



A Federation for Hunting & Conservation Malta (FKNK) Analysis of:



Light pollution and its effect on Yelkouan Shearwaters in Malta; causes and solutions



FKNK Analysis of Birdlife (Malta) 'Light Pollution Study'

August 2008

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Purpose of Analysis

Being always in the FKNK's interest to analyse any public paper, document, etc., that is published by Birdlife Malta, this report regarding the effects of artificial lights on both migratory and resident wild birds over the Maltese Islands, was no different, however more interesting.

In the first instance Birdlife figures of bird species recorded in this report are supported by the physical evidence, the recovered (dead or alive) bird, and not based solely on reports of observations as is the norm in all other Birdlife Malta reports. This is similar to the figures of harvested huntable birds of hunters which are recorded on the 'carnet de chasse' – each such record can, strictly speaking, be supported by the physical evidence, the caught bird.

Secondly, apart from the fact that this is the first Birdlife Malta report which has come to the FKNK's notice wherein hunting has been totally omitted and no sort of blame has been attributed to hunters, on the other hand several other local hotels, establishments, operations, localities, fisheries, tourism, the Mellieħa Church, etc., have been targeted in this report.

Finally the report forms part of an EU LIFE funded project also co-funded by reputable entities including MEPA, HSBC, Heritage Malta, RSPB and SPEA besides others.

How to follow and understand the analysis

*In the quotes, earmarked by inverted commas, lifted from the original report, any word, phrase, sentence that has been **underlined** and displayed in **bold** is thus to draw reader's attention.*

FKNK's comments are displayed in italics.

7.0 Results

7.1 Grounded Birds

Every year, a number of Yelkouan Shearwaters in Malta become disorientated and fly inland. Between 1978 and 2007 a total of 86 birds were reported to BirdLife Malta. The results are displayed in Table 2 and Figure 6



Yelkouan Shearwater – White circles
Cory's Shearwater – Green circles
European Storm-petrel – Grey circles

Figure 6. Map illustrating the location of all recorded Procellariiformes groundings in Malta"

*The map is somewhat **misleading**, because when one counts the indicated number of groundings in the circles one gets 18 Yelkouan Shearwater, 47 Cory's Shearwater and 8 European Storm-petrel, a total of **73 birds** and not 86 birds as stated initially. Therefore the results of the total of 86 disorientated birds reported to Birdlife between 1978 and 2007 ARE NOT in fact displayed in Figure 6, and the Map DOES NOT illustrate the location of ALL recorded Procellariiformes groundings in Malta.*

The missing 13, or is it 14 birds, must be attributed to 'unknown' locations of grounding, which conclusion was arrived at following deeper analysis and after making other allowances and mathematical calculations as explained on the following pages.

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"Location of grounding	No. of birds	Cory's	Yelkouan	Storm-petrel	% of total
Hal Far / Ghar Hasan	1	1			17
Unknown	1	3	1		16
Ċirkewwa	6	4	2		7
Għadira	6	3	3		7
Delimara Lighthouse	4		1	3	5
Xlendi Bay	4	4			5
Birzebbuga	3	1	2		3
Buġibba	3		3		3
Ghar Lapsi	3			3	3
Comino	2		2		2
St Pauls	2	2			2
Zurrieq	2	1		1	2
Qawra / Salina	2	1	1		2
Marsalforn Bay	2	1		1	2
Blue Grotto	1	1			1
Cospicua	1	1			1
Għarb	1	1			1
Gnejna	1	1			1
Golden Bay	1	1			1
Landrijjiet	1	1			1
Manikata	1		1		1
Mellieha	1	1			1
Mgarr ix xini	1	1			1
Naxxar	1		1		1
Pembroke	1		1		1
Sannat, Gozo	1	1			1
Sliema	1	1			1
St Venera	1		1		1
Ta Cenc	1	1			1
Tarxien	1	1			1
Victoria, Gozo	1	1			1
Xagħra	1	1			1
Xemxija	1	1			1
Total	87	5	2	8	

...Table 2. Number of grounded birds, by species, recorded in Malta between **1987 and 2007**.

Disoriented shearwaters and petrels were found in a total of **35 locations**. For all species combined, the five key focal areas for groundings were found to be Ħal Far (including Għar Ħsan), Ċirkewwa, Għadira and Delimara Lighthouse. Considering the Yelkouan Shearwater separately, the top five epicentres of these incidents were Għadira, Buġibba, Ċirkewwa, Ħal Far and Comino."

Once again this table displayed **incorrect figures**.

Counting the number of birds we get a total of **60 AND NOT 87** as displayed (not 86 any longer), and the total of Cory's Shearwater should read 36 AND NOT 5, similarly the total of Yelkouan Shearwater should be 19 AND NOT 2. As a sign of relieve the total of European Storm-petrel is displayed correctly at 8.

Even with the corrected totals the overall total still does not tally with the 60 total. This is because the number of Cory's and Yelkouan Shearwaters recovered from unknown locations read 3 and 1 respectively whereas the total number of birds recovered from unknown locations reads 1 and not 4, which total of 4 if corrected would result in an overall total of **63 birds**.

The report states that the birds "were found in a total of 35 locations." The table indicates **33 locations, one of which is listed as unknown**.

Also, the years of the recordings, are incorrectly stated as 1987 and 2007 instead of 1978 and 2007 in the description of Table 2.

It is only through reference to the % of total that one can manage to arrive at somewhat accurate totals, also assuming that the percentages are correct, since if 17% of the birds were recovered at Ħal Far/Għar Ħasan than the total no of birds on the total of 87 birds would add up to 15 and not 1, whilst the total no of birds from unknown locations which is stated at 16% of total would add up to 14 and not 1 or 4. Thus the overall total would tally with the stated total of 87 birds.

Through this though it is still not clear as to which species of birds the missing 14 individuals from Ħal Far/Għar Ħasan and the 13 from unknown locations belong to. For the purpose of this exercise and on the presumption of **misprints** the missing birds of the former location have been attributed to Cory's Shearwater and the difference of 10 birds from the latter location to the Yelkouan Shearwater.

Thus the final table would read total no. of birds 87, Cory's total 50, Yelkouan total 29 and Storm-petrel total 8.

"Most of the birds received by BirdLife Malta are unharmed and can be ringed and released...."

...This problem is not restricted to seabirds. Every year, BirdLife Malta receives birds from a range of species that have become disorientated during nocturnal migration and crash into buildings. Extensive data has only been collected on these cases since 2007. Table 3 shows all birds brought into BirdLife Malta in 2007 with injuries consistent with collision.

Species	Total	Alive	Dead	% juvenile
Little Bittern	10	8	2	33.3
Moorhen	2	2	0	50
Black-necked Grebe	2	2	0	100
Scops Owl	1	1	0	na
Totals	15	13	2	

Table 3. Injured birds found with injuries consistent with collision with buildings in Malta (2007 data only)

...As these birds are passing over the islands, the **locations where they were found were very widespread...**

The above statements and table are very clear indicators that as many as 87% of recovered birds are not lost or killed.



Light pollution and its effect on Yelkouan Shearwaters in Malta; causes and solutions

Helen Raine, John J Borg, Dr. André Raine, Suzanne Bairner, Matthew Borg Cardona" - *Except for the Biologist from Bermuda, none of the others seem to deserve a title, not even the basic Mr. or Ms.*



Executive Summary

...key actions...were identified as...residents to switch off lights, remove or replace unnecessary or inappropriate outdoor lighting... prevent over illumination in hotel porches and grounds...removal of globe lights (and the complete prohibition of their future use)...the replacement of other street lighting...removal of multiple rows of lights...

...simple, relatively inexpensive and practical solutions were identified... these will however require focus and funding

1.0 Introduction

Light pollution also has the potential to affect other seabirds in Malta, particularly Cory's Shearwater (*Calonectris diomedea*) and European Storm-Petrel (*Hydrobates pelagicus*). There are between 6,090-7,130 breeding pairs of Cory's Shearwater in Malta, making it the fifth largest population in Europe, and 5,025 – 8,025 breeding pairs of European Storm Petrel (mainly on the islet of Filfla), which is the largest known breeding colony of this species found in the Mediterranean." – *So, on the tiny Maltese Islands we have it from the horse's mouth that we have 10% of the world's population of Yelkouan Shearwater, including 1,500 breeding pairs which number when added to the breeding pairs of the Cory's Shearwater and European Storm-Petrel, without taking account of the off-springs, add up to over 33,300 thriving individual birds! When according to*

Birdlife, everybody has been led to believe that the Maltese hunters have decimated ALL the birds of Malta!

2.0 Light Pollution, the background

"Lights...can lead to local extinctions of species...

Light trespass...

...there is nowhere on Malta or Gozo to observe the stars without being influenced by light pollution...

Light attraction among...seabirds...is a worldwide problem...there is a wide range of light pollution...with the potential to affect seabirds, including street lights...parking places, harbours, airports, fireworks, individual houses and factories, stadiums, security lights and also car head lights...Light pollution in the marine environment includes lights on fishing vessels, gas flares on oil rigs, and squid fisheries...

Shearwaters and petrels that are attracted to artificial lights tend to become disorientated. This may cause them to crash into buildings, wires, vehicles and also tall vegetation. Many then fall to the ground and are either killed by predators or die of starvation and their injuries...

Artificial lights...also effect other bird species. Light associated mortality of nocturnal avian migrants can involve hundreds of thousands of birds...

...In Malta there are numerous cases each year of birds being brought to the Birdlife office both dead and alive after colliding with buildings during nocturnal migration..." – *according to the report as many as 15 such birds were brought to Birdlife office in 2007 and still it is not clear if these birds had in fact collided.*

"...reptiles, plants, amphibians and insects have all been shown to suffer negative effects from light pollution..."

Effects on humans

The full implications of artificial lighting are only just beginning to be understood. ...human health can be significantly influenced by light pollution...It can cause increased levels of anxiety and lack of sleep; artificial light can also induce the loss of visual acuity. Fatigue and anxiety can lead to medically defined stress that can cause further health problems including hypertension and headaches...studies also suggest a link between exposure to light at night and risk of breast cancer,...

Artificial lighting can blind drivers, cyclists and pedestrians and this can affect road safety and contribute to accidents....

Practical measures used internationally to reduce light pollution

3.0 Practical Measures

By far the best choice for lighting (apart from switching lights off altogether)...

...a blanket prohibition on globe lights should be made....

...one of the grounded birds in Malta was actually found on a construction crane which indicates that lighting on these structures is likely to pose a serious hazard to the birds.

...Throughout the Maltese Islands, sports lighting is quickly becoming a major night-time problem....

Lighthouses are clearly a threat for migrating species,...In Malta, the grounding of four European Storm-petrels around the Delimara lighthouse...suggests that this problem exists here." – *Figure 6 lists three Storm-petrels found around the Delimara lighthouse.*

"Oil platforms, vessels using bunkering zones and other fishing vessels are also often brightly lit and it is therefore important that these lights be scaled back...

...turn off street lighting and restrict the use of non-beneficial interior and exterior lights during the peak of fledging each year...In Malta, Yelkouan Shearwaters...in late June and July, Cory's Shearwaters in September and October and European Storm-petrels from July to October. During these periods, extraneous hotel lights and non-essential street lights could be switched off...ideally to ensure that all lights are extinguished during that period...rooftop floods, perimeter spots, should be extinguished during critical periods...." – *June to October = peak of incoming tourism industry.*

"6.0 Methodology

...The data analysed covered the period 1978 to 2007....

7.0 Results

See page 1 of this analysis.

The following locations were found to be the **main** causes of light pollution for the

Rdum tal-Madonna colony

i. Buġibba

ii. Mellieħa

iii. Adventure Campsite & White Tower

iv. Ċirkewwa

v. Għadira

Buġibba

Specific location	Item causing light pollution
<u>Buġibba promenade</u> (continues through all sections) widespread	Streetlights Street lights made up of two rows of globes and a row of tall lamp posts
<u>The New Dolmen Hotel*</u>	Excessive hotel room porch lighting 2 spotlights
<u>Amazonian Night Club</u> <u>San Antonio Hotel and Spa</u>	Excessive hotel room porch lighting
<u>Buġibba beach</u>	Beach light with reflectors causing glare; the row of globes and a row of lamp posts can be seen on the street
<u>Central Square</u>	Multiple unnecessary decorative globe lights.
<u>Buġibba promenade</u>	Large spotlight within a basketball court.
<u>McDonalds and surrounding area</u>	Globe lights and unnecessary spotlights on outdoor playground

Mellieħa

There were two specific light sources identified as causing **severe pollution** from Mellieħa....a **spotlight** that points at the **Mellieħa Parish church**...a **floodlight** situated half way up a **crane**...A more diffuse source was from **residential housing**.

Specific Location	Item causing light pollution
<u>On street in front of church</u> <u>Parish church</u>	spotlight
<u>Throughout garden under the church</u>	Globe Lights
<u>Top of Crane</u>	Crane at worksite
<u>Along the Roads</u>	Streetlights made up of tall lampposts

...The **White Tower** has a wall light which is **causing light pollution**. The **Adventure campsite** has a lamp post and an upward pointing wall light...**The toilet light**... is also emitting **large amounts of light pollution**....

...light pollution is mainly emanating **from residential flats** and the **RIU Seabank Hotel**...
extreme levels of light pollution...discos, BBQs and parties with generators...and from the lines of kiosks which use very bright neon lights and spot lights.

...the **Mellieha Bay hotel** has excessive lighting...

Ċirkewwa;...

...the route used by **passengers who are boarding the ferry**...a **row of street lights**...**The Paradise Bay Hotel**...

8.0 Discussion and Recommendations...

...**hotels are causing light pollution**...

...**switching off some or all of the lights during June and July**...

...**Room lighting in hotels is also resulting in light pollution...particularly in the breeding season...keep curtains closed during the hours of darkness...Alternatively, special windows can be fitted in hotels**...

...**advise home owners...closing curtains at night and turning off garden lights and outside lights during key fledging periods**...

The Parish Church...extremely well lit, especially during the period of celebrations...one of the spot lights...should not be used during the breeding season (Feb to July) and preferably not at all....” – *So now the curfew is being recommended for 9 whole months of any calendar year (Feb to Oct)!*

“The White Tower has a wall light which could be removed as it appears unnecessary;...

The Adventure Campsite has a lamp post and a wall light as well as a toilet light....

Għadira Bay...

...**During the breeding season and particularly during the fledging season, it is absolutely imperative that generators are prohibited from the beach, disco lights are prevented and the kiosks limit their light pollution to essential lighting only**....

RIU Seabank Hotel and Mellieha Bay Hotel

The hotel is currently inappropriately over illuminated. Globe lights must be removed...The hotel is currently planning to expand its foot print. This development in such a sensitive area would cause serious light pollution among other environmental problems....The Seabank Hotel should also review their light policy and make changes to reduce the pollution currently being experienced.
The Mellieha Bay Hotel should follow similar guidelines...

...the Paradise Bay hotel has the ubiquitous globe lights (although pollution from the hotel might be worse at other times of the year)

Light pollution from the sea

- fishing boats
- disco boats
- tankers

...a major source of light pollution in Malta is the Malta Freeport terminal at Birżebbuġa and the nearby industrial estate at Hal Far....

9.0 Nationwide recommendations

...following recommendations should be included as legal requirements:

- o elimination of “vanity” or architectural lighting during bird migration periods and seabird fledging seasons
- o strobe lights and lasers to be prohibited from use during bird migration periods and seabird fledging seasons
- o Inefficient lighting on new buildings developments and street lights to be prohibited at the planning stage,...
- o Unnecessary external lights to be prohibited.

...Enforcement on beaches, especially Ghadira to prevent discos, generators etc...

...Immediate consideration of how to remove globe lighting street furniture...

... Extension of Notice to Mariners to protect vulnerable seabird SPA colonies in the Maltese islands during the breeding season by preventing vessels from stopping, making noise or using any lights other than navigational lights....

10.0 Conclusion

The result of taking action against light pollution now will be to ensure the future of the shearwaters and storm-petrels for which these islands are becoming famous. – ***MTA PLEASE TAKE NOTE. THIS MAY BE THE WAY FORWARD TO BRANDING MALTA!***

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Targeted hotels, establishments, localities, operations, etc.

<i>Adira Bar</i>	<i>Home Owners</i>
<i>Adventure Camp</i>	<i>Human Health</i>
<i>Adventure Camp Toilet</i>	<i>Incoming Tourism</i>
<i>Airports</i>	<i>Individual Homes</i>
<i>Amazonian Night Club</i>	<i>Industrial Estate Ħal Far</i>
<i>BBOs</i>	<i>Laser Lights</i>
<i>Beach Kiosks</i>	<i>Lighthouses</i>
<i>Beach Parties</i>	<i>Malta Freeport</i>
<i>Buġibba</i>	<i>Malta Tourism Authority</i>
<i>Buġibba Beach</i>	<i>Maltese Islands in General</i>
<i>Buġibba Central Square</i>	<i>McDonald and surrounding area in Buġibba</i>
<i>Buġibba Promenade</i>	<i>Mellieħa</i>
<i>Car Head Lights</i>	<i>Mellieħa Bay Hotel</i>
<i>Ċirkewwa</i>	<i>Mellieħa Parish Church including street and garden</i>
<i>Coastline Hotel</i>	<i>Mellieħa Residents</i>
<i>Cyclists</i>	<i>Mellieħa Road</i>
<i>Delimara Lighthouse</i>	<i>New Dolmen Hotel</i>
<i>Disco Boats</i>	<i>Oil Rigs</i>
<i>Discos</i>	<i>Paradise Bay Hotel</i>
<i>Drivers</i>	<i>Parking Places</i>
<i>Factories</i>	<i>Pedestrians</i>
<i>Fireworks</i>	<i>RIU Seabank Hotel</i>
<i>Fisheries</i>	<i>San Antonio Hotel & SPA</i>
<i>Fishing Boats</i>	<i>Security Lights</i>
<i>Fishing Vessels</i>	<i>Stadiums</i>
<i>Garden Lights</i>	<i>Street Lights</i>
<i>Għadira</i>	<i>Strobe Lights</i>
<i>Gozo Channel</i>	<i>Tankers</i>
<i>Ħal Far (including Għar Ħasan)</i>	<i>Vanity Lights</i>
<i>Harbours</i>	<i>White Tower</i>

FKNK Analysis of Birdlife (Malta) 'Light Pollution Study'

FKNK Conclusions

Whilst acknowledging the fact that artificial lights do not aid and may at times hinder migrating birds, the FKNK believes that the findings of this report may be at times far fetched and the recommended alterations, besides being costly, could be impractical when one considers the insignificant "corrected" result obtained from the evidence supplied as follows:

<i>Total Disoriented Birds in 29 year span</i>	<i>Out of which Yelkouan Shearwater</i>	<i>Total average birds per annum</i>	<i>Total average Yelkouan per annum</i>	<i>13% lost (dead) birds per annum</i>	<i>13% lost (dead) Yelkouan Shearwaters per annum</i>
<i>87</i>	<i>29</i>	<i>3</i>	<i>1</i>	<i>0.39</i>	<i>0.13</i>

*Lino Farrugia
Secretary - FKNK*