

# Relocation of pygmy cormorants *Phalacrocorax pygmeus* using scare tactics to reduce conflict with fish farmers in the Bet She'an Valley, Israel

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## SUMMARY

To help resolve the conflict between pygmy cormorants *Phalacrocorax pygmeus* and fish farmers, the birds were scared away from Bet She'an Valley before the breeding season started. The cormorants have subsequently relocated to other, safer breeding sites.

## BACKGROUND

The pygmy cormorant *Phalacrocorax pygmeus* is a near-threatened species (IUCN 2004) which was common in (what is now) Israel in the 19th century, mainly occurring as a wintering migrant but also a breeding species. However in the 20th century there was a decline and from 1960 to 1973 there were no observations in Israel at all. The decline was primarily due to loss of wetland habitats e.g. the draining of Lake Hula, and intense persecution by fish farmers. After this period of absence, in 1974 pygmy cormorants were observed with a gradual increase in numbers and a few pairs breeding in the 1980s. In the early 1990's they began nesting again around Lake Kinneret (also known as the Sea of Galilee and Lake Tiberias), southward to the Bet She'an Valley.

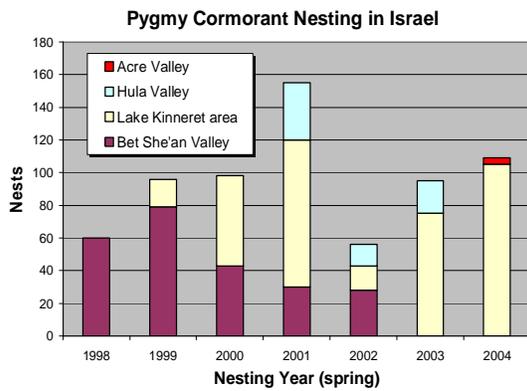
Pygmy cormorants usually begin to nest in early to mid-March in Israel, near sources of food. During this time their diet consists mainly of small fish. Spring is also the time when the fish farmers stock their large ponds with small fish. Increasing conflict arose between cormorants (using fish ponds as feeding areas) and fish farmers, and in the Bet She'an Valley this reached its peak in April 1999 with the intentional destruction of a nesting colony by disgruntled farmers. Following this event, a concerted conservation project was begun to try to safeguard the future of the cormorants whilst at the same time endeavouring to resolve the conflict with fish farmers.

## ACTION

**Inception of the management plan:** The project involved forming a pygmy cormorant management plan and was undertaken in cooperation with representatives of the fish farmers, the Ministry of Agriculture's Department of Fisheries, and representatives of the Israel Nature and Parks Authority (INPA) at the local and federal level. The project was headed by Dr. S. Nemtzov, (wildlife ecologist, Science Division of INPA, Jerusalem). The Society for the Protection of Nature (SPNI) - Israel's major pro-wildlife NGO, was also initially involved but dropped out because of objections to the proposed methods to be employed.

**Management concept:** The idea was to dissuade pygmy cormorants from nesting in the Bet She'an Valley by scaring them away from the site (using non-lethal scaring tactics i.e. gas cannons and pyrotechnics) and in so doing hopefully encourage them to take up residence and nest at Lake Kinneret approximately 20 km to the north. No birds were to be physically captured or harmed during this procedure and none were to be disturbed once the nesting season began in March. In other words, any individuals that did return to the Bet She'an Valley to nest would not then be disturbed again.

**Cormorant scaring:** Commencing in autumn 1999, and throughout the winter of 1999/2000, the pygmy cormorants were frightened away



**Figure 1.** Number of pygmy cormorant nests at Acre Valley (red), Hula Valley (blue), Lake Kinneret area (crème) and Bet She'an Valley (purple), 1998- 2004.

from all roosting sites in the Bet She'an Valley so that they would hopefully transfer themselves to Lake Kinneret, where it was hoped they would remain and hopefully nest within the Bethsaida Nature Reserve. Harassment was permitted even within nature reserves in the Valley, but only until the end of February so as not to disturb other nesting species.

In the winter of 2000/01 harassment at roosting sites in the Bet She'an Valley continued again, with the intention to further reduce the number nesting in the Valley in the spring of 2001.

**CONSEQUENCES**

**Spring 2000:** The initial attempts during the first winter to encourage birds to relocate themselves, seemed to be relatively successful as there were more birds and nests around Lake Kinneret and fewer in the Bet She'an Valley (confined to a small nature reserve) than in the previous year (Fig. 1). The overall number of nests in 2000 was also similar to that in the previous year, which supported the feeling that the population overall was not harmed by this rather radical action.

**Spring 2001:** Following winter harassment in 2000/01, there was further reduction in the number of nests in the Bet She'an Valley and an increase around Lake Kinneret. For the first time, pygmy cormorants started nesting in the Hula Valley, too. A suspicious fire destroyed one of the nesting sites near Lake Kinneret in July 2001 but this was at the end of the nesting season, so no harm was done to the birds. During the winter of 2001/02 harassment was again authorized.

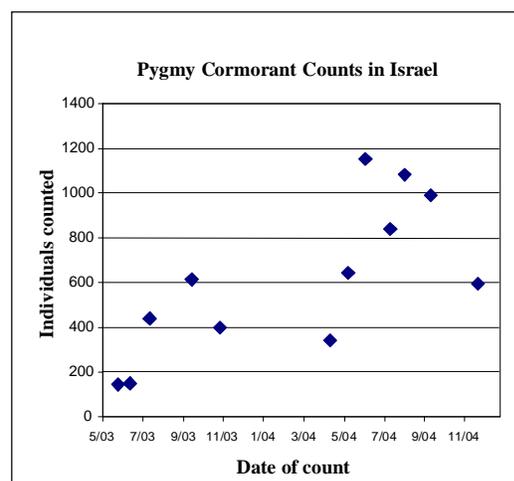
**Spring 2002:** The winter ended relatively late,

and by early May 2002 pygmy cormorants had still not begun nesting anywhere in Israel. In mid-May some cormorants established a small nesting colony in a nature reserve in the Bet She'an Valley only 50 m from a fish farm, and within a few days, dozens of birds began to earnestly build their nests there. The fish farmers insisted on having the colony removed but the INPA decided not to disturb this colony as nesting had already begun. On 29 May 2002, a fire destroyed the entire nature reserve including the cormorant nesting colony.

**Spring 2003:** In spring 2003 there were no pygmy cormorant nests in the Bet She'an Valley and almost all nesting was around Lake Kinneret. The number of nests increased greatly relative to the previous year. The project seemed to have achieved its goal of encouraging birds to relocate and nest around Lake Kinneret.

**Summer-autumn 2003:** Counts of the country-wide population of pygmy cormorants through the summer of 2003 and into the winter of 2003/04 (Fig. 2) showed an increase in their numbers in many wetlands throughout the country.

**Spring 2004:** In spring 2004 the number of pygmy cormorants in Israel increased greatly over all, and there was a large increase in the number of nests around Lake Kinneret relative to 2003. Also of note was the fact that in spring 2004 pygmy cormorants started nesting in the Acre Valley (some 50 km west of Lake Kinneret), near the Mediterranean coast, for the first time in many years.



**Figure 2.** Pygmy cormorant counts in Israel.

**The situation in February 2005:** The cormorant population has increased greatly relative to previous years (Fig. 2) and birds have spread to new areas e.g. the Acre Valley. As the spring of 2005 approaches, there are calls from fish farmers to cull pygmy cormorants before the population gets any larger, and also to prevent nesting in other areas of potential conflict.

**Conclusions:** The reduction of conflict by encouraging 'self-translocation' did not appear to harm the cormorants and may have led to greater numbers in the long term by encouraging breeding in safer areas, the displaced birds finding alternative nesting sites

out of harms way e.g. around Lake Kinneret. There is still controversy as to the advisability of continuing to prevent the nesting of pygmy cormorants in the Bet She'an Valley, a strategy which may perhaps be extended to new areas as the pygmy cormorant population increases and expands its range.

#### REFERENCES

IUCN (2004) 2004 IUCN Red List of Threatened Species.  
[www.iucn.org/themes/ssc/redlists/rlindex.htm](http://www.iucn.org/themes/ssc/redlists/rlindex.htm)