Life in the dark: monitoring and reducing light pollution for the conservation of Yelkouan Shearwater

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Securing the Maltese Islands for the Yelkouan Shearwater
Project Closing Webinar 9-10 July 2020
The value of darkness
What is light pollution?
Light Pollution in the Maltese Islands

* 17th most light polluted country (by population size)
Falchi et al. 2016
Scopoli’s Shearwater
*Calonectris diomedea*

Yelkouan Shearwater
*Puffinus yelkouan*
1,795 – 2,635 b.p.

Known shearwater and storm-petrel colonies

Mediterranean Storm-petrel
*Hydrobates pelagicus melitensis*
5,000 – 8,000 b.p.
Light pollution and seabirds
Light-induced groundings
St. Paul's Bay promenade © LIFE Arċipelagu Garnija
Colony attendance
Temporary light pollution
The scatter plot shows the relationship between the illuminance of the cliff face (cd/m²) and the level of moonlight in the sky. The x-axis represents the level of moonlight in the sky, ranging from -1 to 2. The y-axis represents the illuminance of the cliff face, ranging from 0 to 0.020 cd/m². The data points are color-coded based on the number of ships: black for 0 ships, dark green for 5 ships, and light green for 10 ships. The plot is divided into two sections: 'before moonrise' on the left and 'moon in the sky' on the right.
Colony attendance - Permanent light pollution
Night sky brightness mosaics

Drone surveys
Existing problems...
Existing problems...
Existing problems...

Essential Infrastructure
Čirkewwa ferry terminal
Future problems...

Low-development areas
Armier
Future problems...

Pre-upgrade urban Mellieha
How to mitigate light pollution?

Use full cut-off fixtures
How to mitigate light pollution?

Keep intensity low
How to mitigate light pollution?

Direct light to where it is needed
How to mitigate light pollution?

Use lighting schedules
How to mitigate light pollution?

Minimize blue light
How to mitigate light pollution?

- Reduce reflected light
The town of La Patrie after light pollution mitigation © RICEEM
Seabird specific recommendations

- CCT < 3000K in urban areas
- CCT < 2700K in rural and protected areas
- Prohibit non-essential lighting of the marine environment
- Reduce visual impact of coastal luminaires as viewed from the sea
- Seasonal restrictions on lighting
# Stakeholder engagement

## Government Agencies
- MCCAA
- ERA
- Planning Authority
- Enemalta

## Local Councils
- Il-Munxar
- Melliha
- Kunsill Lokali San Pawl Il-Bahar
- Kunsill Lokali Birżebbuġa
- Kunsill Lokali Ħamrun

## NGOs
- Vigío

## Private Companies
- Trelleborg
- Gozo Channel Company Limited
Advocating changes to legislation

- Review of current legislation
- Design new legislation proposals to;
  - Reduce light pollution,
  - Safeguard breeding habitats,
  - Reduce light-induced mortality.

Without compromising public safety and security
The future?

- National policy for light pollution
- Increased public awareness
- Designation of Dark Sky Heritage Areas

Reduced light pollution

- Seabird colonies safeguarded
- Reduced light – related mortality
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