



WINTERING POSITION AND FIRST RECORD OF BREEDING OF DALMATIAN PELICAN *PELECANUS CRISPUS* ON TIFF ISLAND IN KHORE MOSA IN PERSIAN GULF IN 2010

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Abstract: Dalmatian Pelican *Pelecanus crispus* was nesting in Parishan and Bakhtagan wetlands in Fars province in Iran until 2005. After drying these wetlands, the small breeding population of *Pelecanus crispus* (10-15 pairs) disturbed. There was no information about the breeding of this species in Iran until 2010. On the fifth of March 2010 I found a small breeding colony on Tiff Island, (30° 25'12" N 49°09'47"E) in Khore Mosa Creek in Persian Gulf. There were 6 nests; three of the nest had 3 eggs, two of them had 2 eggs and one of the nests had one egg. The Average weight of the eggs was 162 grams, average diameters of eggs was 93.66x63.20 mm, the average height of nests was 64.16cm and average diameter of nests was 54cm. Six females of the Dalmatian Pelican have been sited on the nest and six of them were feeding near the island about 200 meters far from the nests on the water. Area of the island is about 16 hectares, around of the island covered by *Cyperus ssp*, *Lysium* and *Saueda vermiculata* and *Halopyrum mucronatum*, but middle of the island is without any vegetation.

Keywords: Breeding, Dalmatian Pelican, Iran, Khore Mosa, Persian Gulf, Tiff Island.

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INTRODUCTION

Dalmatian Pelican *Pelicans crispus* is considered as a vulnerable species in the world, (Cerivellii et al., 1991a and 1994; Cerivellii 1987 and 1994; Groombridge 1993-1994; Hatzilacou 1993; Krivonosov and Vinogradov 1994, Krivonosov et al., 1994, Litvinova, 1994, Lysenko, 1994; Michev 1981; Perennou et al., 1994; Rose and Scott, 1994; Vizi, 1981). Rather larger than White Pelican *Pelecanus onocrotalus*, from which it differs in its greyer white (never pink) plumage, lack of crest, yellow eyes and especially grey legs. Gular pouch is yellow to orange and iris pale yellow. Easier to distinguish when in flight overhead, no black showing in under the wings. A thick crest of silver feathers on the nape adds to the luxurious look of this impressive bird. The undersides of the wings are pale grey, darkening towards the ends. As the breeding season progresses, the pouch fades to yellow, and during the winter the plumage loses its silvery sheen, appearing whitish or grey. This is the largest of the pelicans, averaging 170–190 cm (67-75 inches) in length, 11–15 kg in weight and just over 3 m in wingspan. On average, it's the world's heaviest flying species. This pelican migrate short distances. In flight, it is an elegant soaring bird, with the flock moving in synchrony. The neck is then held back like a

heron's (Baharat bushan et al., 1993; Birdlife International 2001, Krivonosov et al., 1994; Lysenko 1994 and Peja et al., 1994). Main breeding habitat of the Dalmatian Pelican in Iran were Parishan (5-10 pairs) (Scott, 1995, Behrouzirad, 1999; 2008; Argyle 1975), and Bakhtagan, (Scott 1995; DOE of Fars. 1980-2007). After drying the Parishan and Bakhtagan wetlands in 2005, there was no information about breeding of this species in Iran. In March 2010 I was searching the bird fauna of Khore Mosa; I found the small breeding population of Dalmatian Pelican on Tiff Island.

METHODS AND MATERIALS

Study Area: There are 6 islands (Boneh, Dara, Nedelgar, Ghabre Nakhoda, Sandy and Tiff) in Khore Mosa in Persian Gulf. Tiff island located on 30° 25' 12" N 49° 09' 47" E in Khore Mosa, 7 km. south of Mahshar Port and 4 km east of Imam Khomainsi port (Fig 1). Area of the island is about 16 hectares (800×200 meter). Khore Mahshar consists of the main part of Khore Mosa (Mosa Creek) in the Persian Gulf. Main inhabitants of the island are waterbirds mainly Gulls, Terns and Waders. The most dominant plant species were *Cyperus*, *Halopyrum mucronatum*, *Lycium* and *Suaeda vermiculata*, which cover about 70%–90% of around of the island. (width of the vegetation is about 2 or 3 meters in all around of the island). Central part of the island is without any vegetation. This island has abundant water; since natural and human predation is absent, this is an ideal environment in which birds may breed or stop over during migration.



Figure 1. Location of Tiff Island in Khore Mosa in Persian Gulf

BIRDS COUNT

I organized four field trips to Khore Mosa and its islands where a few Dalmatian Pelican has been recorded during last years in winter (Scott, 1995). Some of the islands are very important place for nesting sterna spp and Crab plover *Dromas ardeola* (for example Khabre Nakhoda and Boneh islands (Scott 1995; Evans 1994; Behrouzi-Rad 2008). The first survey was conducted on 7th August 2009 with the aim of finding the present number and breeding populations of sterna spp and Crab plover in Khore Mosa and its islands. At that time I did not see Dalmatian Pelican in the region, but I found two nests of Western Reef Heron *Egretta gularis* on short scrub, but did not find other birds nest on the island. The second survey carried out on 12th November 2009 in all island and water body of the Khore Mosa, I observed only 3 Dalmatian Pelican on Khore Mosa (30° 29' 41" N 49° 06' 17" E), a third survey conducted on 5th March 2010 and found 6 nests of Dalmatian Pelican on Tiff Island. (30° 25' 12" N 49° 09' 47" E). During 2 hours staying on the island, Total count was used for bird counting by 60 × 15

telescop and 10×40 Binocular. Islands checked for Terns, Crab Plover and Western Reef Heron nests and signs of nesting activity. The fourth survey carried out on 10th April 2010.

RESULTS AND DISCUSSION

Tiff Island has been never visited by ornithologist until Aug.2009. This was the first observation of birds in Tiff Island. Number of wintering birds on Tiff Island has been shown in (Table1).

Table 1. Number of birds on Tiff Island in August 2009 - 10 April 2010

Species	Number	Counted date
Black Headed Gull , <i>Larus ridibundus</i>	11	7 Aug. 2009 (12-14PM)
Lesser Crested Tern , <i>Sterna bengalensis</i>	2	"
Western Reef Heron , <i>Egretta gularis</i>	2Ad + 7 chicks	"
Slender-billed Gull , <i>Larus genei</i>	32	"
Black Headed Gull , <i>Larus ridibundus</i>	24	"
Redshank , <i>Tringa tetanus</i>	3	"
Western Reef Heron , <i>Egretta gularis</i>	2	"
Dalmatian Pelican , <i>Pelecanus crispus</i> six pieces on nest and six pieces on water	12	"
Crab plover , <i>Dromas ardeola</i>	45	5 March 2010 (15-17)
Little Stint <i>Calidris minuta</i>	12	"
Temmenkii Stint <i>Calidris temmenkii</i>	13	"
Common Curlew <i>Numenius arquata</i>	3	"
Wimble <i>Numenius phaopus</i>	3	"
Redshank <i>Tringa tetanus</i>	3	"
of Oystercatcher , <i>Hematopus ostralegus</i>	8	"
Ruddy Turnstone <i>Arenaria interpres</i>	4	"
Common Sandpiper <i>Actitis hypoleucos</i>	23	"
Terek Sandpiper <i>Xenus cinerus</i> ,	8	"
Marsh Sandpiper <i>Tringa stagnatilis</i>	32	"
Spotted Redshank <i>Tringa erythropus</i>	1	"
Dunlin <i>Calidris alpina</i>	55	"
Curlew Sandpiper <i>Calidris ferruginea</i>	6	"
Western Reef Heron <i>Egretta gularis</i>	2	"
Crab plover <i>Dromas ardeola</i>	4	10 April 2010 (13-14-PM)
2 nests of Western Reef Heron <i>Egretta gularis</i> , one of them had 3 eggs and other one had 2 eggs	2 nest	"
6 pieces of Dalmatian pelican <i>Pelecanus crispus</i> on Nests	6	"
Redshank <i>Tringa totanus</i>	2	"
Common Curlew <i>Naumanus arquata</i>	3	"
Stint <i>Calidris sp</i>	4	"

BREEDING POPULATION OF *PELECANUS CRISPUS*

Pelecanus crispus breeds exclusively in the Palearctic, including eastern Europe and east-central Asia, in Georgia, F.Y.R. Macedonia, Serbia and Montenegro, Bosnia and Herzegovina, Albania, Greece, Romania, Bulgaria, Russia, Ukraine, Azerbaijan, Armenia, Turkey, Iran, Turkmenistan, Uzbekistan, Kazakhstan and Mongolia((Cerivelli et al., 1991b; Peja, et al., 1994). European breeders winter in the eastern Mediterranean countries, Russian and central Asian breeders in Iran, Iraq and the

Indian subcontinent, and Mongolian birds along the east coast of China, including Hong Kong (Cerrivelli 1994; Krivenko, et al., 1994). (Fig.3) following the massive declines during the 19th and 20th centuries, their numbers have stabilized between 10,000-20,000 individuals (Cerivelli 1996, Krivenko et al., 1994). The world population of this species is estimated at between 3215 and 4280 breeding pairs, nesting at 20 or 21 sites (Cerivelli and Vizi.O 1981) (Tables 2, 3 and 4). Each nesting site can contain several colonies spread over quite a large geographical area, this being particularly true for the former USSR. The former USSR harbors between 80% and 84% of the world population of *P. crispus*. Kazakhstan alone harbors more than half of the breeding pairs in the former USSR (Krivonosov et al., 1994, Crivelli et al., 1994, Perennou et al., 1994), After the former USSR, Greece is the most important country, with between 6% and 8% of the world population (Pyrovetsi, M.1990, Crivelli 1981, Michev 1981, Rose & Scott1994,Vizi 1979b and 1981). *Pelecanus crispus* breeds locally in south-eastern Europe, which account for less than half of its global breeding range. Its European breeding population is small (as a few as 1600 pairs table 1), but increased substantially between1970-1990. Despite marked declines elsewhere within its global range during 1990-2000 (Table 2), the species have had a moderate increase overall in Europe. Nevertheless, its population size still indicates it susceptible to the risk affecting small populations, and consequently this globally threatened species is evaluated as Rare in Europe. (Tables 2, 3 and 4). Breeding population of this species were 5-10 pairs in Iran until 2005 (Scott 1975 and 1995; Behrouz-Rad 1999, 2008). The Parishan and Bakhtagan wetlands were only breeding site in Iran until 2005. These two wetlands harbors 0.5% of the world breeding population of the *Pelecanus crispus* (Behrouzi-Rad1999). However, there is no chance that *P.crispus* breed in this area, flowing the major damage caused by the drying all the marshes in Fars province especially Parishan and Bakhagan in 2005-2010. Recent and reliable estimates of the number of breeding pairs and nesting sites are shown in (Fig 3) and (Tables 2 and 3).The best estimate of the world population is 3,215–4,280 breeding pairs (Crivelli 1994; Table 3). The former U.S.S.R. (Kazakhstan, Russian Federation, Turkmenistan, Ukraine and Uzbekistan) harbors 80–84% of this, and the next most important country, Greece, has 6–8%. European population numbers (Table 4) are estimated at 886–1,204 pairs (Romashova 1994; Cerivelli 1994; Tucker and Heath, 1994) in 1994.

Table 2. Breeding population of Dalmatian Pelican *Pelecanus crispus* in Europe and Iran

Country	Breeding	Years	Trend
Albania	19-19	1992-2002	Stable
Armenia	5-8	1997-2002	Stable
Azerbaijan	3-10	1996-2000	Stable
Bulgaria	49-128	1996-2001	Increased
Georgia	Present	2003	?
Greece	500-550	1995-1997	Stable
Romania	400-550	1990-2002	Increased
Russia	350-450	1990-2000	Increased
Serbia and	3-7	2000-2002	Stable
Turkey	220-270	2001	Stable
Ukraine	3-14	1990-2000	increased
IRAN	5-11	1970-2010	decreased
Total (Approx)	1600-2000		

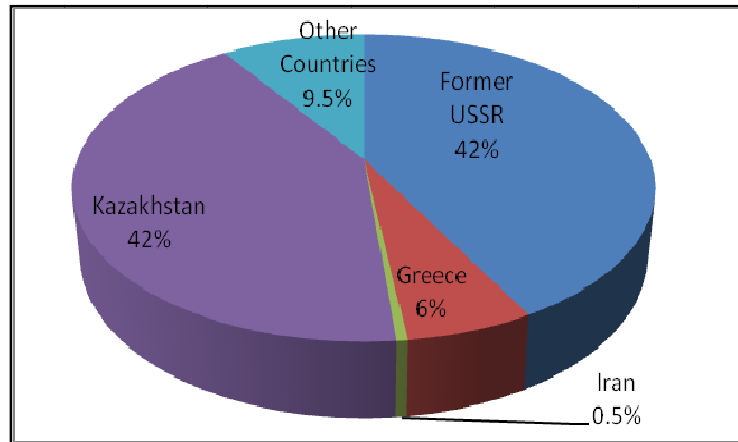


Figure 2. Percent of breeding population of *Pelecanus crispus* in the world in 1999

The breeding population of Dalmatian Pelican was 5-10 pairs in Parishan wetlands in Iran (Behrouzi-Rad 1999, Scott, 1995). Number of breeding of this species depends on water level on Parishan, the security of this habitat and food resource (especially the amount of fish in Parishan). For this reason, the breeding population of *Pelecanus crispus* fluctuated between 5-11 pairs during three 3 recent decades ,1970s 2000s (Table 5). In 1984, 3 pairs of this species had been bred in Bakhtaghan wetland (Farhad-Pour, Pers. Com).

Table 3. Breeding place of *Pelecanus crispus* with estimated number of breeding pairs in World

Country name	Number of breeding pairs	No. of breeding site	Reference
Albania	40-70	One site	Crivelli 1994
Bulgaria	70-90	One site	Crivelli 1994
Greece	190-260	2 sites	Cerivelli 1994
Rumania	70-150	One site	Cerivelli 1994
Former USSR	2700-3500	8 sites	Cerivelli 1994
Montenegro (exYugoslavia)	10-20	One site	Bold & Tsevenmydag 1994
Iran	5-10 (1970s-2005) on fifth of March.2010 only 6 pairs on Tiff, 8 pairs on Sivand Dam	2 sites In 2010 Only one site	Scott 1970s and 1995, behrouz-Rrad 1999 and2008. Behrouzi-Rad March 2010 Jolai, 2010
Mongolia	30-50	One site	Cerivelli 1994
Chaina	?	?	Cerivelli 1994
Turkey	100-150	4-5 sites	Cerivelli 1994
Iraq	?	?	Cerivelli 1994
Total 11 country	3215-4280	21-22 sites	Cerivelli 1994

Table 4. Numbers of breeding Dalmatian Pelicans *Pelecanus crispus* in Europe (Crivelli 1994)

Country	Number of breeding	Breeding pairs (year of census)	References
Albania	1	40-70 (1990s)	Peja, N., Sarigul, G., Siki, M. and Crivelli, A.J. 1994
Bulgaria	1	70-90 (1990s)	T. Michev 1994

Fed. Rep. of Yugoslavia (Serbia only)	1	10–20 (1980s)	O. Vizi ,1981
Greece	2	190–260 (1990s)	Catsadorakis et al, A. J. Crivelli and D. Hatzilacou , 1994
Romania	1	70–150 (1990s)	B. Kiss and M. Marinov,1994
Russian	4–5	400–450	Crivelli et al. (1994)
Turkey	4–5	100–150	Peja, N., Sarigul, G., Siki, M. and
Ukraine	1	6–14	Lysenko (1994)
Total	15–17	886–1,204	

Table 5. Number of breeding pairs of Dalmatian Pelican *Pelecanus crispus* in Parishan and Bakhtaghan wetlands, 1970s-2010

Year	Breeding pairs			Reference
	Parishan	Bakhtagan	Persian Gulf	
1970s	5-10	-	-	Scott 1970, Argyle 1975, Scott 1995.
1983	7	-	-	Behrouzi-Rad 1983 unpublished birds Ringing report
1984	-	3		Farhad Pour 1984
1988	6	-	-	Behrouzi-Rad 1988 unpublished bird ringing report
2003	11	-	-	Behrouzi-Rad 2003, pers.obs.
2004	9	-	-	Behrouzi-Rad 2004, pers.obs.
2005	6	-	-	Behrouzi-Rad 2005, pers.obs.
2006	0	-	-	Behrouzi-Rad 2006, pers.obs.
2007	0	-	-	Behrouzi-Rad 2007, pers.obs.
2008	dry	dry	-	Behrouzi-Rad 200, pers.obs.
2009	dry	dry	-	Behrouzi-Rad 2009, pers.obs.
2010	dry	dry	6	First record , Behrouzi-Rad,5th March 2010
2010	dry	dry	8	Jolai First record

15 Juvenile on 22 June 1983 and 13 Juvenile on 5th June 1988 of Dalmatian Pelican have been ringed by a metal ring in Parishan. (Dept. of Environment of Fars 1980-2007 unpublished birds ringing reports). It was measured the nests and eggs of this species in Tiff Island on 5th March 2010 (Table 6).

Table 6. Nests and eggs sizes of Dalmatian Pelican on Tiff island in Persian Gulf on 5th March 2010

Number of nests	Number of eggs	Height of nests	Diameter of Nests	Eggs sizes	Weight of eggs
1	one	40 cm	40 cm	95.45x65.32 mm	160 g
2	3	60 cm	56 cm	92.45x65.67 mm 96.62x62.45 mm 88.66x66.88 mm	200 g 160 g 190 g
3	3	55 cm	65 cm	103.72x72.10 mm 92.65x65.70 mm 85.63x63.75 mm	190 g 180 g 160 g

4	3	60 cm	65 cm	95.57x57.85 mm 82.52x59.56 mm 90.50x60.70 mm	120 g 130 g 160 g
5	2	65 cm	53 cm	98.60x 60.65 mm 96.54x60.86 mm	170 g 150 g
6	2	45 cm	45 cm	94.54x61.76 mm 98.76x61.65 mm	155 g 152 g
Average	-2.16	64.16 cm	54 cm	93.66x63.20 mm	162 g

Egg sizes from clutches in Manchy-Gudilo were 85-102 x 56-63mm, average 94.7 x 59 mm (n=29). The weight of eggs from these clutches was 148-224 g, average 172 g. Egg sizes from the Kuban delta were 88.3-96.7 x 56.2-60.6, average 93.3 x 58.7mm (n=8). The weight of two eggs from these clutches was 170.8 and 176.5 g. (Kazakov, et al., 1994). It seems that eggs sizes in Tiff Island are similar (82.52-103.72 x 59.56- 72.10 mm, average 93.66 x 63.20) to Manchy- Gudilo, Kuban delta and Europe. Egg sizes reported 93.6x 59.7 mm in europe (Colin Harrison 1975). Also, the first record of breeding of small colony (8 pairs with eight nests with 2-3 eggs in each nest) of this species recorded on 10th April 2010 in Sivand Dam reservoir (30° 08" 34'N 53° 05" 00' E) by Miss Jolai, (pres.com) expert of Fars Environment Office.

WINTERING POPULATION

The wintering population and counted years in the world has been shown in table 7 and number of wintering population and important wintering sites of *Pelecanus crispus* in Iran has been shown in tables 8 and 9, the distribution of this species has been shown in (Fig 2).

Table 7. Wintering population of Dalmatian Pelican *Pelecanus crispus* in Europe (Data from Internet)

Country	Wintering population Size (individuals)	Years	Trend
Albania	91-186	1995-2002	increased
Azerbaijan	200-400	1996-2002	increased
Bulgaria	423-607	1997-2001	Stable
Greece	930-1700	1995-1999	increased
Macedonia	10-36	1997-1999	Decreased
Serbia and MN	5-10	1990-2002	Decreased
Romania	20-50	1990-2000	Decreased
Turkey	1300-1600	1991-2001	Stable
IRAN	500-4500	1970-2007	increased
Total (Approx)	>3000	Decreased	

Table 8. Wintering population and important wintering habitats of Dalmatian Pelican *Pelecanus crispus* in 2007 Iran

Wintering Sites	Numer	Caspian Sea Coasts
South Coasts of Caspian sea	738	Caspian Sea Coasts
Miankaleh Wildlife refude	93	Caspian Sea Coasts
Anzaly Marsh	69	Caspian Sea Coasts
Hara Protected Area	90	Persian Gulf Coasts

Coasts of Qeshm island	64	Persian Gulf Coasts
Taib and Kolahi mangrove wetlands	77	Persian Gulf Coasts
Khore Kargosh	86	Persian Gulf Coasts
Khore Tafarkan	253	Persian Gulf Coasts
), Khore Myidani	127	Persian Gulf Coasts
Jask	103	Persian Gulf Coasts
Heleh protected Area	103	Persian Gulf Coasts
Mond Protected Area	240	Persian Gulf Coasts
Nayband National Park	41	Persian Gulf Coasts
Govater Bay	182	Persian Gulf Coasts
Khore Chahbahar and Konarak	753	Persian Gulf Coasts
lake of Aslandoz dam on the Aras River	26	North West of Iran

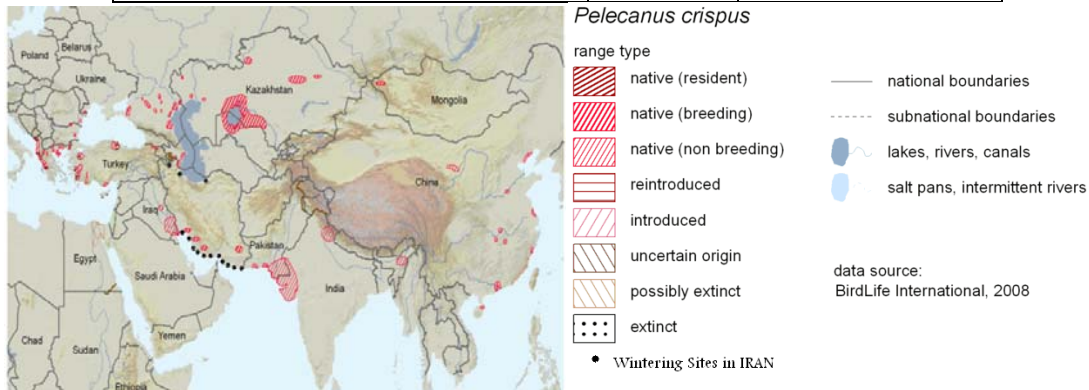


Figure 3. Distribution of Dalmatian Pelican *Pelecanus crispus* in the world

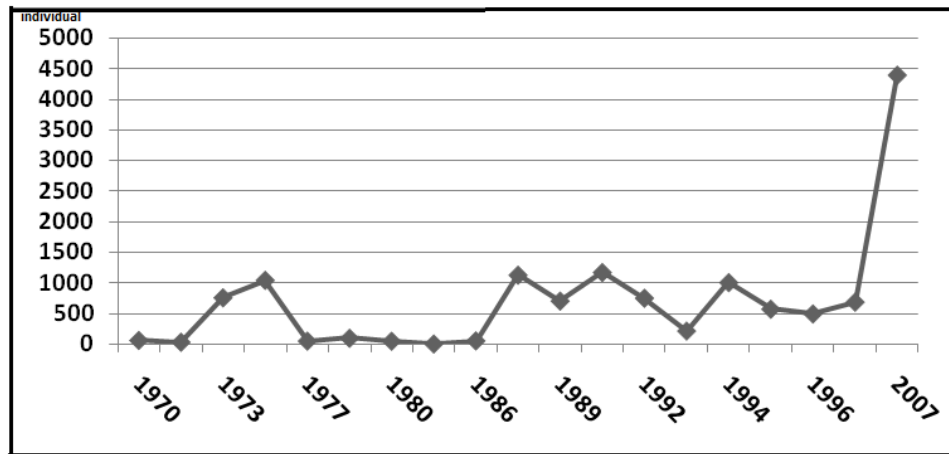


Figure 4. Wintering number of Dalmatian Pelicans *Pelecanus crispus* in Iran

Table 9. Number of wintering sites and population of *Pelecanus crispus* in Iran (Data from DoE Mid-Winter Waterbirds Count, 1970-1997 and 2007)

Year	Parishan	Persian Gulf coasts	Caspian Sea	Other sites	Number of Sites	Total
1970	-	-	-	65	3	65
1972	-	-	35	1	2	36
1973	60	204	192	404	7	760
1974	100	518	203	224	10	1045, Scott 1974

1977	15	32	12	-	5	54
1978	4	17	79	-	5	100
1980	-	-	52	-	1	52
1983	-	7	-	-	1	7
1986	26		32	-	3	58
1988	184	14	918	13	9	1129
1989	16	0	690	0	2	706
1991	252	86	394	440	11	1172
1992	44	0	462	247	8	753
1993	17	65	136	-	4	218
1994	39	595	346	28	10	1008
1995	53	162	258	101	4	574
1996	44	275	152	26	12	497
1997	72	165	452	-	14	689
2007	17	3005	937	126	33	4390



Figure 5. Nests and eggs of Dalmatian Pelican *Pelecanus crispus*, Tiff Island on 5th March 2010 (Photo, Behrouzi-Rad March 2010)

Dalmatian Pelican *Pelecanus crispus* breeds amongst the reed beds (in Parishan Wetland breeds amongst the reed beds) or in the open area on the islands (Tiff Island) in river deltas and coastal lagoons, In the Mediterranean region, a few breeding colonies are found in lagoon systems (Peja et al., 1994). One of them (Karavasta, Albania) was already known the early of this century and two others (Camalti Tuzlasi and the Menderes Delta, Turkey) are recent. They were established probably during the 1970s following the abandonment of breeding colonies located in freshwater inland wetlands. In Iran, Dalmatian Pelican did not breed in estuaries or Coastal lagoons. The Dalmatian pelican is also found at inland, freshwater wetlands in winter. The Parishan wetlands are completely fresh water and the Persian Gulf is completely salty. It starts to breed in the late of March or April, sometimes solitarily but usually in dense colonies of up to 250 pairs (Krivonosov Rusanov and Gavrillov, 1994; Lysenko, 1994). In Parishan wetland the 5 or 10 (Maximum 11 nests in 2003) nests are dispersed in more than 200 -500 hectares in reedbeds, but in Tiff island 6 nests were seen in the 4 meters which the nests were enclosed together completely. It departs the colonies between the end of July and September, although a few remain until November (Crivelli, 1987; Romashova, 1994). They are in social group during the winter, often occurring in large flocks and foraging communally and cooperatively in small groups, although occasionally they feed singly. The birds return to their breeding sites in late-January to April, depending on the region. Immature birds and non-breeders may remain in the wintering grounds, or may stay with the breeding colonies (Bird Life International. 2001, Krivonosov, Rusanov and Gavrillov, 1994). Number in colony in wintering population of this species at south of Caspian Sea coasts consist about 100 (Maximum 500) individuals in Miankaleh Protected Area or in Gomishan hunt-banned area. In Persian Gulf, the flocks never did not have more than 100 individuals. At Persian Gulf coasts Dalmatian Pelican exists during year, but the number of them is very few in

summer. They are often migratory, especially in the Caspian Sea and Persian Gulf coasts. It occurs mainly at inland, freshwater wetlands but also at coastal lagoons, river deltas and estuaries. It breeds on small islands in freshwater lakes or in dense aquatic vegetation such as reedbeds of *Typha* and *Phragmites*, often in hilly terrain (Romashova, 1994; Peja et al., 1994). A few breed in Mediterranean coastal lagoons. The species use of habitats surrounding its breeding sites, including nearby islands and wetlands. Non-breeding population on migration season, use the large lakes as an important stop-over sites. It typically winters on marshes and lagoons in India, and ice-free lakes in Europe (Crivelli, 1996). Most nests of the *Pelecanus crispus* approximately 1m high and 0.5-1.5m in diameter. (Litvinova, 1994, Vizi, 1979b). Coasts of Tiff Island are as a shelter, quiet, have a plentiful amount of fish and suitable place for feeding and breeding for birds. There is no doubt that the number of Dalmatian Pelican *Pelecanus crispus* breeding in Iran strongly declined between the 1970s, 1990s, and 2010 table 4 and 5. In 2010 only six pairs had bred in the Tiff Island. There is not any report of breeding of this species in other sites in Iran between 2005- 2010. Breeding begins in March and April in the western part of the range, but varies geographically (Pyrovetsi et al., 1993a). In Iran in Persian Gulf, breeding started the early of March. Nest sites are found in areas with plentiful fish, and nests were constructed from grass, and sticks. There were 3 eggs in 3 nests, 2 eggs in 2 nests and 1 egg in one nest on 5th of March 2010, in Tiff Island. (Michev, 1981; Crivelli et al., 1991a; Krivonosov et al., 1994; Romashova, 1994).

THREATS AND CONSERVATION

The Dalmatian Pelican *Pelecanus crispus* is classified by IUCN as globally threatened in the category Vulnerable (Groombridge 1993 -1994, IUCN. 2010). At the European level it is considered Vulnerable (Tucker and Heath 1994). Declines in the past have been due to wetland drying, shooting, and persecution by fishermen. Currently, habitat degradation from wetland alteration and water pollution are serious threats, which are compounded by over-exploitation of fish stocks by the fishing industry and hunting by people. In Iran drying of two major breeding sites Parishan and Bakhtagan, Shooting and water pollution are the main reason for decline of the breeding population.

CONCLUSION

The Dalmatian Pelican *Pelecanus crispus* is classified by IUCN as globally threatened in the category Vulnerable. For this reason and existence of low population in Iran, *Pelecanus crispus* is a protected species and shooting or killing the species is forbidden and all breeding habitats of this species are protected, however; there has been not a significant changes in the number of *P. crispus* breeding between 1970 and 2010, but breeding habitats of the species have been changed from Parishan and Bakhtagan to Tiff Island in Persian Gulf and Sivand Dam Lake in Fars province, because two main breeding habitat of this species (Parisha and Bakhtagan) dried since 2005 and the small breeding colony of the species was disturbed. The new breeding habitats are not suitable, because the waterlevel in Sivand Dam Lake depends on using water; usually there is not enough water in the Dam Lake. For this reason water level variation happens a lot, so there is not enough fish as a food resource, and it negatively effects on the success of breeding of this species. Tiff Island closed to Petro-chemical Zone (PETZON) and was located on ships traffic rout which quartering between Bandar Immam Port and Persian Gulf. There is oil pollution in the Khore Mosa creek, which effects on the food resource of the pelicans. *Pelecanus crispus* used to build the nest on red beds among huge vegetation cover in Parishan and Bakhtagan wetlands, but in the two new breeding habitats there is not any vegetation cover and the nests have been built on the ground and the eggs and chicks are visible and the predators can eat the eggs and hunt the chick easily. So shortage of Security, vegetation cover, and existence of water pollution caused that the Tiff Island cannot be a suitable breeding habitat. For this reason, the breeding population of *Pelicanscrispus* cannot survive in this new habitat for many years. On the other hand, the number of the breeding population of this species declined in the world and is estimated at between 3215 and 4280 breeding pairs, those effects on the small breeding

population of Iran. Nesting sites were 20 or 21 in the world, and were two sites in Iran in 2010. The sites were Tiff Island (6 pairs) in Khore Mosa and Sivand Dam lake (8 pairs) in Fars Province in Iran. Also there is no doubt that the number of *P. crispus* wintering in Iran strongly declined between the 1970s and the end of the 2010. The reduction in the number of wintering birds in Iran can be related to a decrease in the number of breeding birds in the other countries which after breeding migrate to Iranian wetlands in winter. Ornithologists recorded isolated birds in various wetlands in the country, but the birds only occurred regularly on the coasts of the Persian Gulf and Oman Sea in south of Iran, Miankaleh and Gomishan wetlands in south of Caspian sea coasts. Wintering population of *Pelecanus crispus* reported 500-4500 individuals in Iran since 1970 to 2007 from 3-33 sites. They are in social group during the winter, often occurring in large flocks and foraging communally and cooperatively in small groups, although occasionally they feed singly. The birds return to their breeding sites in January to April, depending on the region. Immature birds and non-breeders may remain in the wintering grounds, or may stay with the breeding colonies. The number of this species in a colony in wintering population at south of Caspian Sea coasts was about 100 individuals in Miankaleh Protected Area or in Gomishan hunt-banned area. In Persian Gulf the flocks did not have more than 100 individuals.

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