



Environmental Monitoring Report

Project Number: 34097
April 2006

PRC: SHANXI ROAD DEVELOPMENT II PROJECT Annual Monitoring Report For Yuncheng Wetland Nature Reserve

Prepared by Houma-Yumenkou Expressway Project Monitoring Station of Yuncheng
Wetland Nature Reserve
Shanxi, People's Republic of China

For Shanxi Hou-yu Expressway Construction Co. Ltd.

This report has been submitted to ADB by the Shanxi Hou-Yu Expressway Construction Co., Ltd. and is made publicly available in accordance with ADB's public communications policy (2005). It does not necessarily reflect the views of ADB.

Asian Development Bank

Shanxi Road Development Project II
Houma-Yumenkou Expressway Project Monitoring Station
of Yuncheng Wetland Nature Reserve

Annual Monitoring Report
(2005-2006)

April 2006

CONTENT

I. General

II. Main work

III. Monitoring Results

Appendix I Observation of Birds

Appendix II Food Enrichment

Appendix III Air Monitoring of the Wetland

Appendix IV Noise Monitoring of the Wetland

I. General

Yuncheng Wetland Nature Reserve in Hejin Section, which is passed through by Houma-Yumenkou Expressway Project, covers an area of 9611.9 hectares. Its geographical coordinates are 110°33'16"-110°41'38"E and 35°30'42"- 35°39'30"N. There are some typical wetland in the reserve, such as rivers, bank shoals, sandbanks in the river, marsh lands and grasslands etc. There is some wetland vegetation such as bulrush, white couch grass, Chinese tamarisk and so on and live 159 kinds of birds. In which, four kinds are national protected animals Grade I, for example bustard, black stork, and so on. 21 kinds are national protected animals Grade II such as gray crane, giant swan, and white fronted goose, etc. Also there are large number of hems, wild geese and ducks. This area is main place to spend winter and look for food for gray cranes. Following with the strengthening of administration of Wetland Nature Reserve and people's protection consciousness, the kinds and quantities of birds are on the increasing trend.



II. Main Work

2.1 Strengthen Propaganda

The Monitoring Station of Yuncheng Wetland Nature Reserve not only takes charge of the monitoring work of birds and wetland environment, but also responsible for protection and propaganda of the environment and monitoring of bird flu. On the one hand, we strengthen the propaganda to the contractors, for

example, setting up warning board, placarding slogan. On the other hand, we organized the propaganda concerning birds' protection, carried on environment protection activity by the means of the media and publicizing cars, and distributed more than 5000 pieces of handbills to the villagers in Hejin section.



2.2 Improve the Quality of Monitoring Personnel

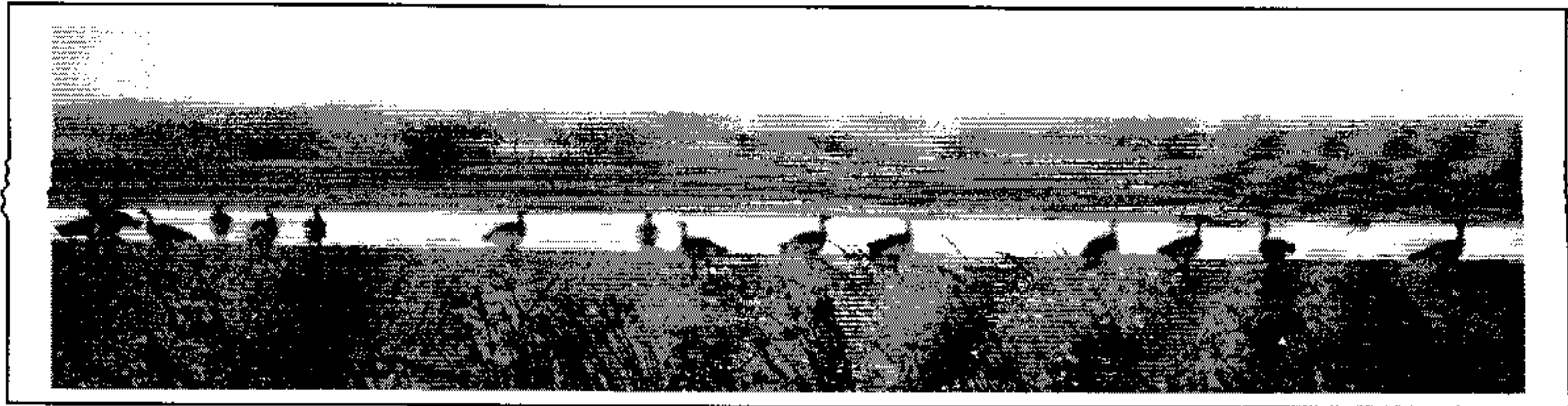
To identify accurately the types of bird and record their activities status in details, we reinforce the daily study of monitoring personnel, required them to grasp the basic skill of observing birds, to get well knowledge of the types of bird in Yuncheng Wetland Nature Reserve, especially in Hejin section. For unidentified birds, ask them to compare carefully with the pictures in Birds Handbook on Field of China so as to improve identifying accuracy. Now the monitoring personnel have a big progress on identifying ability compared with before. Also we strengthen monitoring the affection on birds' perching and looking for food, which caused by environment change, such as air, water and noise etc.

2.3 Daily Monitoring and Observation

In 2005, the winter migrant birds of Yuncheng Wetland Nature Reserve in Hejin section, especially gray crane, arrived at here earlier over 20 days than in 2004. As this fact, we required the monitoring personnel to observe migrant bird and monitor environment ahead of schedule. Following with the monitoring rules,

bird observation is operated once ten days with three monitoring spots, and the details were recorded. Environment monitoring is operated once one month, and it includes the monitoring on air, water quality and noise, etc.

The details of birds' observation are shown in attachment I.



2.4 Food Enrichment

Since the construction of Longmen Yellow River Bridge in Nature Reserve, cause the change of environment and affect birds' perching and looking for food. We started to cast food from October 14, 2005 according to the experience before, once five days and 250kg once, the total of food cast is 5100kg with 24 times, the main food cast is corn.



See attachment II for record of food enrichment.

2.5 Prevention and Control of H5N1 Avian Flu

As migrant birds are the main carriers of schlepping and spreading avian flu virus, the monitoring to migrant birds is the key point in the monitoring of wild animal's epidemic resource and disease, also the first defence to prevent and control H5N1 avian flu which is concerning public healthy and society stability. Yuncheng Wetland Nature Reserve, in which a large number of migrant birds, was listed in the country monitoring area of wild animal epidemic resource and disease, Hejin section is monitoring emphasis in the Nature Reserve, and the

Hou-yu Expressway Monitoring Station has taken charge of this important work. To do well this work, we fixed the patrolling route to run around-the-clock monitoring, strictly following with the *Monitoring Program of Preventing and Controlling H5N1 of Yuncheng City Forestry System* and the *Information*



Mr. JIA jiansheng, vice director of Protection Division, State Forestry Bureau, is inspecting prevention and control of avian flu.

Management Regulations. The epidemic resource and disease have not been found up to now.

III. Monitoring Results

We adopted Standard Class II in GB3095-1996: The Standards of Environmental Air Quality during air monitoring and GB3096-93: The Standards of Environmental Noise in City Region during noise monitoring.

3.1 Air Monitoring in Wetland

By monitoring the environmental air condition at Cangtou School, from October 2005 to March 2006, the extent of TSR in the 6 months is from 0.30mg/m³ to

0.50mg/m³, the average value of monitoring spots is beyond the standard value by 0.27 multiple, the maximum multiple beyond the standard is 0.67.

The details are shown in attachment III.

3.2 Noise Monitoring in Wetland

At two sensitive spots, Cangtou Village and Cangtou School, the noise values are within the scope: 56.1 – 60.7 decibels at daytime and within the scope 45.6 - 52.6 decibels at night. All the monitoring values at daytime are below the noise limit for construction site; all the values at night meet the required limit value, 55 decibels.

The details are shown in attachment IV.

3.3 Monitoring of Birds

We set up three fixed observation spots: Dagutou, No.7 Dam and No.9 Dam, after observing and comparing with the observation results in 2004, we found that there was no obvious change in the quantities of Gray crane in the period from October 2004 to March 2006. The perching place moved toward south, but it is stable. The types of others birds is more than 2004, especially bustard, goose and duck.

Appendix I

Sheet of Birds Observation in Shanxi Yuncheng Wetland Nature Reserve (1)

Date	Place	Weather	Kinds of birds	Quantity	Activity	Observer	Remark
Oct. 14, 2005	Daguotou	Cloudy	wild chicken,	4	looking for	Shi Xuanyin Zhang Huaisen	
	No.7 Dam		Wild duck	6	food		
	No. 9 Dam		wild goose	27	flying		
			gray crane	2			
Oct. 20, 2005	Daguotou	Cloudy	wild chicken	2	looking for	Shi Xuanyin Zhang Huaisen	
	No.7 Dam		wild goose	21	food		
	No. 9 Dam		gray crane	6	flying		
					perching, looking for food		
Oct. 30, 2005	Daguotou	sunny	ring-necked pheasant	4	looking for	Shi Xuanyin Zhang Huaisen	
	No.7 Dam		teal	6	food		
	No. 9 Dam		wild goose, gray crane	75 11			
Nov.11, 2005	Daguotou	sunny	wild goose	300	perching	Shi Xuanyin Zhang Huaisen	
	No. 7 Dam		teal	21	looking for		
	No. 9 Dam		ring-necked pheasant	11	food		
			wild goose, gray crane	about 200	perching		
Nov.20, 2005	Daguotou	sunny	wild goose, teal	85 6	looking for	Shi Xuanyin Zhang Huaisen	
	No. 7 Dam		ring-necked pheasant, wild goose	4 11	looking for		
	No. 9 Dam		wild goose, gray crane	150 12	perching		
Nov.30, 2005	No. 9 Dam	sunny	wild goose, gray crane	77 75	looking for	Shi Xuanyin Zhang Huaisen	
	No.10 Dam		wild goose, gray crane	about 100 27	looking for		
	No. 7 Dam		teal, ring-necked pheasant	4 6	looking for		
Dec.10, 2005	Daguotou	sunny	egret with yellow beak unidentified birds	8 11	looking for	Shi Xuanyin Zhang Huaisen	
	No. 9 Dam		wild goose, gray crane	40 21	looking for		
	No.10 Dam		wild goose, gray crane	127 17	looking for		

Appendix I

Sheet of Birds Observation in Shanxi Yuncheng Wetland Nature Reserve (2)

Date	Place	Weather	Kinds of birds	Quantity	Activity	Observer	Remark
Dec. 19, 2005	Daguotou	sunny	wild chicken, wild duck	11 4	looking for food	Shi Xuanyin Zhang Huaisen	
	No. 9 Dam		gray crane, wild goose	17 29	looking for food		
	No.10 Dam		gray crane, wild goose	14 45	looking for food		
Dec. 29, 2005	Daguotou	sunny	egret, wild chicken	1 17	looking for food	Shi Xuanyin Zhang Huaisen	
	No. 9 Dam		gray crane, wild goose	13 135	looking for food		
	No.10 Dam		gray crane, wild goose	27 45	looking for food		
Jan. 6, 2006	Daguotou	sunny	ring-necked pheasant, wild goose	17 21	looking for food	Shi Xuanyin Zhang Huaisen	
	No. 9 Dam		wild goose, gray crane	85 27	looking for food		
	No.10 Dam		wild goose, gray crane	100 17	looking for food		
Jan. 13, 2006	Daguotou	sunny	ring-necked pheasant	8	looking for food	Shi Xuanyin Zhang Huaisen	
	No. 9 Dam		none				
	No.10 Dam		none				
Jan. 22, 2006	Daguotou	cloudy	gray crane, ring-necked pheasant	18 17	looking for food	Shi Xuanyin Zhang Huaisen	
	slit area		gray crane, wild goose	8 100	looking for food		
	Lianbo Shoal		gray crane, wild goose	4 85	looking for food		
Jan. 28, 2006	Daguotou	cloudy	gray crane, ring-necked pheasant	12 8	looking for food	Shi Xuanyin Zhang Huaisen	
	Lianbo Shoal		gray crane, wild goose	12 85	looking for food		
	slit area		gray crane, wild goose	6 27	looking for food		

Appendix I

Sheet of Birds Observation in Shanxi Yuncheng Wetland Nature Reserve (3)

Date	Place	Weather	Kind of birds	Quantity	Activity	Observer	Remark
Feb. 12, 2006	No. 9 Dam	sunny	gray crane, russet duck	42 47	looking for food, perching	Shi Xuanyin Zhang Huaisen	
	No.10 Dam		gray crane, russet duck	40 36	looking for food, perching		
	Daguotou		white swan, wild goose	about 100 hundreds	looking for food, perching		
Feb. 22, 2006	Daguotou	cloudy	gray crane, swan	30 about 100	looking for food, perching	Shi Xuanyin Zhang Huaisen	
	No. 9 Dam		russet duck, ring-necked pheasant	100 8	looking for food, perching		
	No.10 Dam		wild goose	300	looking for food, perching		
Mar. 1, 2006	Daguotou	sunny	gray crane	18	looking for food	Shi Xuanyin Zhang Huaisen	
	No.10 Dam		gray crane	22	perching		
	No.11 Dam		gray crane	30			
Mar. 11, 2006	Daguotou	cloudy	gray crane	15	looking for food	Shi Xuanyin Zhang Huaisen	
	No.10 Dam		gray crane	17	looking for food		
	No.11 Dam		gray crane	27	looking for food		
Mar. 21, 2006	Daguotou	cloudy	gray crane, teal	30 40	looking for food	Shi Xuanyin Zhang Huaisen	
	No.10 Dam		russet duck, egret, hern	37 6 for each	looking for food		
	No.11 Dam		teal, ring-necked pheasant	50 6	looking for food		
Apr. 1, 2006	No. 9 Dam	sunny	ring-necked pheasant, teal	8 17	looking for food	Shi Xuanyin Zhang Huaisen	
	Daguotou		hern, lapwing	6 4	looking for food		
	Xiaoshizui		egret, egret with yellow beak	About 40	looking for food		

Appendix II

Sheet of Food Enrichment in Shanxi Yuncheng Wetland Nature Reserve (1)

Date	Place	Food	Quantity (kg)	Feeder	Remark
Oct. 20, 2005	No.9 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Oct. 25, 2005	No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Oct.30, 2005	No.9 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Nov.4, 2005	No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Nov.9, 2005	No.9 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Nov.14, 2005	No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Nov.20, 2005	No.9 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Nov. 24, 2005	No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Nov.30, 2005	No.9 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Dec.4, 2005	No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Dec.10, 2005	No.9 and No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Dec.14, 2005	No.9 and No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Dec.19, 2005	No.9 and No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Dec.24, 2005	No.9 and No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Dec.29, 2005	No.9 and No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Jan.2, 2006	No.9 and No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Jan. 8, 2006	No.9 and No.10 Dam	corn	250	Shi Xuanyin and Zhang Huaisen	
Jan.13, 2006			Not fed		water rising in Yellow River
Jan. 18, 2006			Not fed		birds perching

**Sheet of Food Enrichment in
Shanxi Yuncheng Wetland Nature Reserve (2)**

[illegible]

Appendix III

List of Air Monitoring Results

Monitoring item	Monitoring spot	Results																	
		Oct. 2005			Nov. 2005			Dec. 2005			Jan. 2006			Feb. 2006			Mar. 2006		
		12th	13th	14th	11th	12th	13th	12th	13th	14th	14th	15th	16th	14th	15th	16th	14th	15th	16th
TSP	Cangtou village	0.30	0.36	0.33	0.38	0.36	0.39	0.41	0.43	0.35	0.42	0.36	0.38	0.50	0.36	0.41	0.39	0.43	0.35

Statistics of Air Monitoring Results

Unit: mg/m³

Monitoring spot	Scope of value	average	Multiple beyond the standard	The maximum multiple beyond the standard
Cangtou School	0.30---0.50	0.38	0.27	0.67
Standard Value	0.30			

Appendix IV

Noise Monitoring Spot and Frequency

Monitoring spot	Stake No.	Distance away from road center(m)	Monitoring item (noise)	Monitoring frequency	Remark
Cangtou village	K58+200	50	Noise: equivalent Grade A	Once at daytime and night respectively	-
Cangtou school	K58+250	120			

Noise Monitoring Results

Monitoring spot	Leq dB(A)											
	Oct. 2005		Nov. 2005		Dec. 2005		Jan. 2006		Feb. 2006		Mar. 2006	
	day	night	day	night	day	night	day	night	day	night	day	night
Cangtou village	60.1	52.6	57.9	49.6	59.6	50.2	57.6	49.6	59.9	50.6	60.7	51.2
Cangtou school	56.8	47.5	57.4	45.6	58.1	47.2	57.0	47.5	56.1	46.0	57.7	48.0