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Waterbirds around the world

A global overview of the conservation,
management and research of the
world's waterbird flyways

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landbouw, natuur en
voedselkwaliteit



SCOTTISH EXECUTIVE



EDINBURGH, UK: THE STATIONERY OFFICE

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First published in 2006 by The Stationery Office Limited
71 Lothian Road, Edinburgh EH3 9AZ, UK.

Applications for reproduction should be made to Scottish Natural Heritage,
Great Glen House, Leachkin Road, Inverness IV3 8NW, UK.

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN 0 11 497333 4

Recommended citation:

Boere, G.C., Galbraith, C.A. & Stroud, D.A. (eds). 2006.
Waterbirds around the world. The Stationery Office, Edinburgh, UK. 960 pp.

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Greater Flamingo *Phoenicopterus ruber* ringing at Lake Uromiyeh, I.R. Iran

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Zadegan, S.S. 2006. Greater Flamingo *Phoenicopterus ruber* ringing at Lake Uromiyeh, I.R. Iran. *Waterbirds around the world*. Eds. G.C. Boere, C.A. Galbraith & D.A. Stroud. The Stationery Office, Edinburgh, UK. pp. 562-563.

Uromiyeh Lake (483 000 ha) is a large, shallow, hypersaline lake with numerous islands and extensive fringing brackish to saline marshes, in a large internal drainage basin in the uplands of northwestern Iran. The lake is of great importance as a breeding area for many species of waterfowl, notably Greater Flamingo *Phoenicopterus ruber* and is protected as a National Park and Ramsar site. This note describes the results of the ringing programme started in 1970.

Large breeding colonies of the Greater Flamingo were first located in 1965 and 1966 (Fig. 1). Crude estimates place the total flamingo population on Lake Uromiyeh at 10 000-12 000 in 1965 and 1966, while aerial censuses of the breeding colonies in 1971-72 put the population at 15 000-20 000 breeding pairs, with an additional 5 000-10 000 non-breeders present (Scott 1973). Numbers appear to be increasing slightly, with perhaps as many as 25 000 breeding pairs in the last decade. In Iran as whole, wintering flamingo populations are estimated at 85 000-160 000 individuals.

The Flamingo Ringing Project at Lake Uromiyeh started in 1970, and has continued annually from early July to late August in most years. In 1970, 2 250 flamingo pulli (chicks) were neck-banded with blue collars and 242 adults were ringed with metal leg-rings. Since 1970 only metal leg-rings have been used, and

by the end of the 1999 breeding season, a total of 30 002 birds had been marked (leg rings and collars). A colour ringing program was initiated in 1999, starting with 295 pulli. Data are summarised in Table 1.

By the end of December 2002, 216 recoveries (0.72 %) had been reported from 28 countries, including Morocco, Sudan, Ethiopia, Somalia, Azerbaijan, Kazakhstan, India, Sri Lanka and Iran (Table 2). This demonstrates a very wide post-juvenile dispersal of flamingos that had not hitherto been suspected. The adult birds from the Lake Uromiyeh colony, however, seem to winter almost entirely in central Fars and along the coast of Persian Gulf and Oman Sea.

The rate of recovery increased until 1974 (1.23%), but from 1975 this has steadily decreased to 0.72% in 1999. This indicates that metal ringing is not a suitable method for marking flamingos, and we should explore more effective methods such as satellite tracking and colour ringing. From 689 adult ringed birds only 7 have been recovered (three from Iran, two from Kazakhstan, one from Egypt and one from the UAE), and those between 10 months and 15 years after ringing. It seems that ringed adults survive better than ringed chicks. Only two colour rings have been recovered, both in Khue Dubai in 2002 and 2005.

Table 1. Greater Flamingo *Phoenicopterus ruber* ringing and recovery statistics.

Year	Total birds ringed	No. of adults	No. of chicks	No. of recoveries (all)	% Rcvd. year of ringing	% Rcvd./total	Cumulative ringed birds*	Cumulative recovery	Cumulative % success*
1970	2 492	242	2 250	8(5+3)	0.32	3.70	2 492	8	0.321
1971	1 000	0	1 000	18	1.80	8.33	3 492	26	0.744
1972	1 495	0	1 495	31	2.07	14.35	4 987	57	1.143
1973	1 499	0	1 499	20	1.33	9.26	6 486	77	1.187
1974	1 450	0	1 450	20	1.38	9.26	7 936	97	1.222
1975	977	103	874	1	0.10	0.46	8 913	98	1.099
1976	1 762	257	1 505	11(7+4)	0.62	5.09	10 675	109	1.021
1977	2 037	16	2 021	22	1.06	10.18	12 712	131	1.030
1978	2 326	0	2 326	22	0.94	10.18	15 038	153	1.017
1980	904	4	900	4	0.44	1.85	15 942	157	0.984
1981	1 408	8	1 400	9	0.64	4.17	17 350	166	0.957
1982	1 054	4	1 050	9	0.85	4.17	18 404	175	0.951
1983	1 802	55	1 747	15	0.83	6.94	20 206	190	0.940
1985	850	0	850	5	0.59	2.31	21 056	195	0.926
1986	496	0	496	2	0.40	0.92	21 552	197	0.914
1987	800	0	800	1	0.12	0.46	22 352	198	0.886
1988	1 100	0	1 100	2	0.18	0.92	23 452	200	0.853
1989	1 500	0	1 500	3	0.20	1.39	24 952	203	0.813
1994	1 500	0	1 500	5	0.33	2.31	26 452	208	0.786
1995	1 500	0	1 500	4	0.27	1.85	27 952	212	0.758
1997	650	0	650	1	0.15	0.46	28 602	213	0.745
1998	650	0	650	1	0.15	0.46	29 252	214	0.731
1999	750	0	750	2	0.27	0.92	30 002	216	0.720
Total:	30 002	689	29 313	216	0.720	100	30 002	216	0.720

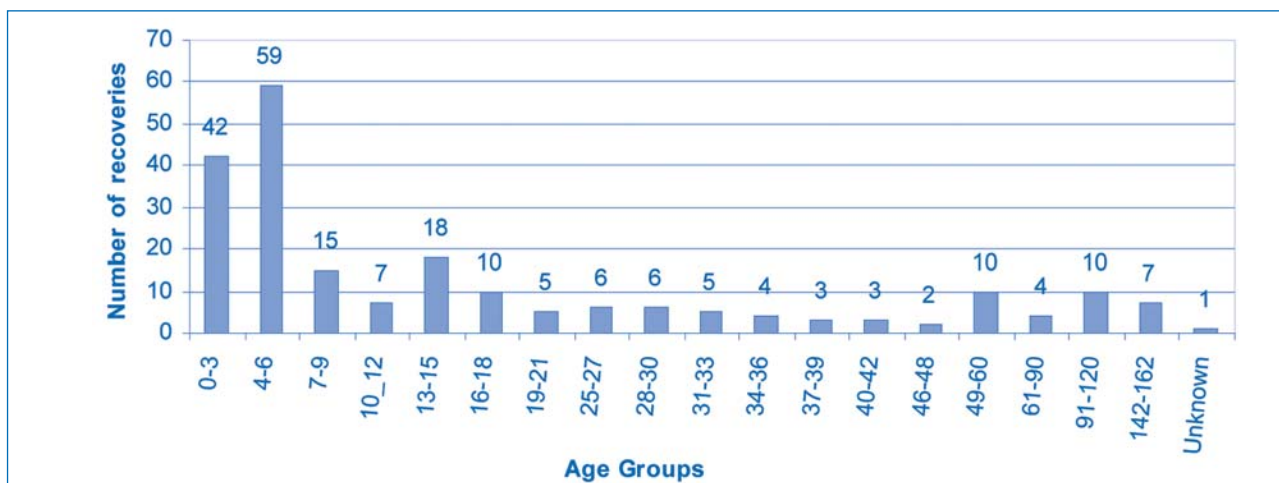


Fig. 2. Recoveries of ringed Greater Flamingos *Phoenicopterus ruber* by age groups (in months).

Fig. 2 shows recovery periods varying from 1-162 months. A total of 99 recoveries (46.3%) occurred 1-6 months after ringing, and 113 recoveries (52.8%) 1-9 months after ringing, showing a high mortality during the juvenile period, caused perhaps by the following:

- until five months, chicks do not have enough strength to fly, and therefore cannot escape enemies;
- chicks are not familiar with threats and are easily injured;

- differences in migration routes - adults are thought to winter mainly in Iran and juveniles outside Iran; and
- recovery data show that although flamingos are a protected species, they are widely hunted, and most recoveries come from shot birds.

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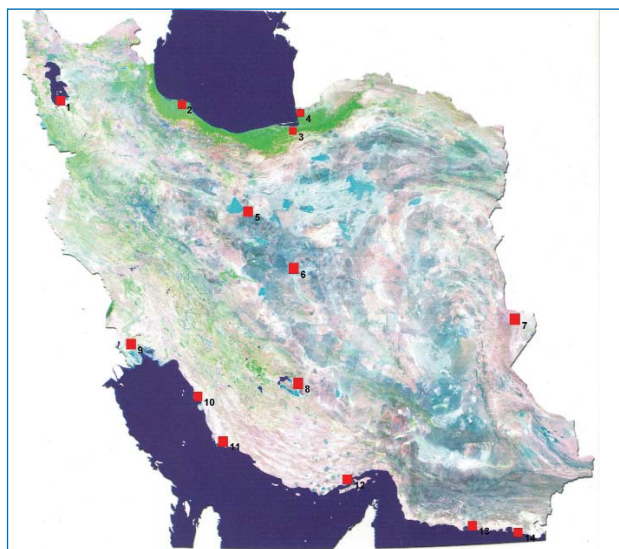


Fig. 1. Distribution of Greater Flamingos *Phoenicopterus ruber* in Iran.

- 1- Lake Uromiyeh (National Park, Ramsar Site and Biosphere Reserve)
- 2- Sefid Rud Delta (Protected Area and Ramsar site)
- 3- Miankaleh (Ramsar Site and Wildlife Refuge)
- 4- Gomishan (No Hunting Area)
- 5- Qom Salt Lake (included in Kavir National Park and Kavir Biosphere Reserve)
- 6- Gav Khoni (Ramsar site)
- 7- Hamun Lakes (Ramsar Site and Protected Area)
- 8- Tashk and Bakhtegan Lakes (National Park and Ramsar site)
- 9- Shadegan Marsh (Ramsar Site and Wildlife Refuge)
- 10- Helleh (Protected Area)
- 11- Mond (Protected Area)
- 12- Hara (Protected Area, Ramsar Site and Biosphere Reserve)
- 13- Gagin and Gabrik
- 14- Chabahar Bay

Table 2. Recoveries in different countries.

Rank	Recovery Countries	No. of Recoveries	% Recovery/ Total
1	I. R. Iran	49	22.68
2	India	21	9.72
2	Pakistan	21	9.72
3	Iraq	19	8.80
4	Turkey	19	8.80
5	Libya	13	6.02
6	Egypt	10	4.63
7	Kazakhstan	8	3.70
8	UAE	7	3.24
9	Oman	5	2.31
10	Bahrain	4	1.85
10	Ethiopia	4	1.85
10	Syria	4	1.85
10	Qatar	4	1.85
10	Tunisia	4	1.85
11	Saudi Arabia	3	1.39
11	Somalia	3	1.39
11	Sudan	3	1.39
12	Azerbaijan	2	0.93
12	Cyprus	2	0.93
12	Greece	2	0.93
12	Israel	2	0.93
12	Morocco	2	0.93
13	Djibouti	1	0.46
13	Italy	1	0.46
13	Kuwait	1	0.46
13	Sri Lanka	1	0.46
13	Turkmenistan	1	0.46