

**MORTALITY OF FOUR IBIS CHICKS DURING BREEDING SEASON 2009 AND
RECOMMENDATIONS FOR 2010 BREEDING SEASON**

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1. FACTS IN CHRONOLOGICAL ORDER

14 May: 4 chicks observed in 2 nests (2 each) from the top of nesting cliff by G. Serra, most likely hatched on 10-11 May.

19 May: 3 chicks observed from top of cliff by G. Serra, one chick disappeared from n-1 during period 14-19 May (Chick 1) – no remains of chicks was found below the nests, on a 2-min visit done by G. Serra on the same day: a piece of nest fallen down was seen, seemingly from n-1.

25-26 May: adults start leaving the chicks alone in the nest for the first time, for almost half of the day.

29 May: during the first day of intensive nest protection by rangers a chick is found freshly dead on the ground below nest n-2 (Chick 3). It was discovered due to observation of behaviour of vultures evidently attracted by something on the ground. On the same day it was realized that another chick was missing from nest n-2: this chick have died during period 20-28 May (Chick 2); ranger Mahmud Abdallah referred that the ibis adult non breeding individual had been observed in many instances disturbing the chicks at both nests, and the parents were observed fighting this individual back. This same observation was made also few hours before the finding of the chick fallen down.

15 June: during the whole day the last surviving chick is seen in the nest. When the adult female Zenobia returns to the nest after sunset, the guard and the ranger Ahmed Abdallah notice from behaviour of adult that there was no chick anymore in the nest. At the same time they notice a black spot on the ground below the nest: the agonizing chick is then found on the ground below the nest (Chick 4).



Chick 3 found freshly dead under nest n-2 on 29 May 2009.

2. NOTES AND COMMENTS

Overall, one ibis chick was lost every 7-10 days during the course of 5 weeks following hatching. This mortality pattern is very different from the one occurred in 2008, when all 4 chicks disappeared during the course of 2 days.

Chick 1 disappeared from nest n-1 during the first 8 days after hatching, while one adult was still spending all day in the nest: this most likely means it was not depredated by ravens or vultures. On 14 May G. Serra observed from top of the cliff that the difference in size between the 2 chicks was very remarkable. The older brother could have easily pushed down the younger one – a common behaviour among birds, especially when food is scant.

We do not have any data on what happened with the Chick 2 disappeared from nest n-2 during period 20-28 May: in fact this nest is quite well hidden and impossible to be monitored constantly from the tent. It could have been depredated during the first 2 days after the chicks were left alone in nest, during days 26-28 May, or it could also be fallen down. Nest n-2 did not seem in fact very well built: it was actually overbuilt. The pair who built it is composed by an experienced adult female (Salam) and an inexperienced subadult at his first breeding.

We are quite sure about the proxy cause of death of this Chick 3: it fell down from the nest, and died by hitting the ground on 29 May between 15.00 and 17.00. It fell down most probably due to disturbance by the single unpaired subadult. The freshly dead chick looked in healthy conditions and even quite fat, weighting 815 gr. Feathers were at their first stages of development (see photo).

Chick 4, full feathered and weighting 590 gr, was only one week before fledging. Inspection of skin revealed presence of several ecto-parasites of different species, whose quantity, according to L. Peske, could have been regarded as normal. According to L. Peske the weight of Chick 4, 200 gr less than Chick 3, which was younger of 2 weeks, shows that this chick was underweight. However, considering the stomach content of this chick, it did not look underfed – also considering that being the last chick survived, it was getting all the food from both parents. Moreover, L. Peske did not find any indication of food shortage by examining the feathers. An interesting hypothesis: this last chick survived in nest n-1 could also have been the weaker one of the 2 observed on 14 May?

The safest way to assess the number of chicks in nests, employed as early as 2002, is through careful observation from the top of the cliff of Mayuf - after a breath-taking ascent of a very steep slope of at least one hour. This operation has been done 3 times during present breeding season by experienced G. Serra taking all precautions to not disturb the birds in nests and at a very safe distance from them (more than 250 m).

During period 10-25 May Dr Kanani and rangers, assisted by G. Serra, discussed on how to manage the known risk of depredation by ravens and vultures during the time chicks are left alone in nests. On 29 May the first dawn-to-sunset intensive protection program of nests against depredation was started.

It should be here noted that ranger Ghazy Al Qaim soon after the death of chicks 3 and 4 started spreading his own personal opinions about the causes of chick mortality. His extravagant explanations included disturbance of ibises at nests by ranger Mahmud Abdallah from below the cliff and by G. Serra from top of the cliff.

These explanations seemed absolutely pretentious and most likely due to the fact that Mr Al Qaim was deeply disappointed for not having being selected to be sent on training abroad by IUCN project. In fact, G. Serra, with more than 15 years experience in field ornithology, knows how to

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monitor nests without disturbing the birds, and have done the same way as early as 2002 with bald ibises without causing any harm to the breeding of birds.

On the other hand Mr Al Qaim admitted to G. Serra on 19 May that he had visited, accompanied by a guard the basis of the ibis nesting cliff, below the nests, on his personal initiative some days before to assess n. of chicks. This operation is regarded as dangerous for the breeding of birds as the distance from nests is too short (equal or less than 100 m), the number of people involved is too high and, above all, this was an unnecessary and not urgent intervention. In fact, as learnt by experience, the best site to monitor the nests is from the top of the cliff. It is especially risky that 2 persons together reach the basis of nesting cliff while chick are in nests.

Said that, it is regarded as unlikely that this intervention done on a personal initiative by Mr Al Qaim was the cause for any chick mortality. Pretentious statements of Mr Al Qaim about chick mortality has only created some confusion at the management level about the real causes of chick mortality: on the other hand, the agenda and the motivations of the ranger were clear to everybody since the very beginning.

Notably, L. Peske has developed a low-cost surveillance system, based on a tele-lens and a video camera. He has preliminarily tested it in the field this year: this system would allow to monitor nest n-1 from the guard tent in Mayuf. This could be a way to monitor nest n-1 in the future, but at the moment there are surely other prioritarian elements to be improved in the ibis protection program (such as the scientific coordination and other basic organizational issues).

3. STOMACH CONTENTS

On 22 June 2009 post mortem analysis was carried out on the bodies of Chicks 3 and 4 at the Veterinary University of Hama, under supervision of Dr Samer Hamoud and Darem Tabaa.

The analysis gave negative results, and did not suggest any clear explanation for the death, except the impact on the ground due to falling from nest. Interestingly, toxicity analysis of stomach content was negative. From analysis, Chick 3 could hold some indications that it did not die due to impact, but this should be further understood. The stomach contents were given to G. Serra who preliminarily detected and identified the following prey items.

Chick 3

Species detected:

- *Pimelia* spp (Tenebrionidae, many individuals, see below)
- *Trachiderma hispida* (Tenebrionidae, many ind., see below)
- *Adesmia* sp. (Tenebrionidae, 1 ind.)
- *Buthacus tadmorensis* (3 ind.)
- *Polyphaga aegyptiaca* (Blattodeaa, Polyphagidae, 1-2 ind.)
- 8 stones of few cm of diameter (gastrolytes): these are most likely used to grind the cuticula of beetles -first time recorded

Total of individuals Tenebrionidae: 112 ind. of which surely 32 ind. of *Pimelia* spp. and then 75 ind. of either *Pimelia* spp. or *Trachiderma ispida* + 1 *Adesmia* sp.

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Stones found in the stomach of Chick 3, together with thoraxes of Tenebrionidae.

Chick 4

Species detected:

- *Pimelia* spp (Tenebrionidae, 90 ind.)
- *Trachiderma hispida* (Tenebrionidae, 21 ind.)
- *Buthacus tadmorensis* (1 ind.)
- Solfugidae (1 ind.)
- *Lacerta* spp (2 ind.)
- *Polyphaga aegyptiaca* (Blattodeaa, Polyphagidae, 1 ind.)
- 3 stones of few cm of diameter (gastrolytes)

Total number of individuals of Tenebrionidae found: 112.



Some prey items from stomach content of Chick 3: first column from left, 3 *Buthacus tadmorensis*; second column from left, 2 *Trachiderma hispida*; the rest are all *Pimelia* spp.

On 25 May 2009 a visual transect of 20 minutes was carried out by G. Serra on ibis feeding habitat (*Shana'a*), detecting the following potential ibis prey on surface and under stones:

- 5-6 *Akis* sp.
- 3-4 *Trachiderma hispida*
- 2 *Pimelia* spp.
- 1 *Mantoidea*.

4. BREEDING SUCCESS, RAINFALL AND PROTECTION EFFORTS

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Method

Ibis breeding success. The ibis breeding success was calculated by dividing the number of successfully fledged and migrated chicks by the number of pairs which had laid eggs at the beginning of the season (breeding pairs) (Serra et al. 2009). For sake of simplicity, we here refer to “migrated chicks” as for healthy juveniles observed leaving the breeding area during the post-fledging period together with the adults (which does not necessarily coincides with the start of the migration).

Rainfall data. Three information sources of rainfall data and spring quality pastures were combined and averaged:

- Oct-Feb rainfall data (mm) from Al Talila weather station (seasons from 2002 to 2009)
- Oct-Feb rainfall data (mm) from Palmyra weather station (seasons from 2002 to 2009)
- perception by 7 different pastoralists from Ibis Protected Area about quality of pastures during springs from 2002 to 2009.

Amount and quality of protection efforts. The amount and quality of protection efforts afforded to the ibis colony during the study period was determined through the Index of Total Protection Effort (ITPE) defined by the following formula:

ITPE = [Degree of scientific coordination + n. and level of training/experience of rangers involved + n. and role of Bedouin guards involved] x relative duration of protection program (0-100).

The four parameters on which the ITPE is based were measured in the following way:

Scientific coordination of protection program: 0= no sc. coordination, 1= remote sc. coordination, 2= partial sc. coordination in the field, 3= sc. coordination in the field

Level of training and experience of rangers: 0= untrained/inexperienced ranger, 1= partially trained/experienced ranger, 2= moderately trained/experienced ranger, 3= highly trained/experienced ranger

Roles of Bedouin guards relatively to rangers: 1= (untrained) Bedouin guard responsible for ibis protection under rangers supervision, 2= (untrained) Bedouin guard assisting rangers in ibis protection under no scientific coordination, 3= (untrained) Bedouin guard assisting rangers in ibis protection under scientific coordination.

Relative duration: 5 months (whole duration of ibis staying) = 100%, 1 mo= 20%.

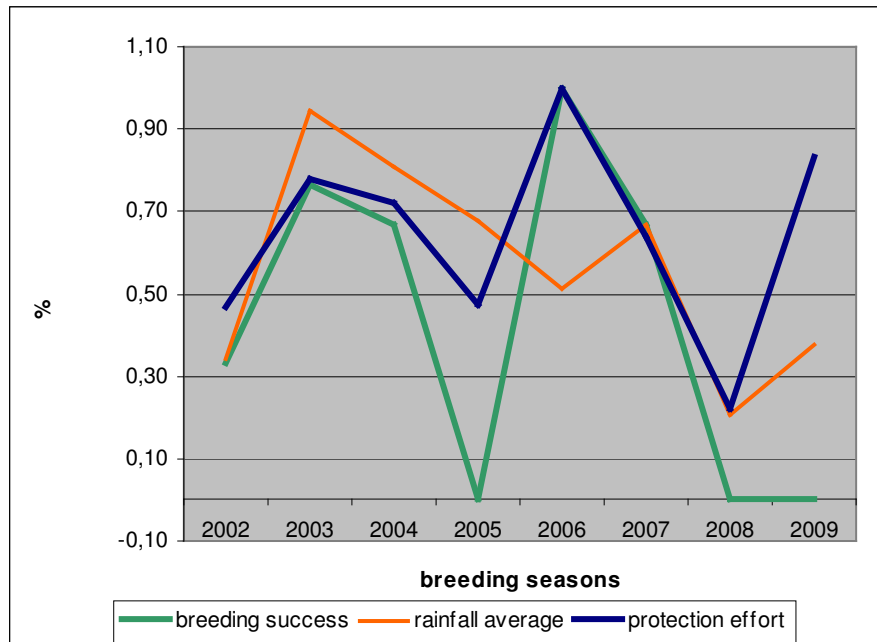
The standardized definition of ITPE as shown above was discussed at length by the persons involved in the field ibis protection programs during period 2002-07 and is based on the following assumptions:

- scientific coordination in the field, performed by a qualified and experienced ornithologist, affects the efficiency and quality of the protection program
- level of training and experience of rangers – not to mention the motivation and passion - dramatically affects the efficiency of the protection program - which is based on intensive work from before dawn to sunset 7 days a week, for 5 months
- untrained guards cannot replace the duties of rangers in the ibis protection and monitoring, as are untrained and they have their family and livestock to take care of: the original and ideal duty for Bedouin guards is just to assist the rangers and complement them.

Results

Graph below shows the variation in percentage of ibis breeding success, of average rainfall and of intensity and quality of protection efforts over the period 2002-09 (8 breeding seasons).

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Spearman's Correlation test gave no significant correlation between the 3 variables considered during period 2002-09 ($r=0.445$ and $r=0.304$, $P > 0.05$). On the other hand, a strong correlation was found between the breeding success and the protection efforts during both period 2002- 07 and 2002-08 (Spearman Correlation Test: $r=0.84$ and 0.876 , $P < 0.001$, respectively); while during the same 2 periods no significant correlation was found relatively to the breeding success and the rainfall (Spearman Correlation Test: $r=0.4$, $P > 0.1$).

Not simple interpretation: data seem to suggest that below a certain threshold of rainfall (or above a certain threshold of drought intensity) efficient and intensive protection cannot prevent breeding failures - like for instance what has happened this year 2009. Surely, as shown by data, the last two springs (2008 and 2009) have been arguably the driest ever since the year of the discovery of the ibis colony. As a consequence, for the first time ever, the area have been devoid of pastoralists in both years. There is not general consensus whether 2009 was slightly better than 2008: according to L. Peske during 2008 spring there were significantly less birds than in 2009. For pastoralists, both seasons were the same: the fact that 2009 had some more rain than 2008 was negatively compensated by the fact that it was the second drought in a row.

5. PROBLEMS WITH NESTS

Ranger Mahmud Abdallah noticed that one egg was lost at nest n-1 of Gattar cliff by Zenobia early in this season – due to falling down. Inspections from L. Peske undertaken on 10 July revealed that this nest might have some structural weaknesses. On the other hand, according to L. Peske nest n-2 of Gattar seems quite fine.

Nest n-2 of Mayuf seemed overbuilt, probably as a result of inexperience by the new young partner of Salam: because the size of the niche is very limited, as a consequence the space for the chicks inside the nest seemed very limited.

6. THE HYPOTHESES FOR CHICK MORTALITY OF 2009 SEASON

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Chick/s possibly involved	Proposed prox. cause	Arguments pro	Arguments contra	Likelihood	Notes
Chick 3	Disturbance by adult non breeding ibis	Several observations direct by ranger Mahmud		very probable	Behaviour known from literature, especially from Morocco
Chick 1 and 4	Insufficient food	<p>Last 2 years rainfall was the worst of all the 8 breeding seasons monitored</p> <p>Chicks were left alone for most day since 2 weeks after hatching <i>versus</i> 4 weeks in 2002</p> <p>Few days after breeding failures ibises have abandoned Shna'a feeding site, and one week later they moved to Rkheime</p>	<p>Ibises are able to find food anyway (but easier for them if without chicks!)</p> <p>Chick 4 had seemingly full stomach with no indication of starvation on feathers</p> <p>L. Peske says that last year there were less birds in the desert than this year</p> <p>Chick 4 was the last survived one, getting all food from both experienced parents</p>	Possible	
Chick 2	Depredation			Possible, during days 26-28 May	Impossible to monitor nest n. 2 from the guard tent
Chick 2	Problems with nests	<p>Nest n-2 in Mayuf was overbuilt, very little room for chicks</p> <p>Inspection of n-1 in Gattar form L. Peske</p>	Both nests produced 3 chicks each in 2006!	Possible-probable	Young adults at first breeding are known to overbuild nests
Chick 4	Inbreeding related problems / genetic problems	Chick 4 was underweight, despite probably not being underfed	Sultan and Zenobia were a successful breeding pair in 2006 and 2007		

7. FINAL RECOMMENDATIONS FOR FUTURE BREEDING SEASONS

- Ensuring Shna'a and Slem reservoirs are fixed during September-October 2009: reservoirs provide ibises with most probably important supplementary food, especially in the form of young toads (Serra et al. 2008). It seems likely that the past 2 breeding failures could be linked to the fact that during the past 3 years both reservoirs were dried and ibises could not exploit supplementary food

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- A deeper interpretation of chick post mortem analysis seems needed: it is recommended to request assistance to veterinarians specialized in wild birds and better in bald ibises.
- Developing an efficient system to provide extra food to ibises, in cooperation with captive ibis projects (Austria, Spain etc.). To be discussed during next IAGNBI meeting in November 2009.
- Attempting to improve nests: it is recommended that this very delicate operation should be done only with technical assistance from BirdLife and IUCN, during period November 2009 – January 2010. In fact, this intervention, if done improperly, could cause more damages than benefits to nests, being the rock of the cliff fragile. To be discussed during next IAGNBI meeting in November 2009.
- Discussing agreement with military in order to avoid overlap of exercitations and occurrence of birds in Rkheim area in the years to come, during period mid June-July. Also important, advocating not targeting the ibis cliff during exercitations
- Carefully studying and discussing the recommendations on best efficiency of ibis protection program as proposed in Annex 1. Timely preparation for next 2010 breeding season according to recommendations.
- In particular: a stronger scientific coordination of rangers and guards is recommended in the future years. Rangers should not make decisions – at least those not linked to routine - without prior consulting an experienced scientific responsible. Especially critical are the visits below nests which should be avoided and - if necessary – must be done only by qualified and experienced staff.
- Rangers should collect data according to standard forms prepared by the scientific responsible and not in the form of personal notes.

ANNEX 1

**PROPOSED STANDARD IBIS ANNUAL PROTECTION PROGRAM
BASED ON LESSONS LEARNED DURING PERIOD 2002-09**

1. *Period of operation:* from 1 February to 30 July, every year

2. *Staff needed*

<i>Type</i>	<i>Number</i>	<i>Duties</i>
Trained national veterinarian better if assisted by experienced international ornithologist	1+1	Scientific coordination and supervision
Trained ranger with proven experience in ibis protection	4-6	Protection, monitoring and data collection, supervision of Bedouin guards, assistance of ornithologists
Bedouin local guard	3 (1 in Gattar, 1 in Mayuf, 1 in Mazrur Dreila)	Protection and monitoring

3. *Equipment needed*

- two 4x4 vehicles (+ maintenance and fuel)
- four high-quality telescopes
- ten high-quality binoculars
- three tents and accessories

4. *General recommendations*

4.1. It is recommended to not underestimate the level of specialized protection efforts needed by ibises during the period from February to July, which is crucial to ensure a smooth breeding: namely, the quality of the protection effort depends on the scientific coordination, the number, the role and the level of training and experience of rangers involved; and by the number and role of the Bedouin guards.

4.2. It is highly recommended to use as a model the successful protection programs taken place during breeding years 2002-04 and 2006-07. These 5 successful protection programs were based on three levels: strong field scientific coordination, at least 2 trained and experienced rangers and at least 4 Bedouin guards helping the rangers.

4.3. It is recommended to not underestimate the importance of the level of experience of the rangers involved in the protection program: for instance, by 2007 the 2 local rangers mentioned above had accumulated a significant amount of experience (5 years of training and on-the-job experience), and, despite in that year the scientific coordination was quite low, they were able to detect the raven threat on time and to control it successfully during the critical time.

4.4. It is recommended to not overlook the level of motivation of rangers required: this is another critical issue, as working intensively in the desert under difficult climate conditions, whole day, every day including week ends, certainly requires a genuine passion and interest. This specific factor, not easy to be assessed objectively, was not used in the analysis shown in Annex 12: it would have certainly made the correlation between the breeding success and the protection effort even stronger and more significant. Considering the sheer amount of overtime work needed, an incentive integrating their normal salary is recommended, at least for rangers, guards and drivers involved in field operations.

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4.5 Enabling and authorizing the rangers to drive the vehicles by their own, without driver, makes the protection program more efficient: in fact it is not easy to find a driver motivated enough to work many hours every day and to wake up very early and go back home very late. Also this arrangement would enable rangers to be sufficiently flexible as this is an important requirement of their work.

4.6 Rangers should be carefully coordinated and supervised by the scientific coordinator and supervisor. Rangers should always consult the scientific coordinator before taking decisions which are not related to routine and already agreed activities. Bedouin guards should be coordinated and supervised by rangers.

4.7 Rangers should collect standard data on data sheets prepared and explained to them by the scientific coordinator, and they should avoid taking informal notes by their own.

4.8 Rangers should make sure that a minimum number of people and vehicles is present at the guard tent in front of the nesting cliff in order to avoid noise and disturbance, especially when birds are using the pasture around the tent and the ponds for drinking.

4.9 Coordination with military should be sought during the periods that birds use the area of Rkheime, which is in March and in June-July.

5. *Specific recommendations in relation to threats*

Based on past experience, the 4 most dangerous threats negatively affecting the ibis breeding performance are the following (in order of importance):

- I. **Depredation by ravens and vultures during the first 15 days when chicks are left alone in nests by parents.** This threat usually materializes some 2-3 weeks after hatching, typically in the month of May. The scientific coordinator should discuss with rangers how to control ravens and Egyptian Vultures around the ibis nesting cliffs early in the season, preferably before ibis return (before mid February). If this is not possible, a dawn-to-sunset ibis nest guarding should be arranged on time for the duration of 15 days from the very first day that chicks are left alone. This requires attention, preparation and readiness. Three motivated guards, covering shifts of 5 hours each, should observe the nests at a distance not less than 300 m, and use a whistle to scare any bird predator approaching the nest. Risk of depredation seems more severe in Gattar than in Mayuf. The two breeding failures, taken place in 2005 and 2008 in Gattar, were likely due to raven depredation of chicks.
- IIa. **Human disturbance around nests during nest selection and building, during incubation and at chick fledging time.** This problem usually takes place from the time of ibis return in February until mid June. No person - visitors and local staff - should get closer than 300 m to the ibis nesting cliff during this period: better would be 500 m. Any visitor should ask authorization from the scientific coordinator and should be accompanied and monitored by trained rangers. Groups should not exceed 10 persons at a time. It is also important that rangers and guards should always ask permission to scientific coordinator in order to get closer than 300 m from the nesting cliff. No exceptions should be made for photographers, video amateurs and media.
- IIb. **Hunting at ibis feeding grounds and at reservoirs used by ibises for drinking (February-July).** The most vulnerable feeding site, due to its remoteness, is that of Mazrur Dreile (Shna'a). A guard should be hired on time, early in the season, in order to stay permanently at the site from March until July. Artificial ponds close to nesting cliff should be arranged before bird arrival early in the season, for the drinking of ibises, in order to prevent them to search water at unknown and unprotected locations. One adult breeding ibis was killed by foreign poachers at the reservoir of Shna'a in 2003. If birds use the reservoir of Shna'a (or Slem) for feeding, a local guard should be hired to protect the site.
- III. **Human disturbance at feeding grounds (February-July).** Nobody should get closer than 300 m from the feeding birds. Any visitor should ask authorization from the scientific coordinator and should be accompanied and monitored by trained rangers. Groups should not exceed 10 persons at a time. No exceptions should be made for photographers, video amateurs and media.

الملحق رقم 13

**برنامج الحماية السنوي المقترح لطائر أبو منجل
بناءً على الدروس المستفادة أثناء الفترة من عام 2002 وحتى عام 2009**

1- مدة العمل: من 1 شباط إلى 30 تموز من كل عام

2- الكادر المطلوب:

الواجبات	العدد	النوع
الإشراف والتنسيق العلمي	1+1	طبيب بيطري وطني مدرب ومن الأفضل إن تم مساعدته من قبل عالم طيور دولي ذو خبرة
الحماية والمراقبة وجمع البيانات والإشراف على الحراس البدو ومساعدة علماء الطيور	4-6	طواف مدرب ذو خبرة مثبتة في حماية أبو منجل
الحماية والمراقبة	3 (1 القطار, 1 معيوف, 1 مزورر دغيلة)	حارس بدوي محلي

3- التجهيزات الضرورية:

- سيارتي دفع رباعي (الصيانة والوقود)
- 4 تلسكوبات ذات دقة عالية
- 10 مناظير ذات دقة عالية
- 3 خيم مع مرفقاتها

4- توصيات عاجلة:

- 4.1 يوصى بأن لا نستخف بمستوى جهود الحماية المتخصصة التي تحتاجها طيور أبو منجل أثناء الفترة من شباط حتى تموز والتي تعد أمراً ضرورياً لتأمين عملية التكاثر بسهولة: إن نوعية جهود الحماية تعتمد على التنسيق العلمي وعدد ودور ومستوى تدريب وخبرة الطوافين وأيضاً عدد ودور الحراس البدو.
- 4.2 يوصى بشكل كبير أن نتخذ من برامج الحماية الناجحة التي جرت أثناء سنوات التكاثر من 2002 حتى 2004 و 2006 و 2007 كنموذج متبع. فلقد بنيت هذه البرامج الخمسة من الحماية على ثلاثة مستويات: التنسيق العلمي الحقلّي الفعال، على الأقل وجود اثنين من الطوافين المدربين وذوي الخبرة و 4 من الحراس البدو لمساعدة الطوافين.
- 4.3 يوصى بأن لا نستخف بأهمية مستوى تدريب الطوافين المشتركين ببرنامج الحماية. فمثلاً في عام 2007، جمع الطوافان المحليان اللذان ذكرا أنفاً مقداراً مميّزاً من الخبرة (5 سنوات من التدريب والخبرة العملية) وعلى الرغم من أن التنسيق العلمي في ذلك العام كان منخفضاً جداً، كانت لديهم المقدرة على اكتشاف خطر الغربان في الوقت المناسب وضبطه بنجاح أثناء الوقت الحرج.
- 4.4 يوصى بأن لا يتم التغاضي عن مستوى التحفيز المطلوب للطوافين وهذه قضية هامة أخرى. إن العمل بشكل مكثف في الصحراء تحت ظروف مناخية صعبة طوال اليوم وكل يوم بما في ذلك عطل نهاية الأسبوع يتطلب اهتماماً ودافعاً قوياً. وهذا العامل المحدد والذي ليس من السهل تقييمه بشكل موضوعي لم يستخدم في التحليل الذي ورد في الملحق 12: وسيجعل هذا العامل من العلاقة بين نجاح التكاثر وجهود الحماية أكثر قوةً وأهميةً. وإذا ما أخذنا بعين الاعتبار مقدار الوقت الزائد والعمل

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المطلوب، فإن حافظاً مكملاً لراتبهم الطبيعي يعتبر أمراً جيداً، على الأقل للحراس والطوافين والسائقين المشتركين في العمليات الحقلية.

4.5 تمكين الطوافين وإعطائهم الإذن لأن يقدوا الآليات لوحدهم بدون أي سائق يجعل من برنامج الحماية أكثر فعالية وفي الواقع ليس من السهل إيجاد سائق محفز بما في الكفاية ليعمل عدة ساعات كل يوم ويستيقظ باكراً جداً ويعود للمنزل متأخراً جداً. ويمكن هذا الترتيب من أن يكون الطوافون مرنون بما فيه الكفاية خاصة وأن هذا مطلب هام لعملهم.

4.6 يجب التنسيق بحرص بين الطوافين كما يجب أن تتم مراقبتهم من قبل المنسق العلمي ومراقب. كما يجب على الطوافين دائماً أن يستشيرو المنسق العلمي قبل إتخاذ القرارات التي لا تتصل بأمور روتينية والنشاطات المتفق عليها مسبقاً و يجب أيضاً تنسيق الحراس البدو ومراقبتهم من قبل الطوافين.

4.7 يجب أن يجمع الطوافون معلومات قياسية على صفحات لجمع البيانات يعدها ويشرحها لهم المنسق العلمي ويجب أن يتجنبوا أخذ الملاحظات غير الرسمية لوحدهم.

4.8 يجب على الطوافين التأكد من تواجد الحد الأدنى من الناس والآليات في خيمة الحارس أمام جرف التعشيش لتجنب الضجة والإزعاج خاصة عندما تستعمل الطيور المراعي حول الخيمة والبرك للشرب.

4.9 يجب بحث التنسيق مع الجيش أثناء الفترات التي تستخدم فيها الطيور منطقة رخيمة والتي تكون في آذار وفي حزيران – تموز.

5- توصيات محددة ذات علاقة بالمخاطر:

إن التهديدات الأربعة الأكثر خطورة، بناءً على التجربة الماضية، التي تؤثر سلباً على أداء تكاثر طائر أبو منجل هي التالية: (الترتيب حسب الأهمية)

1- الهجوم من قبل الغربان والنسور أثناء 15 يوم الأولى التي تترك فيها الفراخ لوحدها من قبل الوالدين. يظهر هذا الخطر عادةً بعد أسبوعين أو ثلاثة من التفقيس وعادةً في شهر أيار. يجب أن يناقش المنسق العلمي مع الطوافين كيف يضبط الغربان والنسور حول جروف تعشيش الطائر في وقت مبكر من الموسم ويفضل قبل عودة الطيور (قبل منتصف شباط). وإن لم يكن هذا ممكناً، يجب ترتيب حراسة للعش من الفجر للغروب في الوقت المناسب لمدة / 15 / يوماً من اليوم الأول الذي تترك فيه الفراخ لوحدها. وهذا يتطلب انتباهاً واستعداداً وجاهزية. يجب على ثلاثة حراس محفرين يغطون ورديات من 5 ساعات لكل واحد أن يراقبوا الأعشاش من مسافة ليست أقل من 300 متر ويستخدموا التصفير ليخفوا أي طائر جارح يقترب من العش. إن خطورة الهجوم من قبل هذه الطيور تبدو أكثر حدةً في الفطار منها في معيوف. من المحتمل إن فشل التكاثر الذي حصل مرتين في عام 2005 و 2008 هو بسبب هجوم الغربان على الفراخ.

2- الإزعاج البشري حول الأعشاش أثناء انتقاء العش وبناءه وأثناء التفريخ وفي وقت نمو الفرخ. تحدث هذه المشكلة عادةً في وقت عودة الطائر من شباط وحتى منتصف حزيران. لا يجب أن يقترب أحد – زوار أو موظفين محليين – من العش أكثر من 300 متر في جرف تعشيش أبو منجل أثناء هذه الفترة ومن الأفضل إن كانت المسافة 500 متر. ويجب على أي زائر أن يطلب الموافقة من المنسق العلمي وأن يرافقه ويراقبه الطوافون المدربون. يجب أن لا تتجاوز المجموعة 10 أشخاص في الزيارة الواحدة. ومن المهم جداً، أن يطلب الحراس والطوافون دائماً الإذن من المنسق العلمي للاقترب أكثر من 300 متر من جرف التعشيش. ولا يجب أن يكون هناك استثناءات للصور ومصوري الفيديو الهاوين ووسائل الإعلام.

3- الصيد في موقع تغذية طائر أبو منجل وعند الأحواض المائية المستخدمة من قبل طيور أبو منجل للشرب (شباط – تموز). إن أكثر المواقع عرضة للخطر هو مزرور دغيلة (شناعة) بسبب بعده. يجب استئجار حارس في الوقت المناسب وبوقت مبكر من الموسم ليبقى بشكل دائم في الموقع من آذار حتى تموز. يجب ترتيب بحيرات صناعية قريبة من جرف التعشيش قبل وصول الطائر ومبكراً في الموسم للشرب من قبل الطيور وليمنعها من البحث عن الماء في مواقع غير محمية وغير معروفة. تعرض أحد الطيور البالغة المتكاثرة من طيور أبو منجل للصيد من قبل صيادين أجانب عند حوض شناعة في عام 2003. وإن استخدمت الطيور حوض شناعة (سليم) للتغذية، فيجب استئجار حارس محلي لحماية الموقع.

4- الإزعاج البشري في موقع التغذية (شباط – تموز). لا يجب على أحد أن يقترب أكثر من 300 متر من الطيور التي تتغذى. ويجب على أي زائر أن يطلب الموافقة من المنسق العلمي وأن يرافقه ويراقبه الطوافون المدربون. يجب أن لا تتجاوز المجموعة 10 أشخاص في الزيارة الواحدة. ولا يجب أن يكون هناك استثناءات للصور ومصوري الفيديو الهاوين ووسائل الإعلام