

Summary of the International Workshop

Great White Pelican Migration over Israel: Management of Ecological Demands and Conflicts with Inland Fisheries

Hula Valley, Pastoral Hotel, Kfar Blum, Israel

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This workshop brought together researchers, professionals, stakeholders and government officials representing countries along the Great White Pelican's (GWP) migratory route in order to evaluate the unique GWP stopover situation in Israel, to share information and establish multi-country, range-wide, problem-solving strategies for conserving this key species. This is the 2nd international workshop in collaboration with the Wetlands International and IUCN Species Survival Commission Pelican Specialist Group (following the 1st Workshop on Pelican Research and Conservation in South East Europe held in Prespa, Greece on May 1-2, 2012).

The workshop was organized by the Israeli Nature and Parks Authority (INPA) and the Israel Ornithological Center of the Society for the Protection of Nature in Israel (SPNI) under the Organizing Committee of **Ohad Hatzofe** (INPA), **Dan Alon** (SPNI) and **Dr. Giorgos Catsadorakis**, Chairman of Pelican Specialist Group, and IUCN-SSC. Partner organizations included the Hoopoe Foundation, Ministry of Environmental Protection, United Jewish Appeal, Fondation Segré, Movement Ecology Laboratory at the Department of Ecology, Evolution and Behavior at the Hebrew University of Jerusalem, African-Eurasian Waterbird Agreement (AEWA), and BirdLife International.

Workshop Structure

This international workshop was an intimate coming together of invited key scientists and professionals, local, national and international that deal with pelican management and research issues. The three-day program included lectures summarizing current knowledge of pelican biology, conservation and management particularly within the Western Palearctic region, combined with an organized discussion dealing with management issues within Israel. On the third day, participants (mostly the foreign guests) spent a full day in the field seeing firsthand the extent of aquafarms in Israel in order to give them a complete picture of the current situation.

Workshop Aims

- To communicate current scientific information about GWP biology and conservation within a global context.
- To highlight Israel's unique position within the GWP's migratory flyway and its international importance for local and regional conservation of GWPs.
- To raise national awareness about global importance of pelicans and their management issues.
- To develop a platform for discussion and information exchange concerning the conservation and management of pelican populations in Israel and other important stopover sites along this flyway.

Specifically the workshop addressed the following issues:

- 1) What are the factors influencing GWP migration stopovers and how are they related to length of stay in Israel?
- 2) What are the important breeding, stopover and wintering sites for these populations and how are they related to changes in GWP migration timing and distribution in Israel?
- 3) What additional methods can be deployed to reduce fish damage at aquafarms in Israel caused by GWP?

General Summary of the Presentations

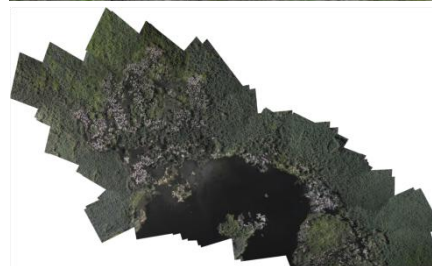
The talks were divided into 3 main topics: Session I - Pelican populations and migration studies (from Western Palearctic to East Africa); Session II: Pelican management and aquaculture conflicts worldwide; and, Session III: Pelicans in Israel: aquaculture conflict, management and research.

Population Size and Migration:

The Great White Pelican has two distinct populations, one in Eastern Europe and Asia, the other in Africa, without forming separate taxonomic units. About half of the Palearctic population nests in Europe estimated at 7,345-10,500 pairs (from Marinov, Botond, Doroşencu, Alexe, and Pogan). The largest number of European Great White Pelicans nest in Romania, in a colony traditionally known in the Danube Delta, with approximately 3,600-4,500 pairs.

The African populations and movement patterns are less known. Chege Amos reported from Kenya that over eight thousand breeding pairs of GWP have been observed only in Lake Elementeita. Satellite tracking has shown over-wintering of the GWP from the European region into the East African Lakes. In 2009, over seventy thousand individuals were recorded in Lake Nakuru while Lake Naivasha had over 3,000 individuals in the same year (National Museums of Kenya). These populations appear to fluctuate greatly depending on food availability and water levels.

The European GWP is listed as *Least Concern* (range level, IUCN Red List, 2014), and Wetlands International (2012) notes that populations are declining for Europe & Western Asia. Participants from this workshop could not corroborate these trends—Romania stable, Greece possibly increasing, Bulgaria stable, Turkey and Ukraine unknown). Threats to breeding populations include: persecution, human disturbance, collisions with power lines, lack of shallow feeding areas free of vegetation, lack of monitoring, further de-synchronization with Dalmatian Pelican breeding period, and lack of nesting islands.



Use of drones for monitoring breeding colonies in Romania (Marinov et al.)

Monitoring autumn migration along the flyway shows similar numbers between Bulgaria and Israel suggesting that no other significant populations are migrating along this corridor. One of the most important factors impacting these migratory populations appears to be loss and degradation of stopover sites. Over the past 50 years there has been a significant loss of stopover sites in the Middle East through draining of lakes and wetlands and this trend unfortunately is continuing rapidly throughout Turkey. Research into migration movements and the identification of important stopover sites is lacking. A large-scale research project using GPS tracking tags and accelerators monitoring (detection of behavior patterns) is currently being conducted and should add greatly to our knowledge ecology, especially during migration (in cooperation with the Movement Ecology Laboratory at the Hebrew University of Jerusalem, Israel Nature and Parks Authority and all of the participants of this workshop).



Ring recoveries of GWP ringed in Romania (Marinov et al.)

Conflict with Fisheries

Israel appears to be the most significant problem area for pelicans and aquafarms. This is a result of: 1. Lack of natural wetlands for foraging in Israel especially in comparison to northern countries; 2. Relatively extensive areas of aquafarms with densely stocked fish ponds; 3. Many pelicans arrive in Israel with depleted energy



reserves and some percentage (appears to vary annually) must feed in order to continue their southward migration to Africa.

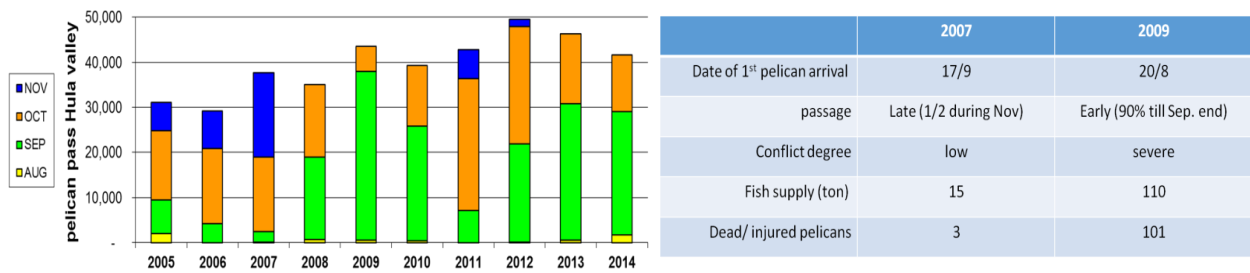
*Pelican killed by fisherman
in Romania (Marinov et al.)*

Pelican Management in Israel

The entire population of the Western Palearctic (South-East Europe and South-West Asia) of Great White Pelican (GWP) (*Pelecanus onocrotalus*) migrate through Israel in the autumn. They are the largest birds in the world that perform such a long trans-desert migration (to East Africa). Monitoring, by the Israel Nature & Parks Authority (INPA) over the years 1999-2013, indicates that 39,395 ($\pm 8,201$) GWPs migrate through the Hula Valley every autumn.

All of the southbound GWP that pass through Israel stopover for a period of between one night up to several weeks. Afterward, most GWP continue their migration to East Africa (mainly Sudan). The north-bound spring migration is much faster with few stopovers in Israel. During the southward migration, Israel provides one of the few relatively well-protected stopover areas with sufficient food resources and safe conditions.

Many stopover and feeding wetlands along the migration routes of GWP between SE Europe and Africa have been seriously degraded or have disappeared, resulting in changes in the ecology of these birds with serious implications for their populations and for aquaculture farms in Israel. The arrival and refueling of such a large population of fish-eating birds provides a real management challenge. In the 1980s, about 2,000 - 3,000 pelicans did not continue their migration to Africa and wintered in Israel. This created a tremendous conflict with the aquaculture sector. In addition, pelicans are arriving earlier each year thus increasing the overall autumn migration and stopover season.



Pelican arrival times in Israel according to month and management implications (Artzi)

The current management scheme aims to enable the GWP to refuel and complete their fall migration, and to reduce the conflict with inland fisheries. In addition to the efforts of farmers to keep pelicans off their farms (scare tactics and exclusion netting and cables), the INPA began a supplementary feeding program in the 1990s that has partially reduced the conflict. Today, fewer than 300 pelicans winter in Israel annually (255 winter on average since 2000). The INPA currently supplies more than 100 tons of non-commercial fish, mainly Zill's Tilapia (*Tilapia zillii*) during the fall migration of pelicans. Most are supplied in the Hula Nature Reserve and in reservoirs in Heffer and Yzrael valleys. During September-November, significant efforts and resources are invested to allocate available non-commercial fish stocks and to transport stocks live to these reservoirs.

Summary of Management Discussion

The discussion was organized around 4 main topics: evidence-based management, monitoring, research, and international cooperation. Although it proved difficult to restrict the discussion to these topics, we were able to summarize several important issues within this framework.

A clear picture emerged from these discussions about the uniqueness of the Israeli situation in terms of pelican ecology (bottleneck migration with birds in low physical condition) and habitat availability (almost no natural wetlands coupled with a high density of aquafarms).

Overall, the guest speakers from other countries praised the work being conducted in Israel. They were impressed with the quality and quantity of data and of the cooperation with various stakeholders, especially given the difficult situation with the fisheries conflict.

Management:

Questions were raised about the sustainability of the current management practices. Limitations include funding, legislation and ecological conditions. For instance, pelicans are arriving earlier on average each year to Israel, which is also increasing the overall amount of time they are present in Israel, thus increasing the pressure on fisheries. Most participants felt there are adequate data for management, although some felt that there is a lack of appropriate data from the fish farmers, especially in regards to adapting fish management practices. Some of the fish farmers were skeptical about the level of data and gave examples of how each year the situation varies greatly both in terms of the pelicans' behavior and the efficiency of the management (supplying fish at the right time, place and quantity). Finally, some people felt that there are not enough alternative management ideas in order to better evaluate the project's sustainability.

Recommendations:

- Need to write a management plan with clear aims, measures of success and budget with revisions every 5 years;
- Compensation to farmers for fish loss;
- Need to concentrate mainly on the birds that are present late in the season and tend to cause the most problems;
- Increase dialogue with and public relations (pr) for fisherman in order to raise public awareness for farmers' plight and increase trust between farmers and wildlife managers;
- Look for alternative sources of income for farmers such as nature and bird tourism;
- Increase stakeholder participation in steering committee;
- Allow deprivation permits (killing problem birds), although most farmers in israel don't believe it works here;
- Restore and improve important stopover wetlands within the pelicans' migration route.

Monitoring:

Long-term monitoring is critical to understanding changes in population, migration, stopover sites and behavior, and management strategies. Given that Israel represents a unique situation for the GWP, monitoring within this central bottleneck area is considered of utmost importance.

Recommendations:

- Set-up a multi-country monitoring scheme at important stopover sites that are with a days-flight from eachother;
- Need to monitor both populations and individuals at breeding areas and along their migration corridor;
- Much information can be gained through the GPS and accelerator tracking tags.

Research:

Three main components of good scientific research were discussed in depth: 1. The need for clear objectives and questions; 2. Sampling- must be representative of the factors related to the research objectives (how much to sample, when and where to sample, general surveys versus individual tracking); and 3. Population versus individual approach. Current research in Israel is depending heavily on individually marked individuals and GPS tracking transmitters. Although these methods provide excellent data over large areas it may not be sustainable in the long-term given the high costs and therefore, traditional population surveys will remain an important part of the research and monitoring efforts.

Recommendations:

- Investigate the factors that influence the length of stay, especially for individuals with long stopovers and that remain late in the season;
- Investigate the factors contributing to early arrival times and poor physical condition?

International Cooperation:

All agreed that the key to success for dealing with the aquaculture conflict in Israel and the general conservation of the species is through international cooperation. Specifically, cooperation is most important in monitoring and research.

Recommendations:

- Publish a joint statement from this meeting expressing the importance of international cooperation in conserving this species;
- Improve real-time communication between countries during the pelicans' autumn migration in order to alert countries such as Israel;
- Implement multi-country monitoring effort (see monitoring recommendations);
- Exploit all potential sources for cooperative funding (e.g. through EU Life Program).

Participants¹

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¹ Other non-registered participants were present as well, representing the INPA, SPNI or fisherman, birdwatchers and from local media.

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