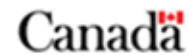


Steve Bonnell, PhD

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Gestionnaire, Évaluations stratégiques et régionales
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From: Ian L Jones <ianljones60@gmail.com>

Sent: May 27, 2019 12:22 PM

To: Bonnell, Stephen (CEAA/ACEE) <stephen.bonnell@canada.ca>

Cc: Bill Montevecchi <mont@mun.ca>

Subject: Fwd: engineering opportunity - Leach's Storm-petrel management offshore

Hi Steve,

I've attached some correspondence (me > Dean of Engineering Greg Naterer, Memorial University of Newfoundland) related to our Regional Assessment meeting of last Thursday May 23 at the Holiday Inn in St. John's.

If you think appropriate, could you forward this to the panel members to look at please?

Thanks.

ilj

Begin forwarded message:

From: Ian L Jones <ianljones60@gmail.com>
Subject: engineering opportunity - Leach's Storm-petrel management offshore
Date: May 27, 2019 at 12:09:26 PM NDT
To: gnaterer@mun.ca
Cc: "Chapman, Tom" <tomc@mun.ca>, Dean of Science <deansci@mun.ca>, Bill Montevecchi <mont@mun.ca>, Ian Jones <ijones@mun.ca>

Hi Greg,

Interesting to meet you last Thursday at the environmental assessment meeting. As I mentioned in our conversation, there is an exciting opportunity for an engineering solution to conflict between offshore oil activity and the seabird Leach's Storm-petrel.

Briefly, this was one of our most abundant breeding seabirds in Newfoundland and Labrador, it's populations are in steep decline, the issue for them including fatal attraction to artificial lights offshore. The bird has nocturnal activity and under certain conditions (e.g., moonless overcast nights, drizzle and fog) the birds lose situational awareness and fly into lights and flares (a.k.a. 'bird storms'). As a k(survival)-selected bird, Leach's Storm-petrel populations are apparently unable to withstand this type of mortality. As a result they may soon be listed under the Species at Risk Act (SARA) - creating migratory bird permitting problems for future development activity offshore.

Fortunately, these is likely a straightforward solution - modifying lighting at offshore platforms and on vessels, as follows:

shading of lighting to block visible point sources of light (see .pdf attachment, especially p. 3 therein) - light sources cast their illumination on work areas only - this is a retrofit solution

spectral modified lighting - experimental evidence indicates green lighting is less prone to cause bird light attractions - this is a retrofit solution involving green light bulbs (in addition to shading)

lighting management - because the light attractions occur only on nights with very specific moon and weather conditions, and seasonally (summer and autumn only) a light control plan that implemented strong light reduction on these nights, with no flaring on these nights, as part of standard operating protocols offshore would reduce fatal light attractions - this is again an engineering solution

With these^ three items in play, I believe we would have an opportunity to minimize or even eliminate offshore activity conflict with this migratory bird, a win situation for all concerned.

My expertise is in the area of seabird biology (including behaviour) of this kind of bird so I (along with Bill Montevecchi) could possibly advise collaborators in your department on how to optimize the engineering in relation to bird characteristics. There would be some related bird experiments that could be done to optimally tweak lighting designs.

Let me know if you are interested.

Sincerely,

ilj

Ian L. Jones

Professor
Department of Biology, Memorial University
St. John's, Newfoundland, A1B 3X9, CANADA

phone (709) 864-7666

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web: <http://www.mun.ca/serg>

<https://www.youtube.com/user/DrIanLJones>



www.hawaii.gov/dlnr/



www.dofaw.net

ACCEPTABLE ONLY WITH PROPER BULB(S)

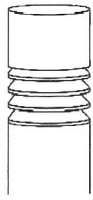
UNACCEPTABLE

WALKWAY/PATH
LIGHTING

STREET/PARKING
LIGHTING

ARCHITECTURAL
LIGHTING

Bulbs for all fixtures should be of the Yellow 'Bug' Light variety incandescent or compact fluorescent.



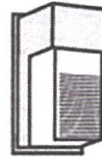
Low Profile Bollards with Louvers



Globe Fixture



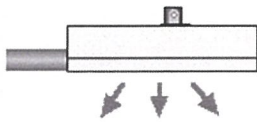
Unshielded Carriage



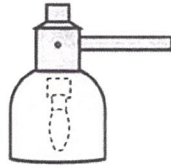
Wallpack



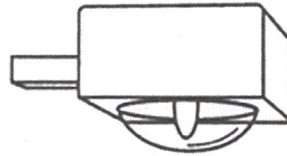
Acorn Fixture



Full Cutoff Low Pressure Sodium Streetlight



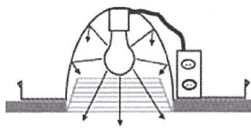
Fully Shielded NEMA Light



Drop-Lens/Sag-Lens w/ exposed bulb



Unshielded Streetlight



Recessed Can w/ baffles



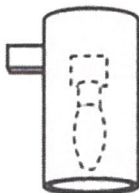
Glare Buster



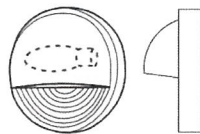
Nautical Wall Sconce



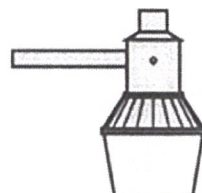
Floodlight



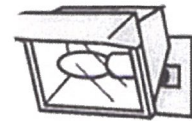
Canister Downlight



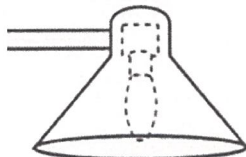
'Eyelid' Step Light



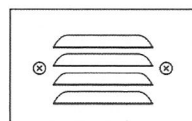
NEMA Security Light



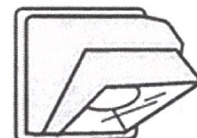
Partially Shielded Floodlight



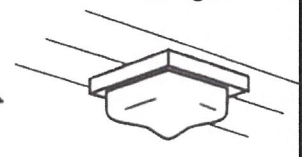
Downlight



Louvered Step Light



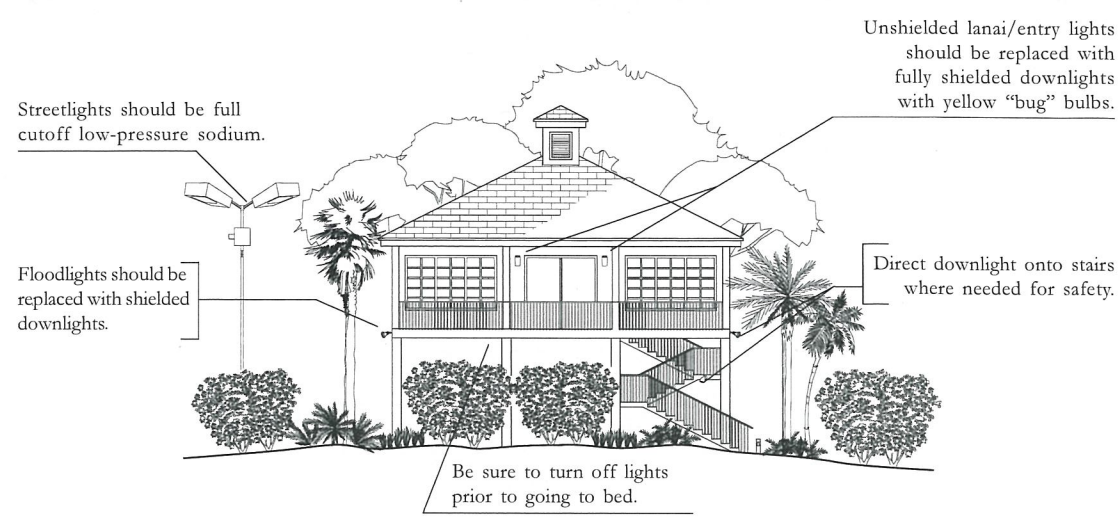
Shielded Security Light



Drop-Lens Canopy Light

REPLACE POORLY SHIELDED LIGHTS TO REDUCE LIGHT POLLUTION
 REPLACE FLOODLIGHTS AND UNSHIELDED FIXTURES WITH WALKWAY AND PATH LIGHTING

REPLACING BAD LIGHT FIXTURES

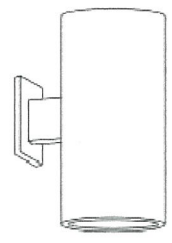


This diagram depicts a typical house with several styles of exterior light fixtures. These fixtures are inappropriate for use and should be replaced with shielded, downward directed lights. When correcting problem light fixtures, don't forget about your interior lights. Try to make it a habit to keep your window blinds closed at night, especially Sept 15-Dec 15 when young Newell's shearwater and Hawaiian petrel fly to the ocean for the first time.



JELLY-JAR LIGHTS

Lights like the one shown above waste 40% to 60% of the light produced in the form of glare. It is not uncommon to see these poorly designed \$3 and \$4 fixtures on homes costing \$500,000 and up.



CANISTER DOWNLIGHTS

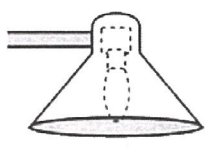
The best light fixture for wildlife is the canister downlight using a 25watt to 40watt yellow bug lamp. Excellent for human safety, minimum glare, almost no light trespass occurs into the night sky or onto your neighbor's property.



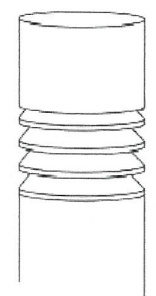
FLOODLIGHTS



CARRIAGE LAMPS



DOWNLIGHT



BOLLARD FIXTURE

These unshielded exterior lights are poorly suited for use in Hawaii. These light fixtures contribute to light trespass onto neighbor's property as well as up into the night sky.

Downlights and bollards are excellent fixtures for providing safety, illuminating pathways and landscaping. Specified with long wavelength "yellow" lamps, these lights actually improve our night vision by reducing glare.

SOURCE FOR GOOD LIGHT FIXTURES: WWW.DARKSKY.ORG/FIXTURES



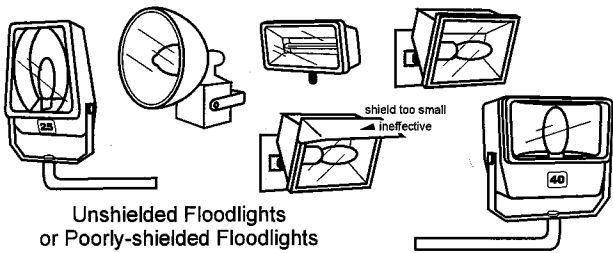
SEABIRD FRIENDLY LIGHTING SOLUTIONS

Help eliminate seabird light attraction. Select the best fixture for your application using this guide. Avoid uplighting, always shield floodlights, and aim downlights carefully to avoid light trespass. For more information go to www.kauai-seabirdhcp.info.

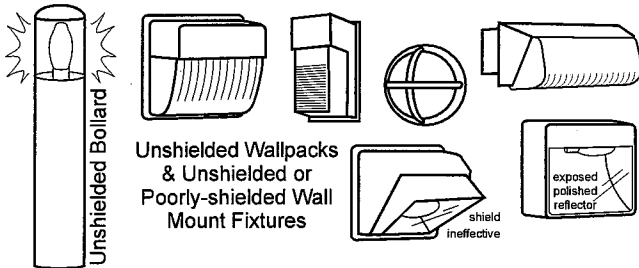


Unacceptable / Discouraged

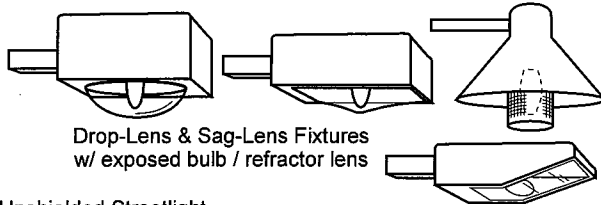
Fixtures that produce glare and light trespass



Unshielded Floodlights or Poorly-shielded Floodlights



Unshielded Wallpacks & Unshielded or Poorly-shielded Wall Mount Fixtures

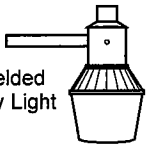


Drop-Lens & Sag-Lens Fixtures w/ exposed bulb / refractor lens

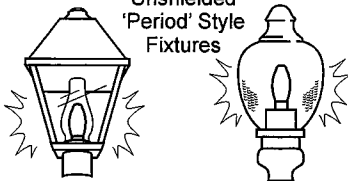
Unshielded Streetlight



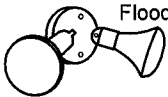
Unshielded Security Light



Unshielded 'Period' Style Fixtures



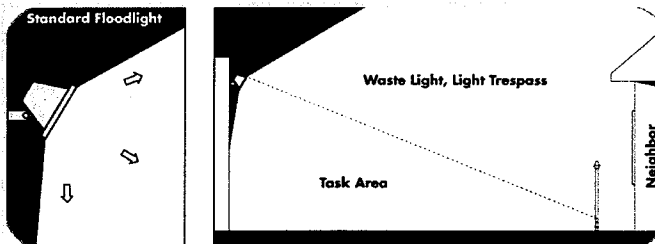
Unshielded PAR Floodlights



Drop-Lens Canopy Fixtures

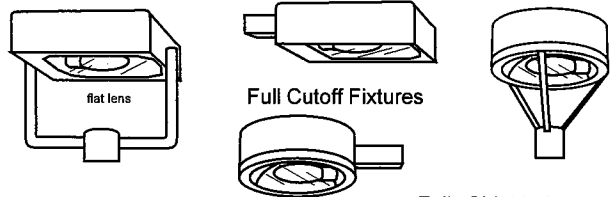


Unshielded floodlight that is angled incorrectly



Acceptable

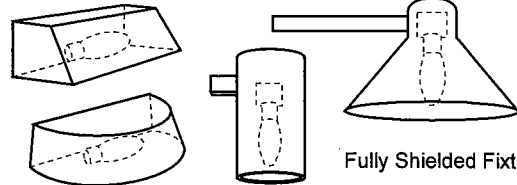
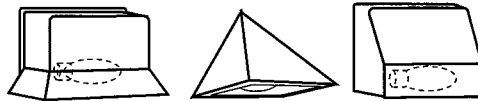
Fixtures that shield the light source to minimize glare and light trespass and to facilitate better vision at night



Full Cutoff Fixtures

Fully Shielded Walkway Bollards

Fully Shielded Wallpack & Wall Mount Fixtures



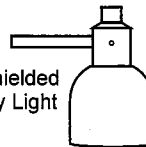
Fully Shielded Fixtures

Full Cutoff Streetlight

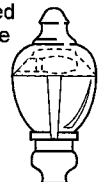


Fully Shielded 'Period' Style Fixtures

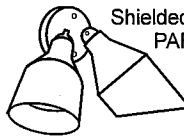
Fully Shielded Security Light



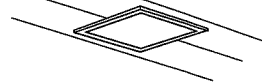
bulb shielded in opaque top



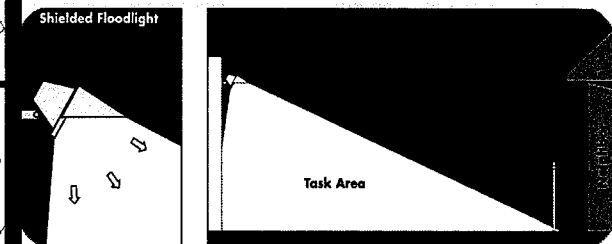
Shielded / Properly-aimed PAR Floodlights



Flush Mounted Canopy Fixtures



Shielded floodlight that is angled correctly





Leach's Storm-petrel

Oceanodroma leucorhoa

a.k.a. *Hydrobates leucorhous*

avian Order: **Procellariiformes**
(albatrosses and petrels)

Avian family: **Hydrobatidae**
(storm-petrels)