

Artificial night-time light alters trophic interactions of intertidal invertebrates

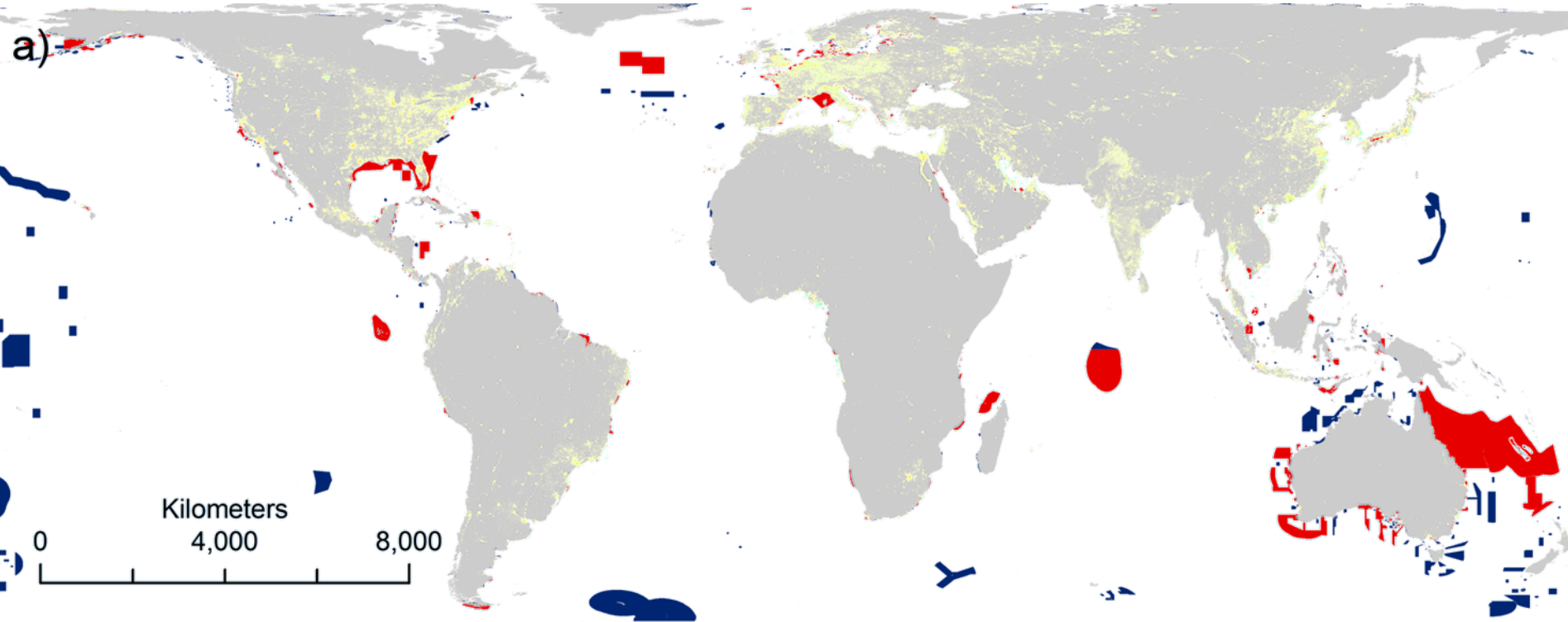
Thomas Davies (Exeter), Ana Queirós (PML) and
Charlotte Underwood (Exeter)



22% of the worlds coastlines (Davies *et al.*, 2014, *Frontiers in Ecology and the Environment*)

Lit

Unlit

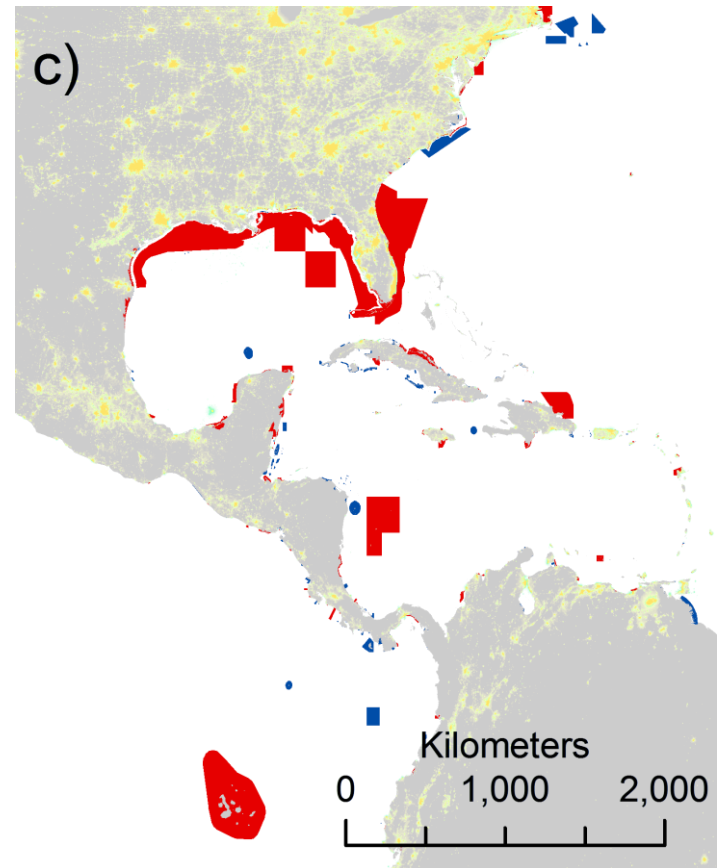
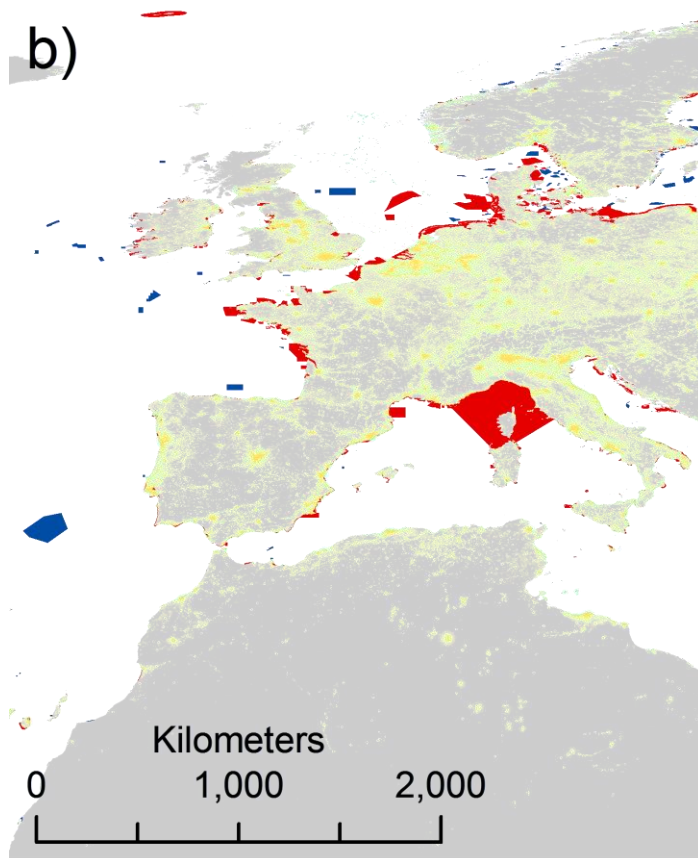


35% of the world's MPAs

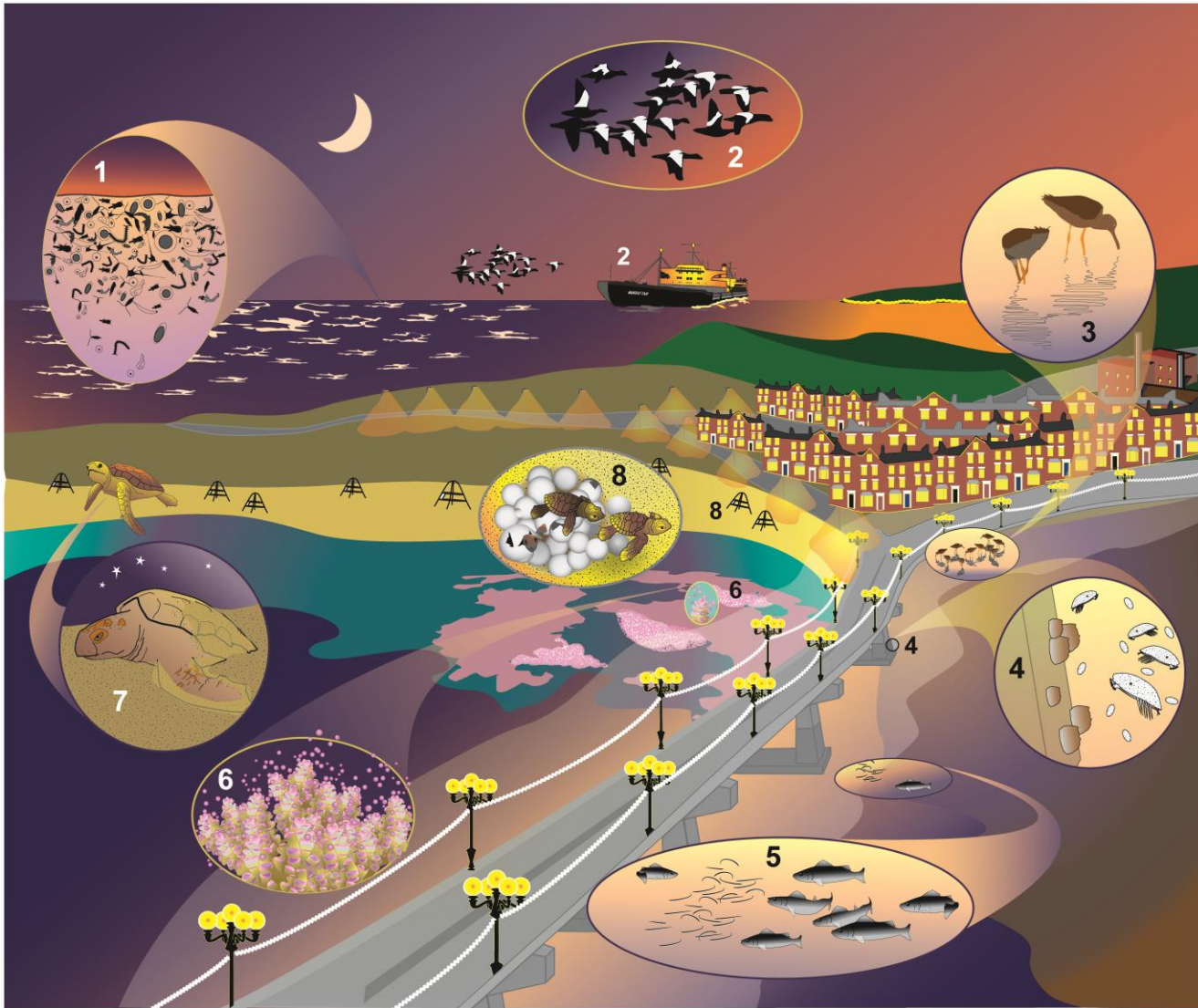
20% exposed across 100% of their area

Davies *et al.* (2015) *Conservation Letters*, 9, 164-171.

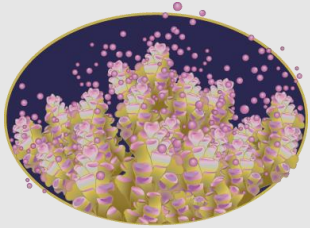
Lit **Unlit**



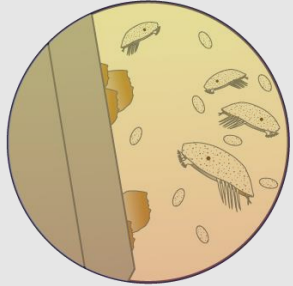
Davies *et al.* (2015) *Conservation Letters*, 9, 164-171.



Davies *et al.* (2014) *Frontiers in Ecology and the Environment*, **12**, 347-355.



Phenology – lunar synchronicity of broadcast spawning



Recruitment – habitat selection by invertebrate larvae



Foraging /predation – efficiency and daily patterns of activity



Movement – daily migration patterns



Is coastal lighting affecting night-time foraging behaviour in the common dogwhelk *Nucella lapillus*?

£2,458 PML-Exeter Collaboration fund (start Mar-2015)

Lab consumables, Travel and Accommodation (Student)

Outputs:

1 Publication



UK Ocean Acidification
Research Programme



DAY

Night

DAY

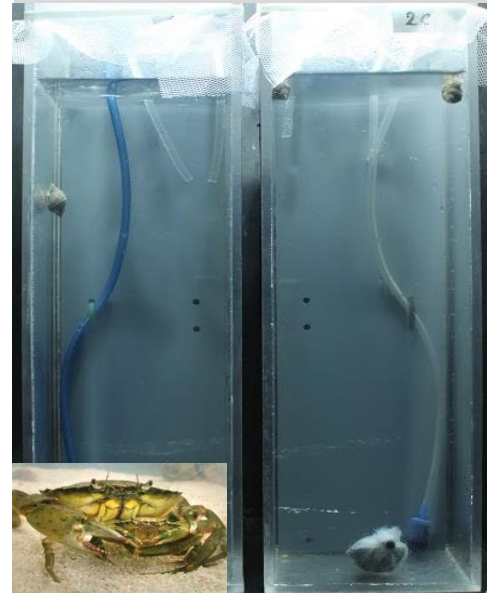
LED



Night



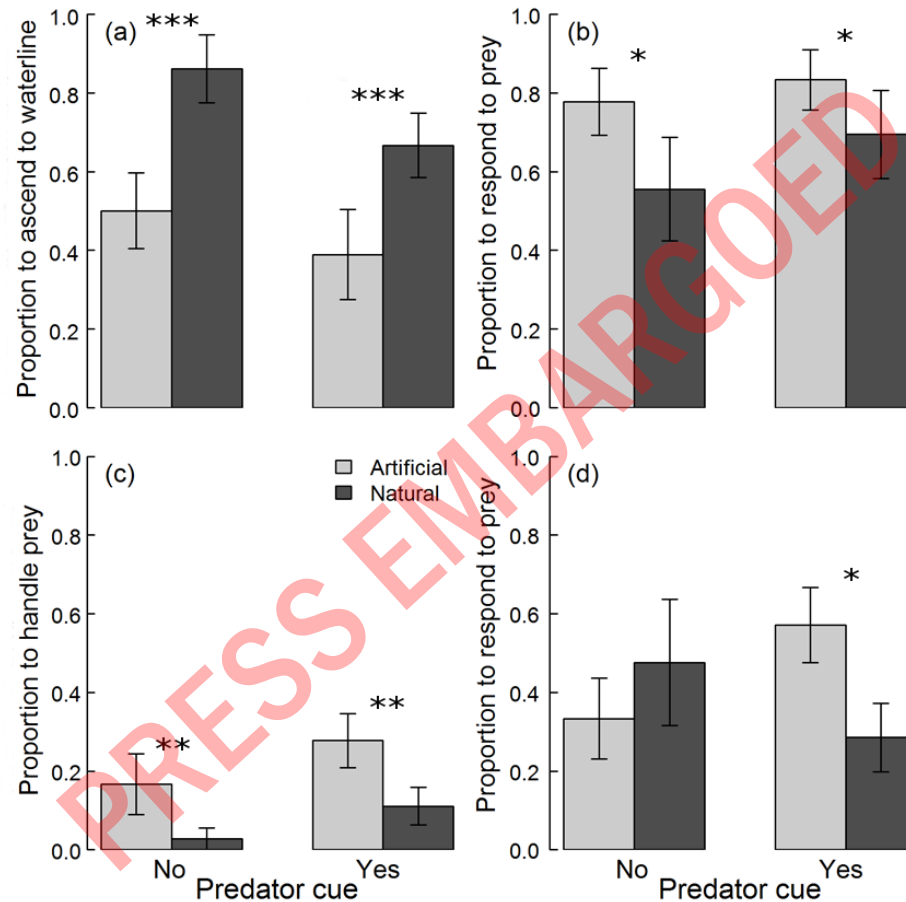
LED

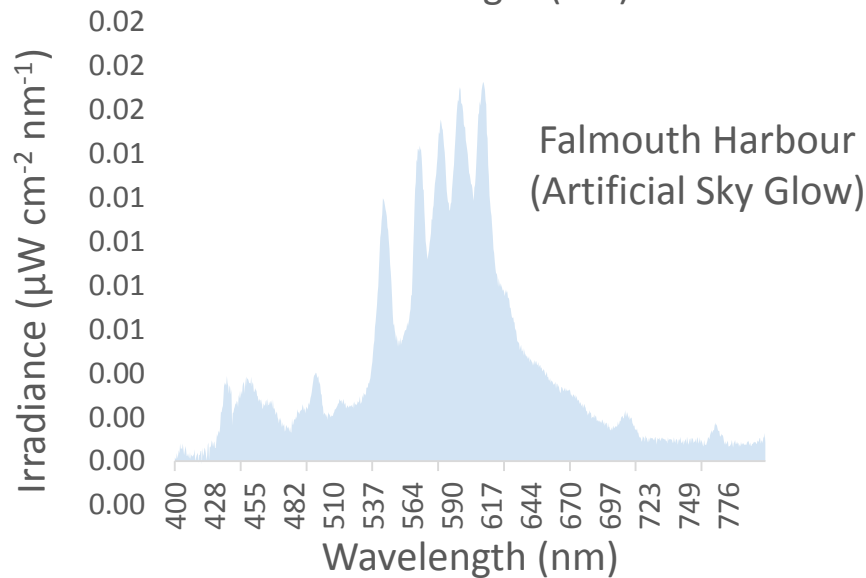
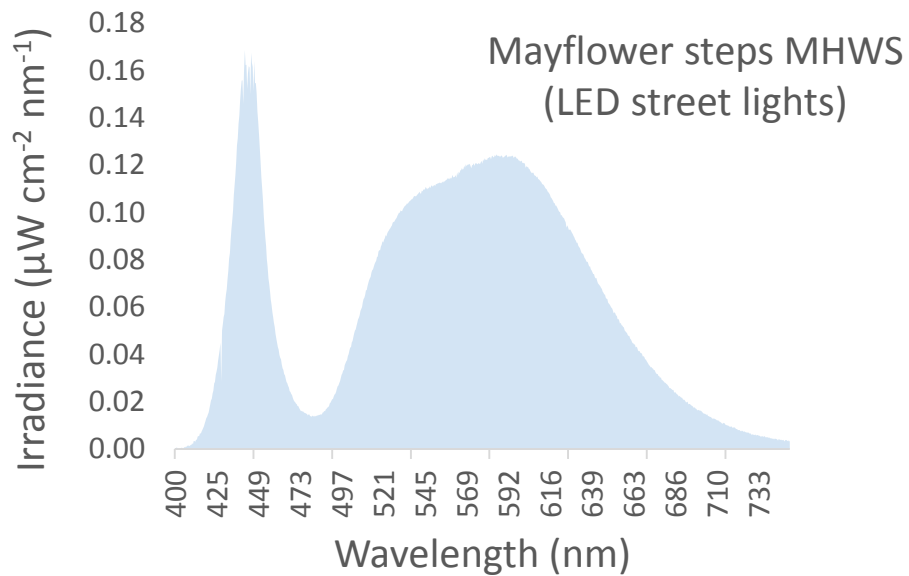


Artificial night-time light alters trophic interactions of intertidal invertebrates

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UNIVERSITY OF
EXETER

PML | Plymouth Marine
Laboratory

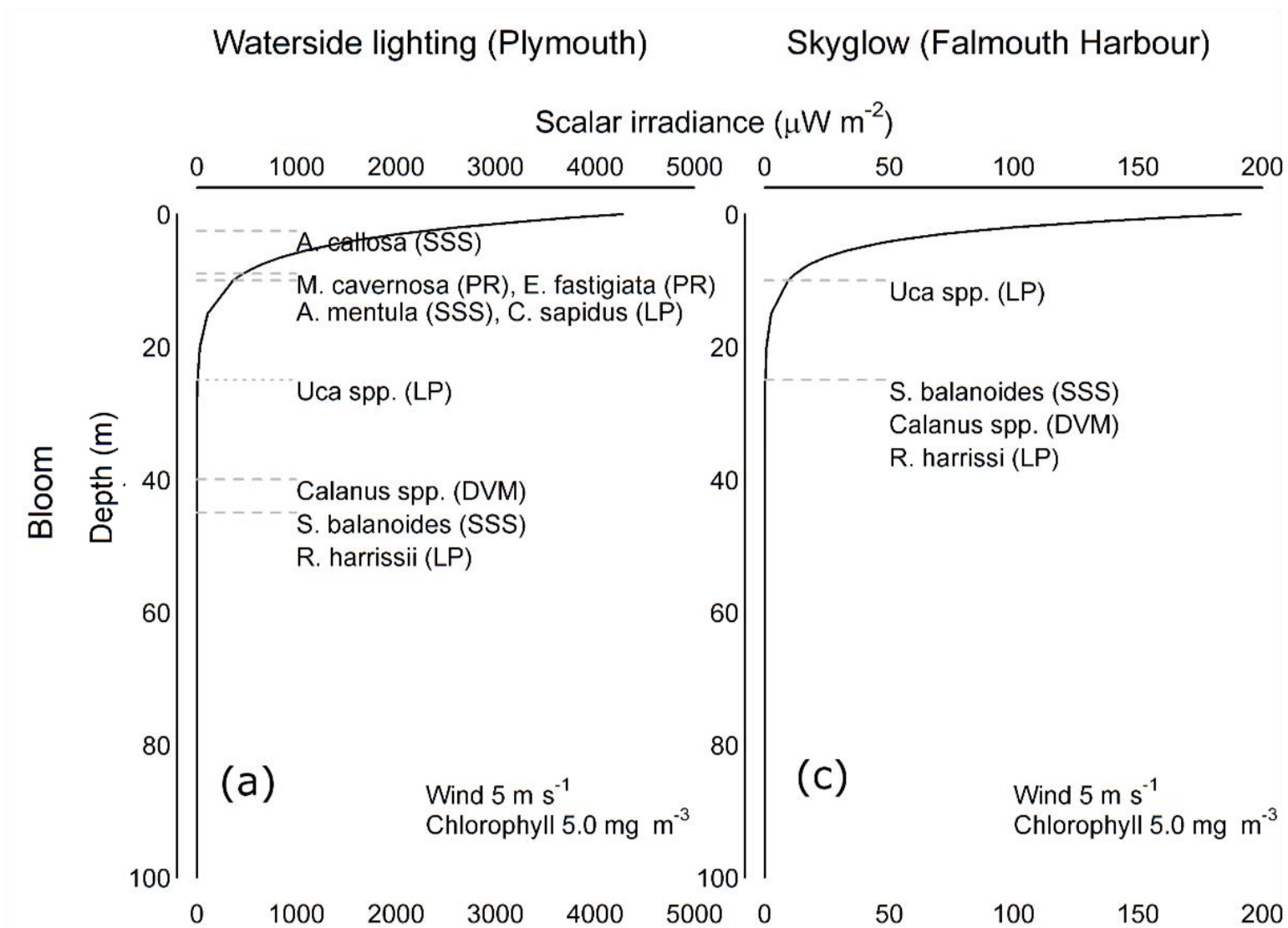
Radiative Transfer Models

Bloom:

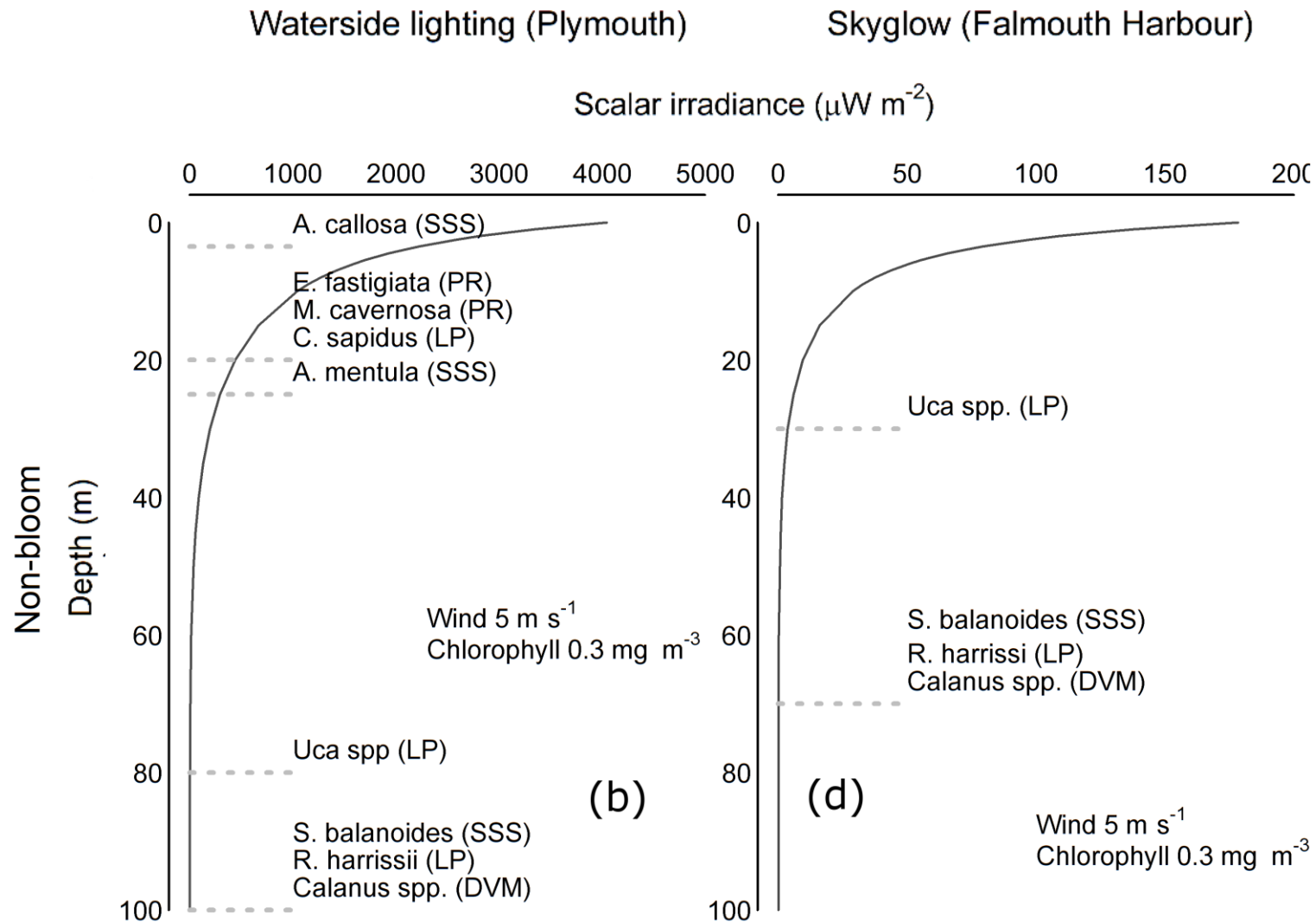
- Wind 5 m s^{-1}
- Chlorophyll 5 mg m^{-3}

Non-bloom:

- Wind 5 m s^{-1}
- Chlorophyll 0.5 mg m^{-3}



Davies, T & Smyth, T (2017), *Global Change Biology*, in review.



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Summary



- £2,458 funding from the collaboration fund (2015)
- Successful completion of one MSc project
- 2 publications, one in press, one in review
- Pilot data → 2 grant proposals