



Journal of Biological Sciences

ISSN 1727-3048

science
alert

ANSI*net*
an open access publisher
<http://ansinet.com>

Observation on the Water Flow of Hadero Lake (Sindh)

Karim Gabol

Department of Zoology (Wild life and Fisheries), University of Karachi, Pakistan

Abstract: Hadero lake has emerged as an important wintering area offer a wide variety of water fowl. 49 species of waterfowl belonging to 6 orders and 12 families have been recorded from the area during the period 1998-2001, which include some rare and threatened species. The status of each bird species has also been recorded. During mid/winter counts of water fowl the highest population of 16864 waterfowl was counted in 1999.

Key words: Wetlands, waterfowl counts, ecology, brackish lake

INTRODUCTION

Wetlands have played a crucial role in human history wetlands occupy the transitional zone between permanently wet and generally dry environment. Hadero lake is a natural brackish water lake on the edge of a rocky terrain, (24° 49'N, 67° 52'E) 10 Km northwest of Thatta, 85 Km east of Karachi at about seven kilometers from Makli to Jang Shahi Road in Thatta District Sind province. The sign-stone of Goth Jummo Mir Bahr. Hadero lake is a very large body of water next to Haleji in this region, covering an area of about 5.10 square miles or 1, 321 ha. A natural brackish lake in a shallow depression on the edge of a stony desert, between Kinjhar lake and Haleji lake. The bedrock is primarily composed of an alternating layers of limestone and sand stone. The long peninsulas which jut out into the lake are capped by layers of limestone. The lake is probably not deeper than 1.7 m.

The northern and western shores are rocky and sandy, and border on stony desert; the southern and eastern shores are gently shelving with saline mud and silt in an area of abandoned cultivation.

The lake is fed by the SLM drain which links up with the Jam branch canal, and by several seasonal streams entering on the north shore. Dry subtropical monsoonal climate with very hot summer and cool winter. The average annual rainfall is about 185 mm. Temperature of ten exceeds 42°C during the summer. Scott(1989) and Conder (1977b). The natural vegetation in surrounding areas includes tropical thorn forest dominated by wattles on the plans and snakeroots forest on the hill. There is relatively little aquatic vegetation in most of the lake other than extensive beds of pond- weeds. The P.H of lake is varies 5.9 - 6.7, the salinity varies according to the temperature 5 to 9 ‰. The lake was first protected as a game sanctuary in October 1971 under section 15 of west Pakistan wild life protection ordinance (1959). The area was declared a wildlife sanctuary in March 1977. The

stony desert on the northern and western shores of the lake is also covered by a protection ordinance.

The management pain prepared by conder (1977) contains a number of recommendations of the management of the sanctuary in March, 1977. The stony desert on the northern and western shores of the lake is also covered by a protection ordinance. The management pain prepared by conder (1977) contains a number of recommendations of the management of the sanctuary, including the establishment of a no fishing and no boating zone in the northeastern corner of the lake and the banning of quarrying activities close to the sanctuary fishing activities and boating cause a considerable amount of disturbance to the water fowl population.

A variety of resident and migrating birds regularly exploit temporary and /or permanent water bodies of Pakistan and constitute a part of its ecosystem. The available information on population of the birds (Ali and Ripley, 1968-1970) Breckenridge (1935), Hirschfeld (1988) Khan (1904), Kendeigh (1944) Scott (1989), (1990), Hickey (1943), Lack (1966). The main objectives of the study of waterfowls of Herdero Lake, because migratory birds have very importance role for Pakistan and other countries. The environmental factor play major role for conservation of population of biosphere. The disturbance of ecological factor produce pronouncing effect on living organisms. The lake supports a commercial fishery, and provides excellent opportunities for scientific research. Fishing activities and boating cause a considerable amount of disturbance to the waterfowl population. Herdero lake an important wintering area for a wide variety of migratory water birds, which includes pelican, flamingos, ducks, coots, glossy ibis, waders, gulls and terns. In Present study author check the status of waterfowls in selected area and compared with previous records. In this present research help how many migratory birds population decline in last four year due to different factors. The observations made by the author in the area from 1998 to

2001, including the mid winter water fowl census conducted by the author.

MATERIALS AND METHODS

The area was regularly visited in all seasons during the period from 1998 to 2001, and bird fauna was recorded. The species was observed and identified by using spotting scopes and binoculars.

The waterfowls were identified by the book “A field guide to the water birds of Asia”. Asian Wetland Bureau, Sonbe and Usui (1993).

RESULTS AND DISCUSSION

A total number of 49 species of birds belonging to 6 orders and 12 families have so far been recorded from the area, as given in Table 1. The majority of the waterfowls are migrate. The results of the mid winter counts of waterfowls as given in Table 2, show its importance with regard to water bird population. Their total population during the years 1998-2001 ranged between 12503-16864, but the numbers declined drastically in 2000. This maybe on account of excessive disturbances due to heavy hunting and some disturbances as result of commercial

Table 1: Waterfowls of Hedero lake

Order: Podicipediformes		
Family: Podicipedidae		
Little Grebe	<i>Tachybaptus ruficoilis</i>	R & B
Order: Pelecaniformes		
Family: Pelecanidae		
Great white pelican	<i>Pelecanus onocrotalus</i>	W
Dalmatian pelican	<i>Pelecanus crispus</i>	R
Family: Phalacrocoracidae		
Great cormorant	<i>Phalacrocorax carbo</i>	R
Little cormorant	<i>Phalacrocorax niger</i>	R
Indian shang	<i>Phalacrocorax fuscicollis</i>	R
Order: Ciconiiformes		
Family: Ardeidae		
Purple heron	<i>Ardea purpurea</i>	R
Grey heron	<i>Ardea cineria</i>	WV/R
Large egret	<i>Egretta alba</i>	WV/R
Little egret	<i>Egretta garzetta</i>	R
India pond heron	<i>Ardeola grayii</i>	R
Cattle egret	<i>Bubalcus ibis</i>	R
Family: Threskiornithidae		
Glossy ibis	<i>Plegadis falcinellus</i>	Str.
Family: Phoenicopteridae		
Great flamingo	<i>Phoenicopterus mber</i>	YRW
Order: Anseriformes		
Family: Anatidae		
Grey lag goose	<i>Auser anser</i>	WV
Ruddy shelduck	<i>Tadorna ferruginea</i>	WV
Common shelduck	<i>Tadorna tadorna</i>	WV
Indian cotton teal	<i>Nettapus coromandelianus</i>	WV
Eurasian wigeon	<i>Anas penelope</i>	WV
Gadwall	<i>Anas strepera</i>	WV
Common teal	<i>Anas crecca</i>	WV
Mallard	<i>Anas platyrhynchos</i>	WV
Northeru pintail	<i>Anas acuta</i>	WV
Garganey	<i>Anas queguedula</i>	WV
Northeru shoveler	<i>Anas clypeata</i>	WV
Red crested pochard	<i>Netta rufina</i>	WV
Common pochard	<i>Aythya ferina</i>	WV
Tufted duck	<i>Aythya fuligula</i>	WV
Order: Gruiformes		
Family: Rallidae		
Moor hen	<i>Gallinula chloropus</i>	R
Common coot	<i>Fulica atra</i>	WV
Order: Charadriiformes		
Family: Recurvirostride		
Black winged stilt	<i>Himantopus himantopus</i>	R
Family: Charadriidae		
Red wattled lapwing	<i>Vanellus indicus</i>	WV
Little Ringed Plover	<i>Charadrius dubius</i>	WV/OS
Lesser sand plover	<i>Charadrius leschenaulti</i>	WV/OS
Sociable lapwing	<i>Vanellus gregarius</i>	WV

Table 1: Continue

Family: Scolopacidae		
Red shank	<i>Tringa totanus</i>	WV
Black tailed godwit	<i>Actitis hypoleucos</i>	WV
Common sand piper	<i>Actitis hypoleucos</i>	WV
Green sand piper	<i>Tringa ochropus</i>	WV
Common snipe	<i>Gallinago media</i>	WV
Little stint	<i>Calidris minuta</i>	WV
Sanderling	<i>Calidris alba</i>	WV
Family: Laridae		
Herring gull	<i>Larus argentatus</i>	WV
Great black headed gull	<i>Larus ichthyæus</i>	WV
Black headed gull	<i>Larus ridibundus</i>	WV
Slender bill gull	<i>Larus genei</i>	WV
Wiskered tern	<i>Chidonias hybrida</i>	PM
Gull billed tern	<i>Gelochelidon nilotica</i>	R
Common Tern	<i>Sterna hirundo</i>	R
Little tern	<i>Sterna albifrons</i>	R
Caspian tern	<i>Hydroprogne caspia</i>	WV

WV, Winter visitor; SV, Summer visitor; Str, Straggler; PM, Passage migrant; OS, Over summering; R, Resident; YRW, year round visitor; B, Breeding

Table 2: Results of mid-winter water fowls counts by author

Name of species	1998	1999	2000	2001
Little grebe	04	42	-	-
White great pelican	12	10	125	120
Dalmatian pelican	-	36	170	150
Great cormorant	660	40	40	35
Little cormorant	180	80	120	372
Indian shang	-	06	-	-
Purple heron	04	15	-	02
Grey heron	11	24	06	04
Little egret	-	220	70	180
Indian pond heron	-	225	16	20
Cattle egret	-	-	10	07
Great egret	-	40	180	190
Great flamingo	-	-	10	25
Indian cotton teal	-	28	115	100
Eurasian wigeon	1380	1140	2100	2000
Gadwall	-	-	-	-
Common teal	1660	1990	1930	1800
Mallard	-	126	-	120
Northern pintail	-	470	660	700
Garganey	-	-	32	40
Northern shoveler	734	1490	1850	1900
Red-crested pochard	-	-	-	-
Common pochard	1150	1260	1650	1700
Tufted duck	540	920	860	900
Unidentified ducks	500	400	300	315
Coot	5300	7640	2100	2500
Moorhen	-	120	-	-
Black-winged stilt	02	-	-	01
Red-wattled lapwing	80	90	12	-
Little ringed plover	15	22	-	-
Common sandpiper	15	26	24	20
Red shank	02	12	08	04
Green shank	06	18	02	01
Green sandpiper	14	36	44	40
Common snipe	15	26	24	-
Little stint	170	124	44	40
Herring gull	08	14	12	25
Great black headed gull	06	08	-	04
Black headed gull	10	90	38	89
Caspian tern	-	-	-	50
Wiskered tern	02	20	76	15
Gull billed tern	04	06	-	-
Common tern	15	20	16	18
Little tern	9	15	-	41
Unidentified tern	10	15	20	25
Sanderling	-	-	-	03
Total	12,518	16,864	12,664	13,556

fishing and boating. In 1994 the Sind wild life management board counted the highest population is 5087704 white tailed plover, 02 oriental pratincole, 01 Asiatic golden plover, 23 Kentish plover, 300 Black tailed Godwit, 26 Eurasian curlew 201 Red necked phalarope, 1336 Ruff 16 painted stork, 128 Glossy ibis, 06 Greylay Gosse, 13 Ruddy Shelduck and 10 common Shelduck (SWMB Census 1994), were recorded only once during SWMB Census in 1994. These waterfowl not seen after 1994, due to increasing hunting, some disturbances result of commercial fishing and boating and seasonal climatic changing.

Only one great Bittern is recorded in September, 2001. 1771 great flamingo are observed during month of May, 2001. These flamingos are summer migration in this area. The threatened or rare species of birds, which have been recorded from the area, include Dalmatian pelican and sociable Lapwing. During the early 1970's the lake welcomed about 10,000 to 20,000 waterfowls (Khan, 1984). In mid-winter in January 1987 the turn out of about 49,000 birds was recorded. In January 1988 the number of waterfowl exceeded to 55,000, that is even highest attendances at Hadero (AWC, 1989). Due to remarkable attendance of waterfowls in winters, Hadero was notified as an important Ramsar site. some little terns and gull billed tern breed on the small islands situated in the lake. Some other birds also breed in the adjacent area.

In total number of 128 species of birds belonging to 14 orders and 46 families have so far been recorded from the Hub Dam area (Syed *et al.*, 2000).

The total population of hub dam during the year 1986-1989 ranged between 46,000-53,000, but the numbers declined drastically in 1990 due to commercial fishing that year (Syed *et al.*, 2000).

Unfortunately, this splendid waterfowls paradise has been violated drastically by the hunters, poachers and

conservation personnel, for the last few years. Some little terns and gull billed terns breed around the lake. Some other birds also breed in the adjacent area. Being located along the Indus flyway, Hadero lake has been an important wintering root for a wide variety of migratory waterfowls.

Eastern bank of the lake is net for ducks every dawn and dusk during winter by the native poachers. During the day, several boats are seen carrying huntsmen, sailing toward the northern on and eastern ends, in order to gun down the fluttering coots. There is no well-planned management of the area, as there is lack of coordination between different agencies responsible for management of sites and thus no concerted efforts are being made for the conservation and management of the area.

The local communities which are totally ignored at present in the conservation afford are desired to be incorporated in the management. Hadero needs the critical means of protection. Imposition and implementation of strict law for the protection of water monitoring and restriction on hunting and netting as well as the maintenance of vegetation and watering system in extremely essential.

REFERENCES

- Ali and Ripley, 1968-70. Hand book of the birds of India and Pakistan. Oxford University Press, Bombay, India.
- Asian waterfowl census (AWC), south Asia, 1989. A mid winter census report.
- Breckenridge, W.J., 1935. A Bird Census Method *Wilson Bull*, 47: 195-197.
- Conder, P.J., 1977b. Lake Hadero Wildlife Sanctuary Management Plan. Sind Wildlife Management Board, Cyclostyled report.
- Hickey, J.J., 1943. A guide to bird-watching, Oxford University Press, New York.
- Hirschfeld, E., N. Kjeien and M. Ullman, 1988. Bird watching in Pakistan 14 February to 6 march, 1988. A report, Sweden.
- Khurshid, S.N., 1991. A step towards wetland conservation. A overview of Pakistan's wetlands with the first action plan. W.W.F. Pakistan.
- Khan, A.A., 1984. Waterfowl of Pakistan W.W.F. Pakistan. Newsletter, 3.
- Kendeigh, S.C., 1944. Measurement of bird populations. *Ecol. Monogr.*, 14: 67-106.
- Lack, D., 1966. Population studies of Birds, Oxford University Press, London.
- Scott, D.A. (Ed.), 1989. A directory of Asian Wetlands IUCN Gland, Switzerland.
- Scott, D.A., A.L Rao and A.R .Beg, 1990. The wetlands of Pakistan and the Ramsar convention. Ramsar Bureau and NCCW, Pakistan.
- Sindh Wildlife Management Board, 1994. A mid/winter census report.
- Syed Ali, Ghalib and K. Najam, 2000. Observation on the Avi fauna Hub Dam, Pak. *J. Zool.*, 32: 27-32.
- Sonobe, K. and S. Usui, 1993. A field guide to the water birds of Asia. Wildbird society of Japan, Tokyo, Japan.