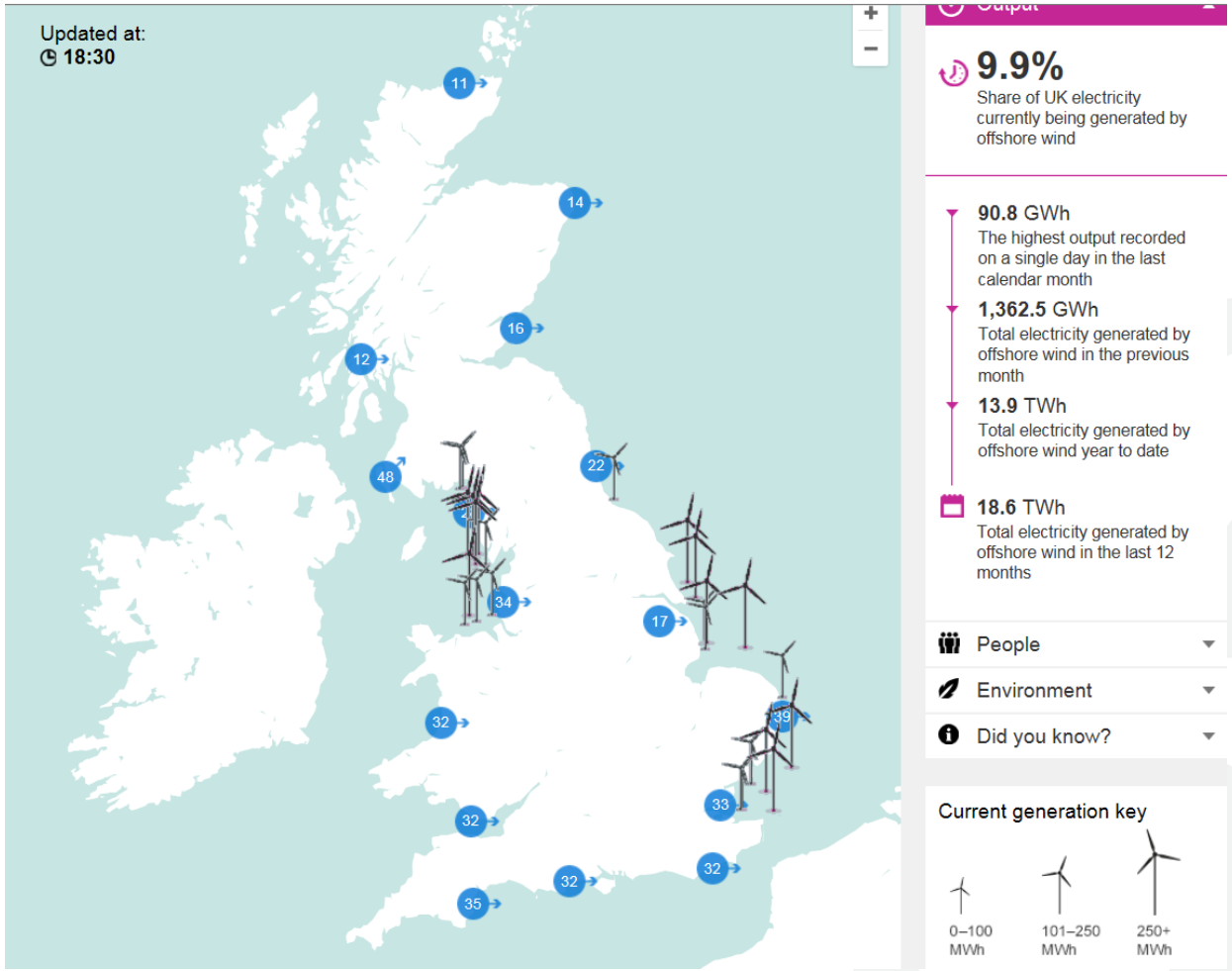
Red-throated diver evidence needs to facilitate offshore wind development in the UK

Photo: John Goold

Sue O'Brien, JNCC
sue.obrien@jncc.gov.uk

Offshore Wind Development



https://www.thecrownestate.co.uk/energy-minerals-and-infrastructure/offshore-wind-energy/offshore-wind-electricity-map/

Offshore Wind Development in the UK

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Figure 2: UK Operational and near term projects – April 2016

Operational: Total capacity of wind farms that have been fully commissioned.

		Capacity MW ▼
01	Barrow	90
02	Blyth	3.8
03	Burbo Bank	90
04	Greater Gabbard	504
05	Gunfleet Sands Demonstration	12
06	Gunfleet Sands I	108
07	Gunfleet Sands II	64.8
08	Gwynt y Môr	576
09	Humber Gateway	219
10	Inner Dowsing	97.2
11	Kentish Flats	90
12	Kentish Flats extension	49.5
13	Lincs	270
14	London Array	630
15	Lynn	97.2
16	Levenmouth Demonstration Turbine	7
17	North Hoyle	60
18	Ormonde	150
19	Rhyl Flats	90
20	Robin Rigg East	90
21	Robin Rigg West	90
22	Scroby Sands	60
23	Sheringham Shoal	316.8
24	Teesside	62.1
25	Thanet	300
26	Walney (Phase 1)	183.6
27	Walney (Phase 2)	183.6
28	Westermost Rough	210
29	West of Duddon Sands	389
Total		5,093.6

Under construction: Total capacity of wind farms that are under construction or where the developer has confirmed a final investment decision, but are not yet fully operational.

		Up to capacity MW ▼
30	Burbo Bank extension	258
31	Dudgeon	402
32	East Anglia ONE	714
33	Galloper[1]	336
34	Hornsea project 1	1,200
35	Hywind 2 Demonstration (Buchan Deep)	30
36	Race Bank[1]	546
37	Rampion[1] (Southern Array)	400
38	Walney extension	660
Total		4,546

Government support on offer: Total capacity of wind farms that have secured a Contract for Difference or whose publicly stated timescales are consistent with accessing the Renewables Obligation (RO).

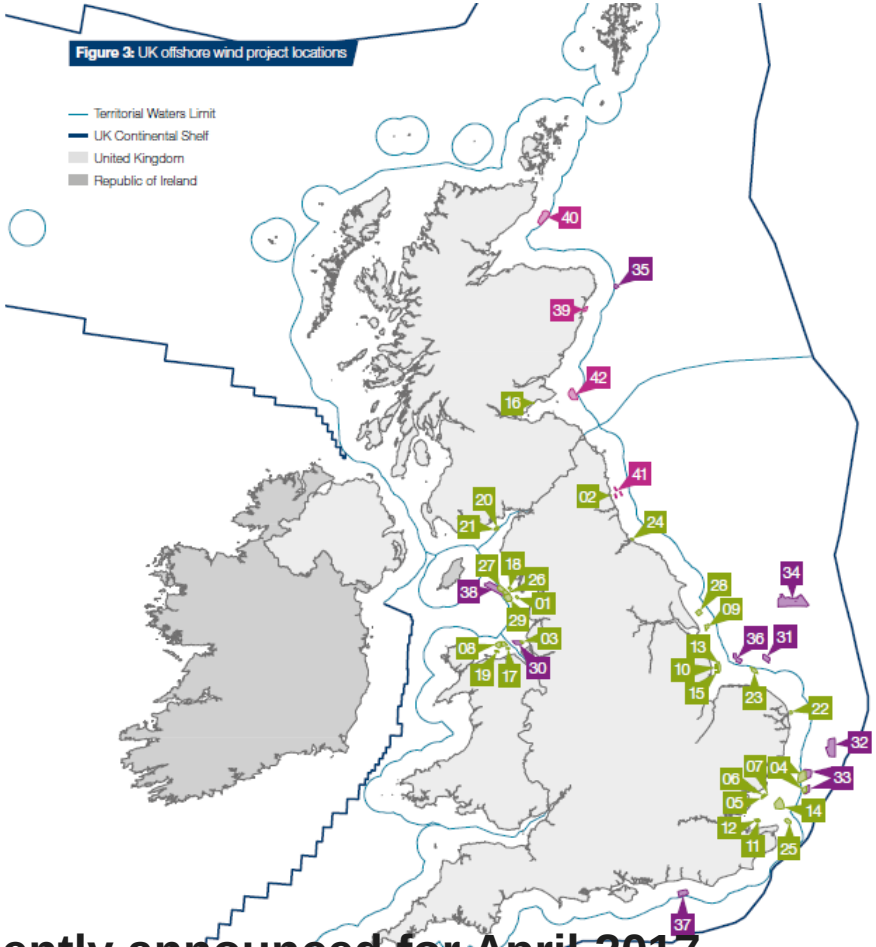
		Up to capacity MW ▼
39	Aberdeen Demonstration	66
40	Beatrice	664
41	Blyth Demonstration	99
42	Neart na Gaoithe (NNG)	448
Total		1,211

1. RO feasible based on published grid connection dates as per TEC register – Mar 2016.

NOTE: CFDs are private law contracts between CFD generators and the Low Carbon Contracts Company (LCCC), a government-owned company that manages CFDs at arms' length from the government.

Quoted capacity refers to the property rights held with The Crown Estate and does not necessarily reflect the build out capacities permissible under current or future statutory planning permissions.

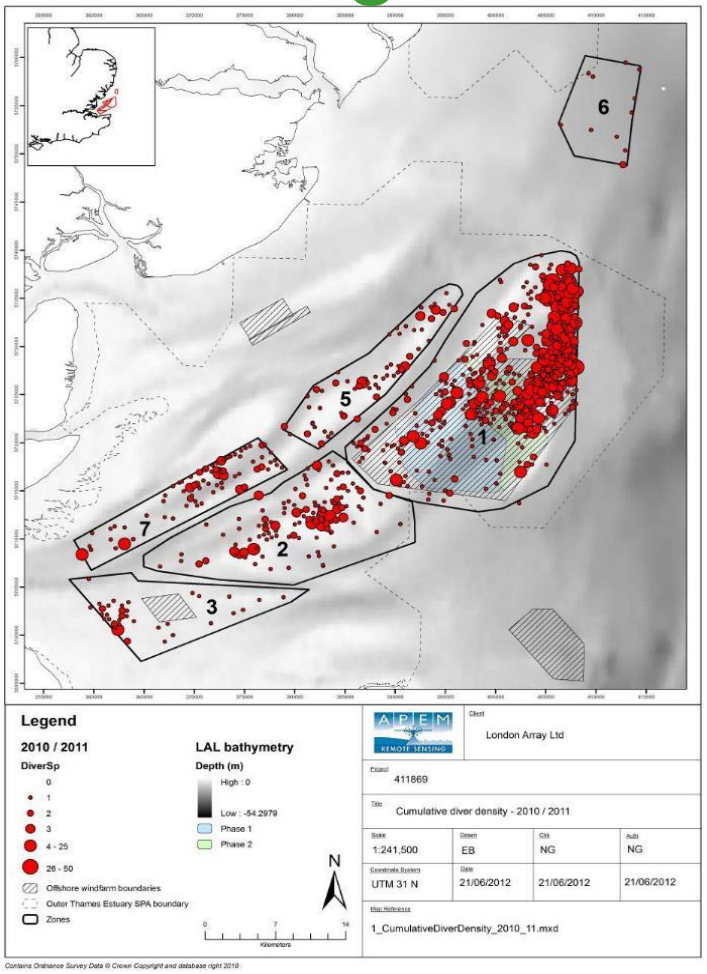
Figure 3: UK offshore wind project locations



Latest subsidy bidding round recently announced for April 2017

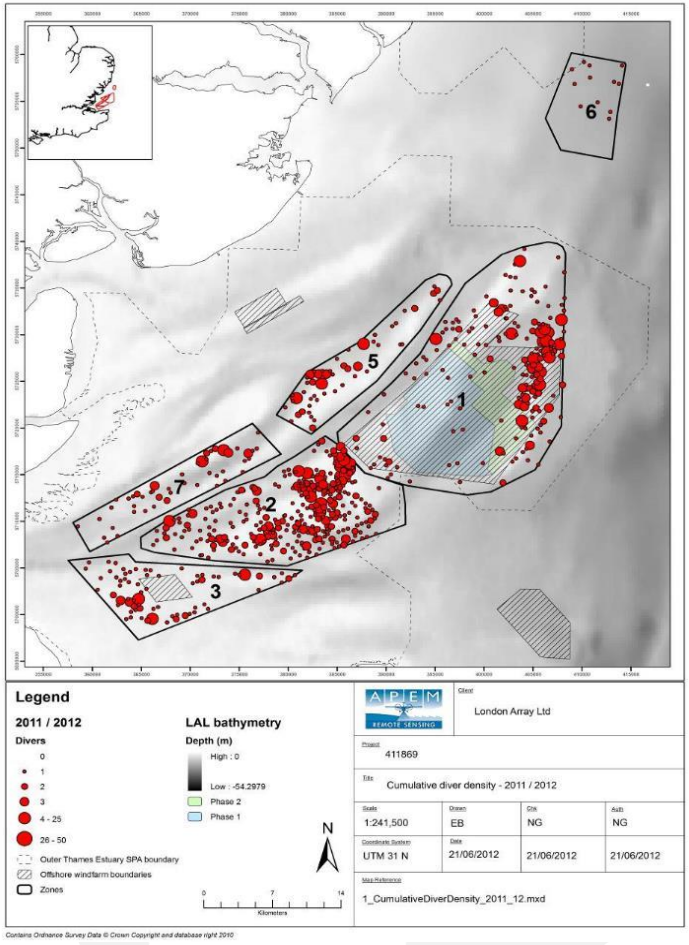
https://www.thecrownestate.co.uk/media/5462/ei-offshore-wind-operational-report-2016.pdf

London Array post-consent monitoring



2010/11 – pre-construction

London Array Ltd monitoring report



2011/12 – during construction

Red-throated divers known to be displaced from OWF

- Red-throated divers have stopped OWF development
- London Array Phase 2:

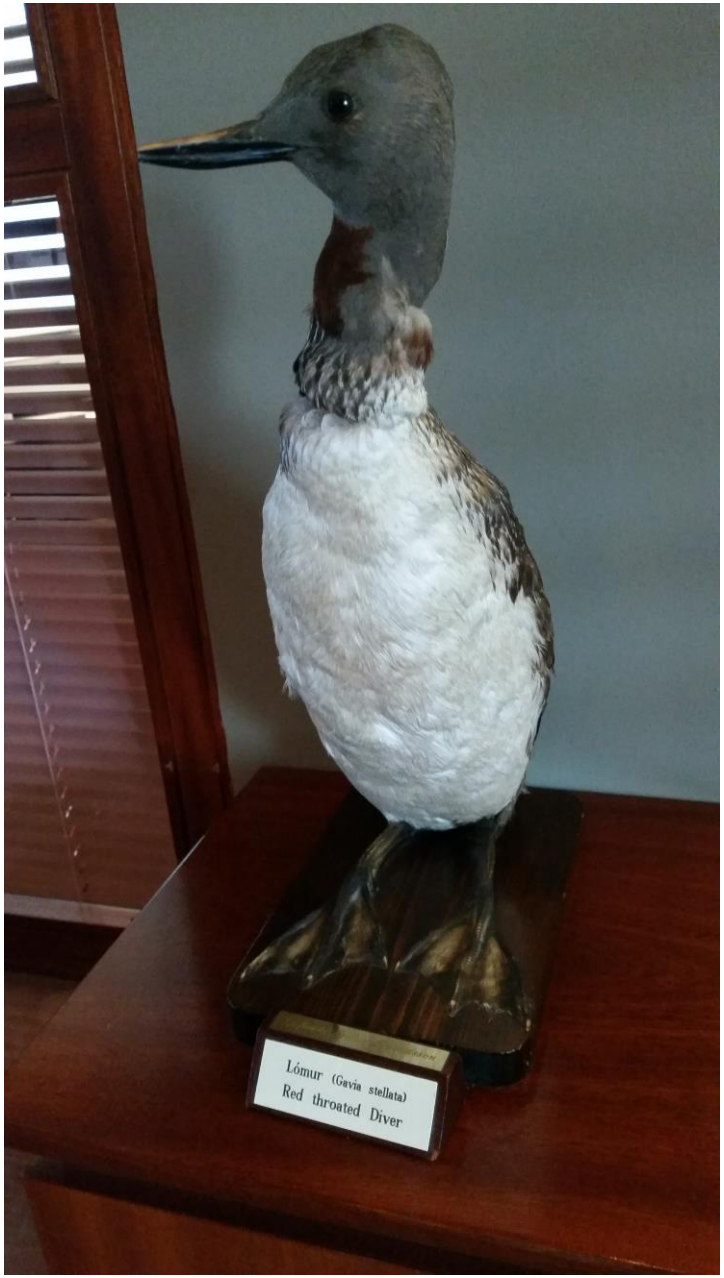
"no guarantee London Array would be able to satisfy the authorities with regard to the Red Throated Diver population"

- How to enable future offshore wind energy production without impacting red-throated diver populations?

Photo: John Goold

Two options for future OWF development in the UK

- Marine Spatial Planning: avoid constructing OWF in red-throated diver habitat
- Better assess consequences of displacement and consider whether population can ‘cope’ with more developments



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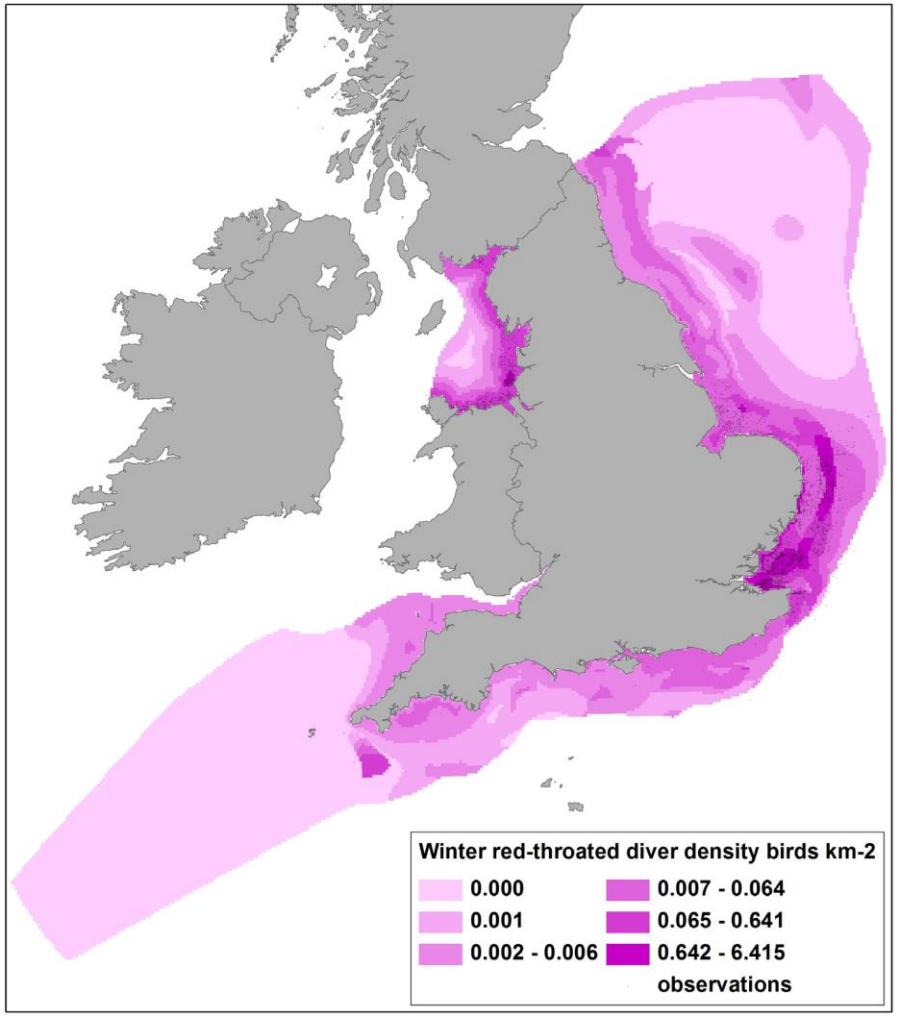
Many gaps in our knowledge about red-throated divers

Marine Spatial Planning

- Evidence needs:
  - Good understanding of abundance and distribution of red-throated divers and their habitat requirements
  - Identification of areas of high importance, e.g. Post-breeding moult locations where critical to not construct OWF



Predicted densities of red-throated divers in winter

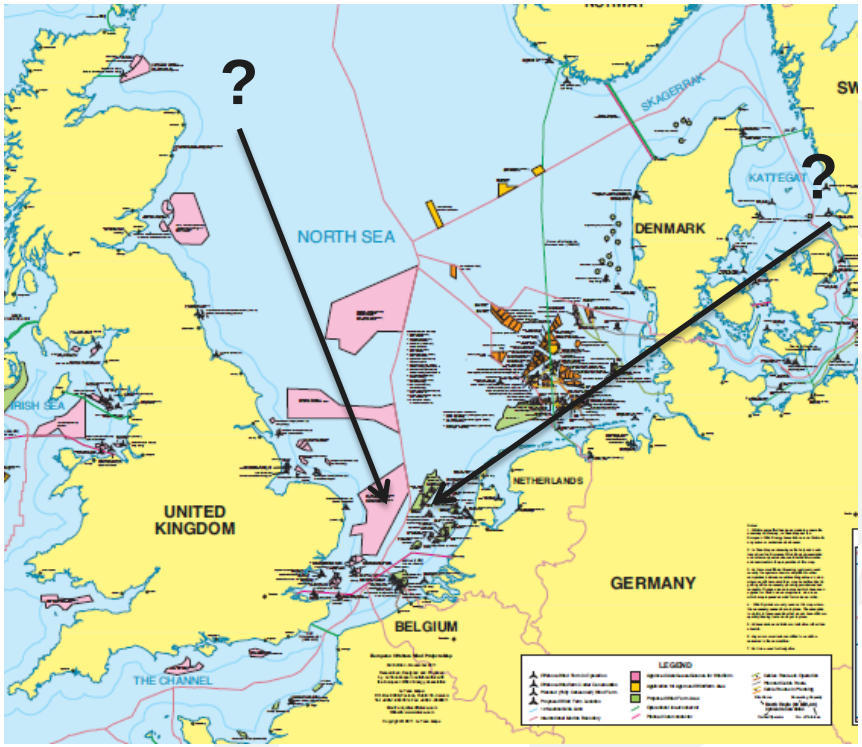
Bradbury *et al*. 2014. Mapping Seabird Sensitivity to Offshore Wind Farms. PLoS ONE 9(9)

Improved understanding of consequences of displacement

- Individual OWF assessment evidence needs:
  - Movements of individual birds at fine spatial and temporal scales
  - Intra-specific competition and energy budgets
  - Prey selection and alternative prey
  - How prey abundance and availability alters (in relation to wind farms and other factors)
  - Demographic rates in relation to energy budgets
  - Individual-based models to try and evaluate population-level consequences of displacement

Improved understanding of consequences of displacement

- Cumulative Impact Assessment evidence needs:
- Where do birds in the UK originate from?
- To what extent do they move around during the non-breeding season?
- What is rate of turnover/ability to move to alternative undeveloped areas?



Challenging Evidence Needs

- Areas good for wind turbines are also good for red-throated divers!
- In the UK much development in shallow sandy sea
- But move towards floating wind in the future so conflict between OWF and RTD may diminish in the future

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