среди взятых из природы птиц только у 13,6 % обнаружены яйца эндопаразитов.

INTRODUCTION

Houbara Bustard (*Chlamydotis undulata macqueenii*) is a medium sized desert bird, declining in all areas of its distribution due to over exploitation and degradation of habitat. Houbara Bustard is trapped (illegally) during their migration to wintering areas of Pakistan. They are smuggled to the Middle Eastern States, where falcons are trained utilizing the Houbara as quarry. This harvest is thought to an extent of 4,000 to 7,000 birds per year (Goriup, 1997). However, the capture record is not available and could be anybody's guess. The trappers and transporters being not fully trained in handling these birds, often cause the death of Houbara. The operation being illegal, the Government functionaries confiscate such illegal consignments. The birds, thus caught due to crowded conditions, poor husbandry and insufficient food supply are usually sick and diseased. To rehabilitate such birds Houbara Foundation International Pakistan (HFIP) established a Houbara Research and Rehabilitation Center (HRRC) in 1996.

The main Objectives of HRRC are: to provide medical treatment, rehabilitate the birds that is not a health risk for free living populations, monitor the survival ratio of the released birds.

It is important to know the survival ratio of rehabilitated Houbara, but prior to release it is necessary to understand the diseases and their treatment to ensure the survival of birds in the wild. Houbara belongs to Otididae family, whose diseases and parasites are poorly documented. In present study parasites of wild Houbara were compared with transitional captive Houbara at HRRC. This would help in the management of Houbara rehabilitation.

MATERIALS AND METHODS

The study was carried out from October 1998 to March 2002. At HRRC the main aviary (200 x 200) was subdivided into different small pens with hessian cloth. The birds were segregated in these pens according to their physical conditions. Sick birds were always kept in separate pens. Whenever a bird was found sick or lazy, it was separated immediately from healthy birds.

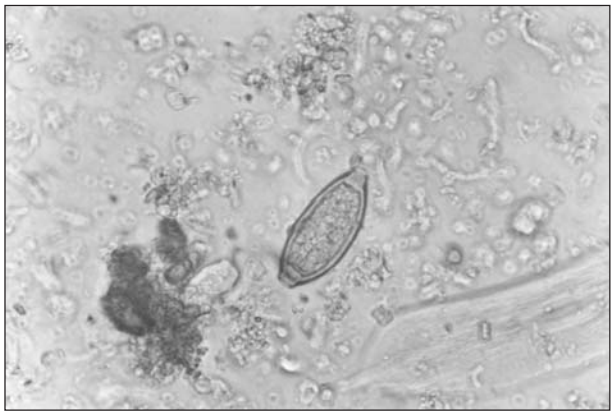

Photo 1. *Capillaria* sp. found in Houbara droppings.

Droppings of wild Houbara were collected and studied for parasites. Similarly dropping of healthy, weak and sick birds at HRRC were collected and studied for parasites. The samples were soaked in 10 % formaline and then a drop of it was taken on a slide, colored with Logule Iodide (300 ml distilled water + 2 g Potassium Iodide + 1 g Iodine) and studied under microscope. The eggs of parasites were also counted for each sample by following procedure:

In 45 ml test tube, 3g of faeces + 42 ml Caustic soda + 2–3 glass beeds were taken. The mixture was shaken till homogeneous. Then 15 ml of the mixture was taken with micropipette on a slide and studied under microscope. The eggs seen were multiplied with 100; this gives the number of eggs in 1 g of sample. The eggs less than 500 considered as light, 500–1000 as moderate and above 1000 are high and significant infestation (Cheesbrough, 1987). The droppings were also collected from wild birds in Cholistan and then compared with the captive birds.

Ectoparasites (Lice samples) were collected from different Houbara preserved in 10 % formaldehyde and identified in the laboratory. The guts of Houbara were collected from the birds that died in HRRC, preserved in 10 % formaldehyde and studied for endoparasites in the laboratory. All the samples were analyzed in the Parasitology laboratory, Department of Zoology, University of the Punjab, Lahore.

The birds were fed with poultry feed and mustard along with special bustard feed imported from Abu Dhabi. Additional electrolytes were also given to birds in drinking water.

RESULTS

During the study period 1,779 Houbara were brought to HRRC, out of which 653 (36.71 %) died due to different diseases and 1,126 (63.29 %) were rehabilitated. On the ar-

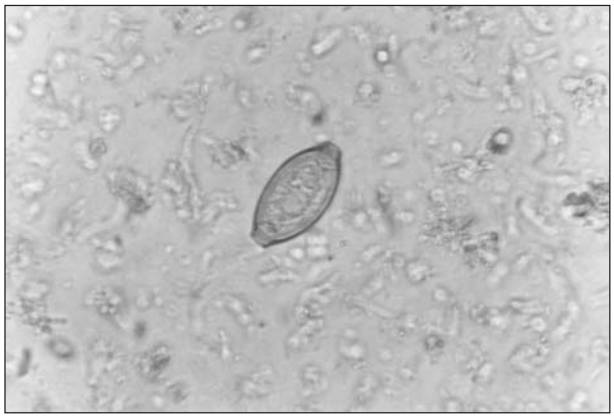

Photo 2. *Trichurida* sp. in Houbara droppings.

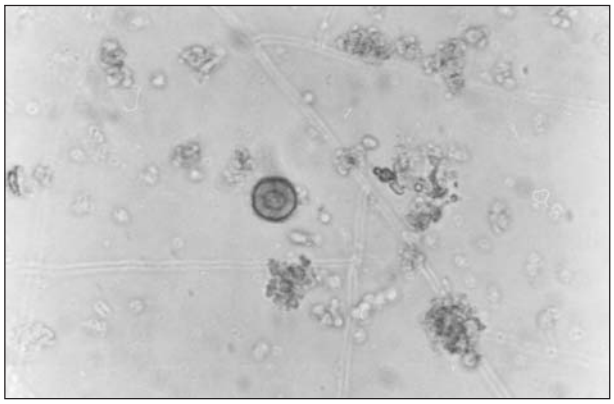

Photo 3. *Raillietina* sp. in Houbara droppings.

rival all the birds were segregated immediately according to their physical conditions into separate pens and then vaccinated against Newcastle and Fowl Pox. Sometimes birds arrived in good condition such as in 1999, 79 birds received from Quetta. Only two died during journey, seven sustained mild injuries and seventy were healthy. But sometimes birds arrived in a very poor condition like 166 birds from Karachi on 10.12.1998. The cages used to transport the birds were small and the doors were too narrow for a Houbara to enter through it. Due to this 48 birds were injured while being packed into cages. The cages were cut in at HRRC and the birds were taken out of the cages. Twenty birds were found dead during transportation, while all the remaining birds were weak and under stress. Moreover, they had spent 30 hours in cages during transport without any food. Thus due to this 50 % birds died in one week.

Droppings of different groups of Houbara were studied under microscope, showed eggs of different parasitic species (Photo 1–5 and Table). Sixty percent of the freshly arrived birds in 1999 were infested with parasites: *Fasciola*, *Ascaridia*, *Capillaria*, *Ascaris* and *Avitellina* species. Birds which were already in captivity (1997), showed 53.3 % infestation of parasites: *Fasciola*, *Capillaria*, *Ascaris* and *Raillietina* species. Similarly 40 % healthy, 55 % ophthalmic, 47 % weak and 60 % birds arrived from Karachi were found infested with eggs of different parasites in their dropping. Eighty percent birds recovered from different diseases

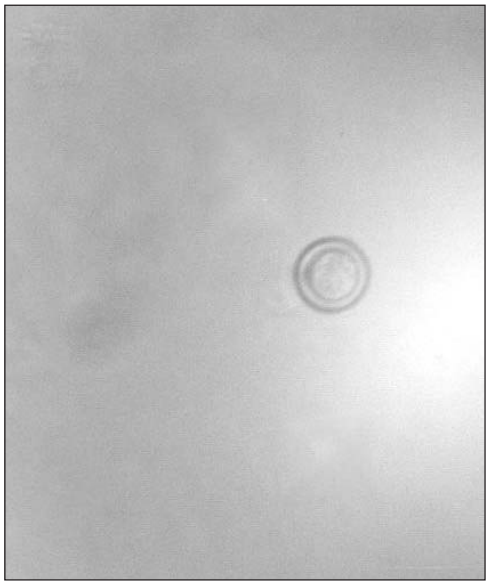

Photo 4. *Ascaris sp.* in Houbara droppings.

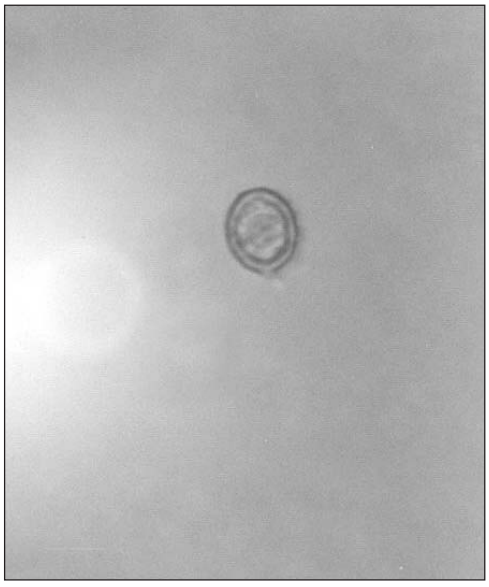

Photo 5. *Avitellina sp.* in Houbara droppings.

Eggs of different species of parasites found in dropping of Houbara Bustard at HRRC
Яйца различных видов паразитов, обнаруженные в помете джека в Центре по реабилитации и исследованию

Houbara groups	Total samples	Parasites, %	Trematodes	Cestodes		Nematodes				Status
			Fasciola sp.	*Raillietina* sp.	*Avitellina* sp.	*Capillaria* sp.	*Trichurida* sp.	*Ascaridia* sp.	*Ascaris* sp.	*Spirurida* sp.	
Fresh arrived	60	60.0	+	–	+	+	–	+	+	–	Moderate
Old birds	45	53.3	+	+	–	+	–	–	+	–	Non significant
Arrived from Karachi	60	60.0	+	+	+	–	+	+	+	+	Moderate
Healthy	60	40.0	+	–	–	+	–	–	+	+	Non significant
Weak	45	46.7	+	+	–	+	–	+	+	–	Moderate
Ophthalmic	60	55.0	–	–	–	–	+	+	–	–	Moderate
Recovered	60	80.0	+	–	–	+	–	+	+	–	High significant
Wild Houbara	44	13.6	+	–	–	–	–	–	–	–	Non significant

at HRRC were also found harbouring endoparasites (*Fasciola*, *Ascaridia*, *Capillaria*, and *Ascaris* species). In wild Houbara 6 (13.6 %) out of 44 samples collected were infested with eggs of only one species i. e. *Fasciola*. Nature may give them some ability to resist against the endoparasites, by using local medicinal plants as a food. The infestation was moderate in weak, eye infected, arrived from Karachi and fresh arrived groups, non-significant in old and healthy group but significant in birds recovered from different diseases. The infestation in wild Houbara was also non-significant.

The round worm (*Ascaridia galli*) was found in intestine of Houbara. Affected birds by this round worm suffered from enteritis and anemia. In heavy infestations, the intestine is obstructed and worms occasionally perforate the gut and come to lie in the body cavity producing peritonitis (inflammation of peritoneum). The tap worm *Raillietina* sp. (cestode) was found in many birds (Photo 6). Two lice species *Lipeurus caponis* and *Cuclotogestce heterographus* (Photo 7) were observed only in birds confiscated at Karachi airport. However, the ticks were not found.

DISCUSSION

Thousands of Houbara are traded every year in Pakistan. These Houbara are usually kept and transported by trappers under sub-optimal conditions of hygiene, fed on inadequate diets and housed in poorly designed cages or rooms and very often mixed with other birds such as pigeons and poultry where they are exposed to many infectious diseases. Therefore most of them are in a poor condition, when they arrive at HRRC.

The mortality was high in 1998 and 1999 (47.68 and 47.02 %) at HRRC but many steps were taken to improve the situation. As a result in the season (2000–2001) mortality was low (23.79 %). The mortality was more in December and January perhaps due to cold weather, which is unbearable by weak and sick birds.

Bailey (1992) observed that Newcastle disease, roundworms, nematodes infestation and

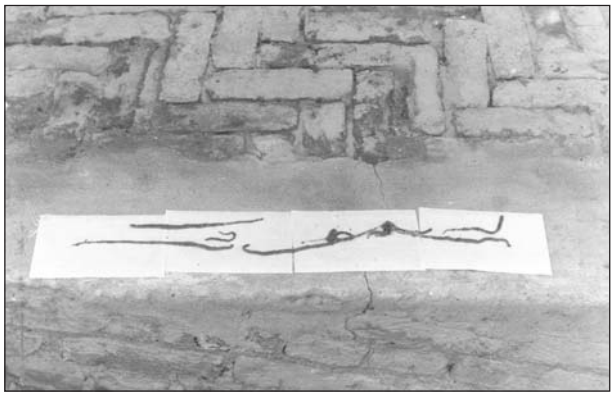

Photo 6. Tap worms observed in Houbara.

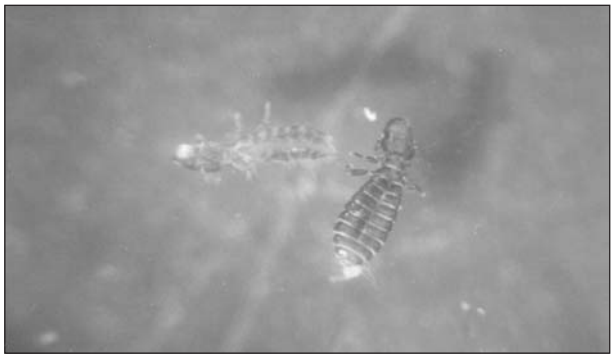

Photo 7. A common lice of Houbara Bustard.

lead poisoning were the main causes of death of Houbara in Al Ain Zoo Abu Dhabi. Bailey et al. (1997) noted trichomoniasis, salmonellosis, avian pox, endoparasites, enteritis, fractures, liver and respiratory diseases at HRRC Rahim Yar Khan. Chaudhry et al. (1988) reported, main causes of death in Houbara confiscated at Lahore airport, were heavy tapeworm, round worms infestation, hemorrhage, enteritis, hepatitis, mild lesions of *Coli bacillaris* and *pneumonitis*. *Pseudomonas aeruginosa* causing contagious opthalmia also killed birds. Jones et al. (1996) recorded Cestodes (*Otiditaenia conoideis*, *Hispaniolepis falsata*), Acanthocephalans (*Centrorhynchus lancea*, *Mediorhynchus taeniatus*), Nematodes (*Hartertia rotundata*, *Allodapa* sp.) in six wild Houbara out of seven birds. In present study trematodes (*Fasciola* sp.), cestodes (*Raillietina* sp., *Avitellina* sp.) and nematodes (*Ascaridia*, *Capillaria*, *Trichurida*, *Ascaris* and *Spirurida* species) were found in different groups of Houbara at HRRC while only *Fasciola* species was found in 6 wild Houbara out of 44 samples.

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