



Report

6th Mediterranean and West African Greater flamingo workshop

9th of October 2014 /// Seaworld /// San Diego, CA.

Workshop organized by Tour du Valat and held as a side event of the **3rd International Flamingo Symposium** (5-9 October 2014)

Report co-written by all participants



Participants

Yelli Diawara (Grande muraille verte, Mauritania)

Juan Amat (EBD-CSIC, Spain)

Manuel Rendón-Martos (Reserva Natural Fuente de Piedra, Spain)

Adelheid Studer-Thiersch (Switzerland)

Cathy King (Weltvogelpark Walsrode, Germany)

Hichem Azafzaf (AAO, Tunisia)

Nicola Baccetti (ISPRA, Italy)

Mark Gillingham (ULM university, Germany)

Arnaud Béchet (Tour du Valat, France)

Sponsored by



**FONDATION
TOTAL**



Région
Provence
Alpes
Côte d'Azur

Foreword

We decided to take the opportunity of the organization of the 3rd International Flamingo Symposium¹ in San Diego to gather the members of the *West-African and Mediterranean network on Greater flamingos*. This network was set up in 2002 in Tour du Valat and now gathers most countries of the Mediterranean and West African range of the Greater flamingo. By holding the meeting there, we aimed at increasing the visibility of our network worldwide and at benefiting from the international experts of Flamingos to exchange knowledge and coordinate conservation strategies. The International Flamingo Symposium gathered 101 participants from 18 different countries and 57 organizations (Wildfow and Wetland Trust, the Center for Biodiversity and Conservation of the American Museum of Natural History, Birdlife, etc...).

Limited funding allowed us supporting only a few focal points of the network and administrative difficulties prevented our Algerian colleague Ettayeb Bensaci from attending the meeting. All participants presented either a talk or a poster at the International Flamingo Symposium and attended the workshops. In particular, Yelli Diawara also attended the workshop on Lesser flamingos and could advocate the need for protection of the Aftout es Saheli (Mauritania), the unique breeding site of this species in West Africa.

Alan Johnson, who initiated the ringing program of Greater flamingos in France, received an award from the community of flamingo specialists for his lifetime involvement in flamingo research and conservation. This was a strong encouragement to us to pursue his work throughout a constant effort to improve our knowledge on this species and to enforce its conservation wherever needed.

¹ <http://www.3rdinternationalflamingosymposium.com>

Workshop Program

- 9h00 /// Round table on actual scientific / logistic and conservation issues at national sites (ALL)
 - Italy (Nicola Baccetti)
 - Spain (Manuel Rendon Martos y Juan Amat)
 - Tunisia (Hichem Azafzaf)
 - Mauritania (Yelli Diawara)
 - France (Arnaud Béchet)
 - Microbiome project (Mark Gillingham)
- 10h30 /// Results of an analysis on PVC ring loss (Arnaud Béchet)
- 11h00 /// Observations on reading pressure variation (Nicola Baccetti)

11h30 Coffee break

- 11h45 Issues
 - Problems with the management of Spanish bird resightings (Juan Amat & Manuel Rendón-Martos)
 - Supporting and improving ringing and resighting efforts at main colonies / ranking priorities (ALL)
 - Problems with hybrid Chilean x Greater flamingos from the Zwillbrocker reserve (Nicola Baccetti and Adelheid Studer-Thiersch)
- 11h45 /// Report of a brainstorming on the GF long-term study in the Camargue (Arnaud Béchet)
- Funding opportunities to support the network / to fund a post-doc for the analyses of joint data.
- 12h15 Synergies with the IWC / Medwaterbirds initiative
- 13h00 Adjourn

Report of the Mediterranean network meeting

Round table: news from the network

Italy

2014: > 20 000 breeding pairs with important numbers in Sardinia. 3 successive breeding attempts in Comacchio with an overall output of less than 300 young. No ringing in Comacchio as there were concerns that it would cause additional disturbance to an already chaotic year. No ringing in Sardinia because of political problems.

Spain

26 806 pairs at Fuente de Piedra 2013. It was the highest number of breeding pairs ever. 2 pairs of Lesser Flamingos in 2013 and 3 pairs in 2014. 1 of these Lesser flamingos had a metal ring. It could come from a zoo or from a private holder. Some countries (e.g. the Netherlands) require that private holders ring the birds they keep. Between the Netherlands, Belgium and Germany there are a number of private breeders with Lesser flamingos, and there are presumably private holders in other European countries as well. In Fuente de Piedra two lesser flamingo chicks successfully raised, and one banded. In 2014 breeding occurred at:

- Fuente de Piedra with 7474 pairs and two lesser flamingo chicks successfully raised and one banded.
- Odiel marshes: 2622 breeding pairs.
- Ebro delta : 533 breeding pairs.
- Petrola lake: 1200 breeding pairs.
- Marismas del Guadalquivir: no successful breeding because of low water levels.
- Manjavacas lake: no breeding.

In Andalusia, there is no major problem of conservation. Ringing in Fuente de Piedra in 2014 (610 juveniles, 2 adults and 1 juvenile, lesser flamingo) and Odiel marshes (500 juveniles and 2 adults). No ringing in Ebro delta. The reason given is that the decision was taken not to ring in order to avoid stress.

Tunisia

Hichem Azafzaf presented a breeding report for Tunisia with a reminder of historical data on flamingos in this region, long considered as a key wintering site for flamingos from the north of the Mediterranean. Whereas Greater flamingos were known to breed in Chott Djerid in the 70's, recent attempts were documented in 2007 in Thyna salina, 2013 in Sejoumi and 2014 at Korba lagoon. Hichem also reported the successful breeding attempt in Korba + first ringing in 2014 with technical assistance from the Tour du Valat.

Mauritania

Yelli Diawara reported the breeding of both greater and lesser flamingos in Mauritania. He reminded us that Aftout es Saheli is not protected and is under high pressure (oil prospecting etc...). It appears that Mauritania should be ranked as the top conservation priority.

Lesser flamingo action plan for Mauritania has been prepared as a local implementation of the Global action plan developed for the 12 range states with more than 1% of the Lesser flamingo population. Since 2010, the breeding started in February in the Kiaone, much sooner than before whereas in the Aftout es saheli breeding usually starts in November.

France

In 2014 breeding occurred at the salt pans of Aigues-Mortes. It was the first time in more than 50 years. There was low breeding success because most birds attempted to breed on dykes where they were probably disturbed by foxes or wild boars. Only about 600 chicks fledged from maybe more than 6000 pairs. Ringing was successful with wide media coverage.

Mark Gillingham microbiome project

Mark Gillingham submitted a DFG grant proposal entitled “MHC diversity, migration and pathogens: effects of host-pathogen interactions on fitness traits in greater flamingos across the Mediterranean basin and west Africa.” By combining a large number of samples collected around the Mediterranean basin and west Africa (n = 9323), a long-term life-history dataset (1995-2017) and recently available next-generation sequencing methods, the project aims to: (1) test the effect of the local environment and long-distance dispersal on the gastrointestinal bacterial community and MHC diversity of breeding populations across the Mediterranean basin and west Africa; (2) identify pathogen- and MHC-fitness trait correlations; (3) test for the variation in MHC allele frequencies and selection across time; and, (4) test the combined effects of pathogen loads and MHC variation on long-distance dispersal propensity and ability. This project will play a crucial role in the understanding of the risks of gastrointestinal pathogens on natural avian populations and how it shapes genetic adaptability, individual fitness and population health. The decision from the DFG will be in early January.

PVC ring loss

Arnaud Béchet presented preliminary results on PVC ring loss. A paper is in preparation. It is suggested that the use of glue at ringing may increase ring longevity and help avoid slipping/loss.

Observation pressure in the Mediterranean

Nicola Baccetti presented figures based on data provided by Christophe Germain on the trends in resightings in the Mediterranean. A decreasing trend can be observed in Italy and Spain, More than 4000 observers are in the database which is huge and should be seen as an asset on which we could promote the program to funding agencies.

- ➔ It is proposed to organize a coordinated leg count survey at the Mediterranean scale to get a better figure of the spatial variation of the proportion of ringed birds and to compare it with old data.

Issues with the management of ring resightings

Italy

Since 2006 the resighting rate has dropped, coinciding with a change in management of colour ring reports of species other than flamingos (it has to be considered that ring readers read rings on multiple species). In 2014 readers were requested by the Italian ringing office to submit also flamingo reports to their system. If the SIAM database has to continue being updated from Italy, this will imply either a duplicate effort of data entry by the readers (which they may not accept) or an unlikely agreement with the ringing office. Loss of data in 2014 has probably been negligible because readers didn't change their habits quickly, but there are risks for the future.

Spain

The contract of Manuel Sanchez who helped manage the SIAM database ended in 2013. The team has obtained the right to contract a new person who should start before the end of this year. A problem with the type of contract (temporal) is that there are no long-term guarantees. As a partial solution of this, Manuel Rendón proposed that all resightings in Fuente de Piedra could be incorporated into the database by personnel from Fuente de Piedra, and any remaining data by personnel from Estación Biológica de Doñana.

➔Point of action

1. It is suggested that a web interface / portal to all resightings of Greater flamingos would solve the problems in all countries for different reasons (((((should be an excellent thing to deal with the shortage of human resource and to deal with the management of resighting at local sites))))). Christophe Germain has planned to develop this in 2015, yet no funding has been secured for this so that his project may enter into competition with other projects for which

Tour du Valat would have found money. Finding this money (~25000€) is THE top priority. Where to find it: from partner organizations proportionally to the number of ringed chicks and than it's up to national coordinators to find the money that Christophe needs. Alternative no. 1: take the money out of funded projects (if any: because with no complete database, no analyses are possible, so it seems quite reasonable). Alternative no. 2: ask zoos for money according to the One plan Approach. Alternative 3: ask some foundations?

2. Cathy King encourages more communication on the FSG discussion-list regarding events (e.g. mass mortality of flamingos due to weather conditions) and sharing of documents. If all the various networks (including Caribbean, Altiplano), were more actively using the server-list, it could bring very valuable for interregional information exchanges and collaborations.

Problems with hybrid Chilean x Greater flamingos from the Zwillbrocker reserve

The problem is that each year, Chilean flamingo breed together with Greater flamingos at the Zwillbrocker reserve in Germany. Since 1991, tens of Chilean chicks have fledged together with at least ten hybrids of Chilean x Greater. The situation appears to constitute a risk to the European Greater flamingo population in the case where Chilean and hybrids would start mixing with flocks from the Mediterranean.

Nicola Baccetti will take the lead to prepare an action plan to deal with this issue in collaboration with the Mediterranean GF network.

Strange engraving of Spanish rings

An issue is reported by Christophe Germain regarding rings used recently in Spain (Fig. 1). The picture show thin bars and both bold and thin characters on the same ring.



Figure 1. Odiel marshes rings

Manuel Rendón-Martos explains that the engraving of the rings for Fuente de Piedra and Odiel is now made with a "laser engraver" that adjust the text and change the thickness of the digits (some bold and some not) and the bars. The margins bars also result from editing problems. The "laser engraver" works like a printer and the bars cannot fill the entire ring. As the rings did not cause reading problems or confusion with other codes and they had no possibility to make new engraving they decided to use them. Considering that "1" is only used in rings from Italy as first digit while in Fuente de Piedra it is in 2nd, 3rd or 4th position, the possibility of errors remains quite exceptional. It would be that the bar "I" is reported as "1" (Fuente de Piedra: 2 / XXX as 21XXX and Odiel: X / XX as XIXX). However, Manuel Rendón-Martos ensure that they will try to correct this for the next engraving. Christophe Germain and Antoine Arnaud also recommend to correct this by homogenizing the thikness of characters and spaces between them.

The Odiel Marshes rings always have 3 digits (X / XX) while in Fuente de Piedra, the codes are 4 (number, bar and three letters) (See Fig. 2).



Figure 2. Flamingos ringed in Fuente de Piedra showing in front a ring that may appear incomplete to inexperienced observers.

Complements of the SWOT analysis of the Camargue long-term study given by the participants.

Strengths

- Long term database of a large spatial scale and unique in size +DNA bank of historical individuals + feathers bank for stable isotope analyses
- Original biological model : long-lived itinerant waterbird ranging from coastal to inland endorheic wetlands; in contrast most long-lived bird species with equivalent dataset are seabirds.
- Flagship species which can be used as an ambassador for the conservation of wetlands
- Scientific partnerships which allow the use of shared data to maximize their scientific value.
- Long term connections between people who work on this species
- Worth being compared with other long-lived species, yet few waterbirds species for which such a long term and large scale dataset exist.
- Database is fed by a fertile and inexpensive substrate of 4000 ring reporters engaged in a most notable example of citizen science and producing high quality data.

Weaknesses

- Lack of investigator (e.g. post-doc) available for data analysis and preparation of scientific publications
- A species on which it is difficult to conduct experimental work
- Low observation effort in the Eastern half of the Mediterranean range
- Likely decreasing proportion of ringed birds (few pairs of ringed birds and few relations between parents and chicks observable). The more the population is increasing, the more ringed birds are diluted within it.
- Irregular use of the FSG mailing list to really create an associative feeling.

Threats

- The ring reporting system is starting to leak: Turkey and Tunisia have been on French shoulders from the beginning, the risk that Spain and Italy will follow needs a quick strategy to remediate to the issue. Otherwise observers will be discouraged to report their resightings.
- Fangassier is used less frequently
- More and more breeding sites are used by the species that are not surveyed for rings as the range of the species is increasing.
- With the economic crisis, funding becomes extremely difficult even to continue resightings during the breeding season in Spain or Italy (it's not this the worse consequence of economic crisis I think).

Opportunities

- The new portal, thanks to Christophe Germain's knowhow.
- Combine with in situ and ex-situ approaches. The one plan approach (see <http://www.cbsg.org/our-approach/one-plan-approach-conservation>)
- Studies of senescence become possible
- The historical dataset including blood samples taken long time ago allows to explore the effect candidate genes (e.g. genes which codes for specific and known physiological mechanisms) may play in several demographic parameters.
- Hichem Azafzaf's proposal of a world flamingo day the 9th of Oct

Research perspectives

Here are listed a series of research axes that could be proposed to PhD candidates or PhD students who may be willing to apply to a Marie-Curie Grant (or any other funding) for doing a post-doc.

- Analyse data on exchanges among colonies (effect of intermittent favourable breeding conditions + individual and colony breeding success)

- Choice of colonies as a function of wintering choices: ontogeny of dispersal from post-fledging dispersal to natal and breeding dispersal.
- Life-time reproductive success of different dispersal strategies
- Ghost birds. Analyze where are birds with no breeding code during the breeding season. Maybe they were actually seen around the colony but not just on it. Or they are elsewhere, breeding or not, where breeding pressure is weak and does not produce breeding codes.
- Social networks: are there “liaisons” among individual birds? The tendency for flamingos to form coalitions in zoos and keep bonds with previous breeding partners is so strong that it is really hard to believe there is no biological basis for it. It would thus be really interesting to see if the flamingos that form the small display groups during the winter later go on to breed together in the same nest area. Adelheid Studer Thiersch wrote: “The highest intensity and highest synchronisation of courtship display was reached in groups of about 15 – 20 birds. This fits closely with Swift’s (1960) observation that a flamingo colony is structured into subunits of different levels, the smallest ones comprising 5 to 8 nests. This occurrence of units of similar size in two different phases of the breeding cycle suggests a correlation between them; it is possible that groups of flamingos that form during the display stage because they are in a similar phase of the breeding cycle later come together to the breeding site, stimulating each other through threats and bickering to lay their eggs synchronously”. Adelheid Studer Thiersch added that “this assumed correlation between display- and breeding-groups was supported by an “unwanted and unintended experiment concerning the feeding rhythm of the flamingos of the Basel zoo. In former years the flamingos were fed in an amount that there was always some rests left until the next feeding. With a change to a new food, its amount was reduced to a degree that it could immediately be swallowed by the birds thus the birds leaving with scarce food supply (mud etc.) during the main hours of foraging in the early morning and evening. Waiting for food and foraging became the most important motivations of the birds. Besides others courtship became also reduced. In those years with hungry flamingos at the phase of courtship the establishment of the breeding colony much later was aggressive and disordered, and those birds laying the egg about the same time were randomly scattered over the whole colony. Breeding success was very low. When the former feeding rhythm and amount was restored before courtship had started the later settling of the colony was calm. Birds with about the same date of egg-laying bred in clusters and breeding success was high. In the year however when the change to the former way of feeding had happened between courtship display and breeding, the settling of the colony followed the same pattern as with the hungry birds though they were no longer hungry at this time. This shows that due to insufficient food supply during courtship the pre-selection of birds in a similar stage of their reproductive cycle had not taken place or only to a very low degree and that this deficiency could not be compensated by an improved food situation.

Acknowledgements

We are particularly grateful to the organizers of the International Flamingo Symposium and in particular to Laurie Conrad, Stephanie Costelow and Cathy King who facilitated the organization of the workshop. Everything went very smoothly thanks to them. We acknowledge our sponsors, Tour du Valat, Région PACA and Fondation Total, which supported financially the travel expenses of most of the participants to the workshop.