

Urban tern ecology: common terns in Leith Docks



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Overview

- Firth of Forth population
- Imperial Dock Lock Special Protection Area (SPA)
- Foraging ecology
- Predation
- Summary

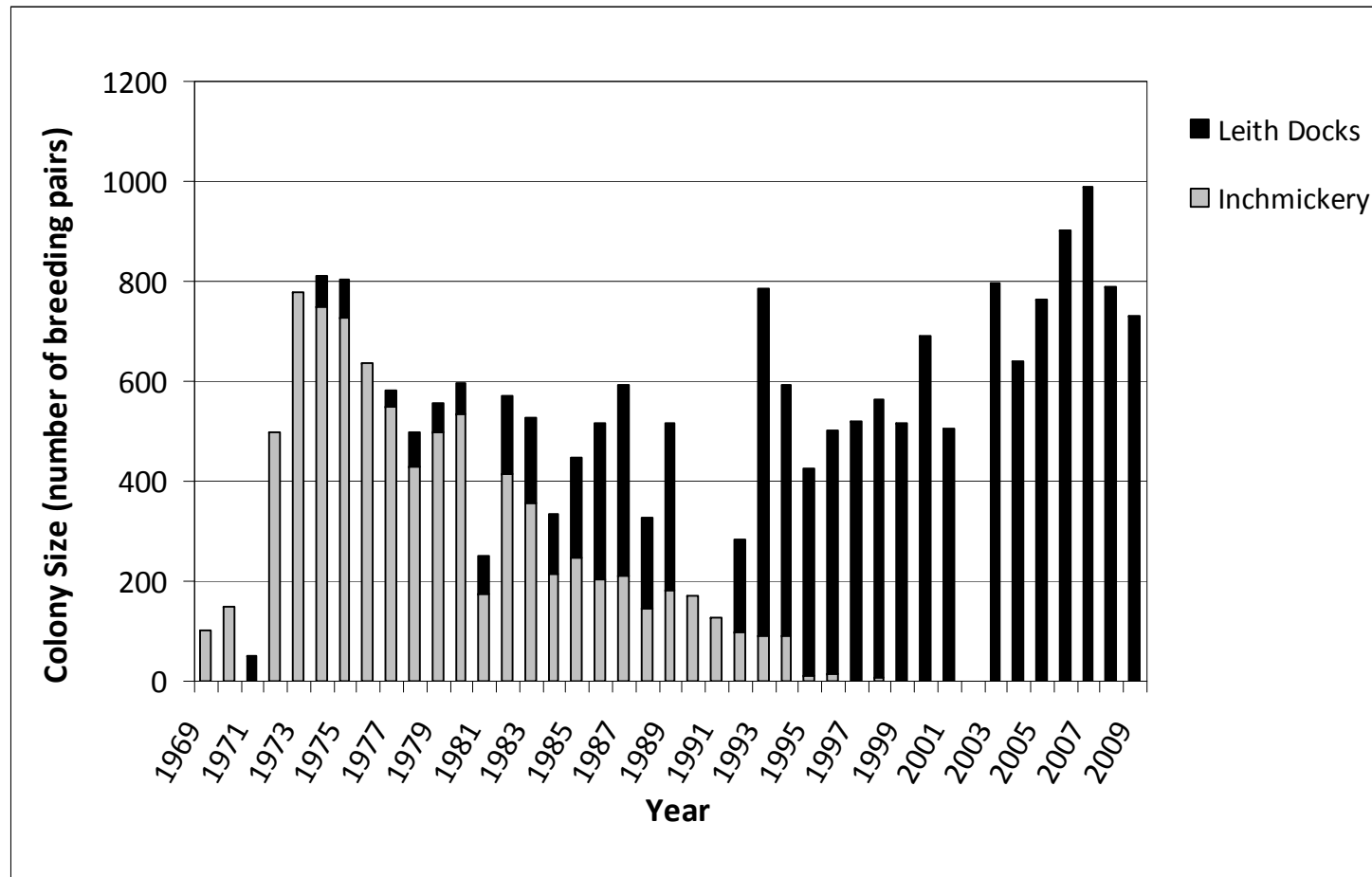


Common terns in the Firth of Forth

- Formerly found on natural islands: e.g. Fidra, Inchmickery
- Leith colony grew from 50 pairs in 1971 to 732 pairs in 2009
- Analysis of long term data suggests colonisation occurred as a result of relocation from natural islands
- Decline of tern colonies on natural islands largely due to increasing gull numbers



Common terns in the Firth of Forth



Data courtesy of JNCC.

Imperial Dock Lock SPA

- Special Protection Area for the common tern since 2004
- 5% British population
- Largest colony in Scotland



Leith Docks





2009 Breeding Season



- Fieldwork May-August
- 732 breeding pairs
- **Minimum** 0.6 chicks/pair

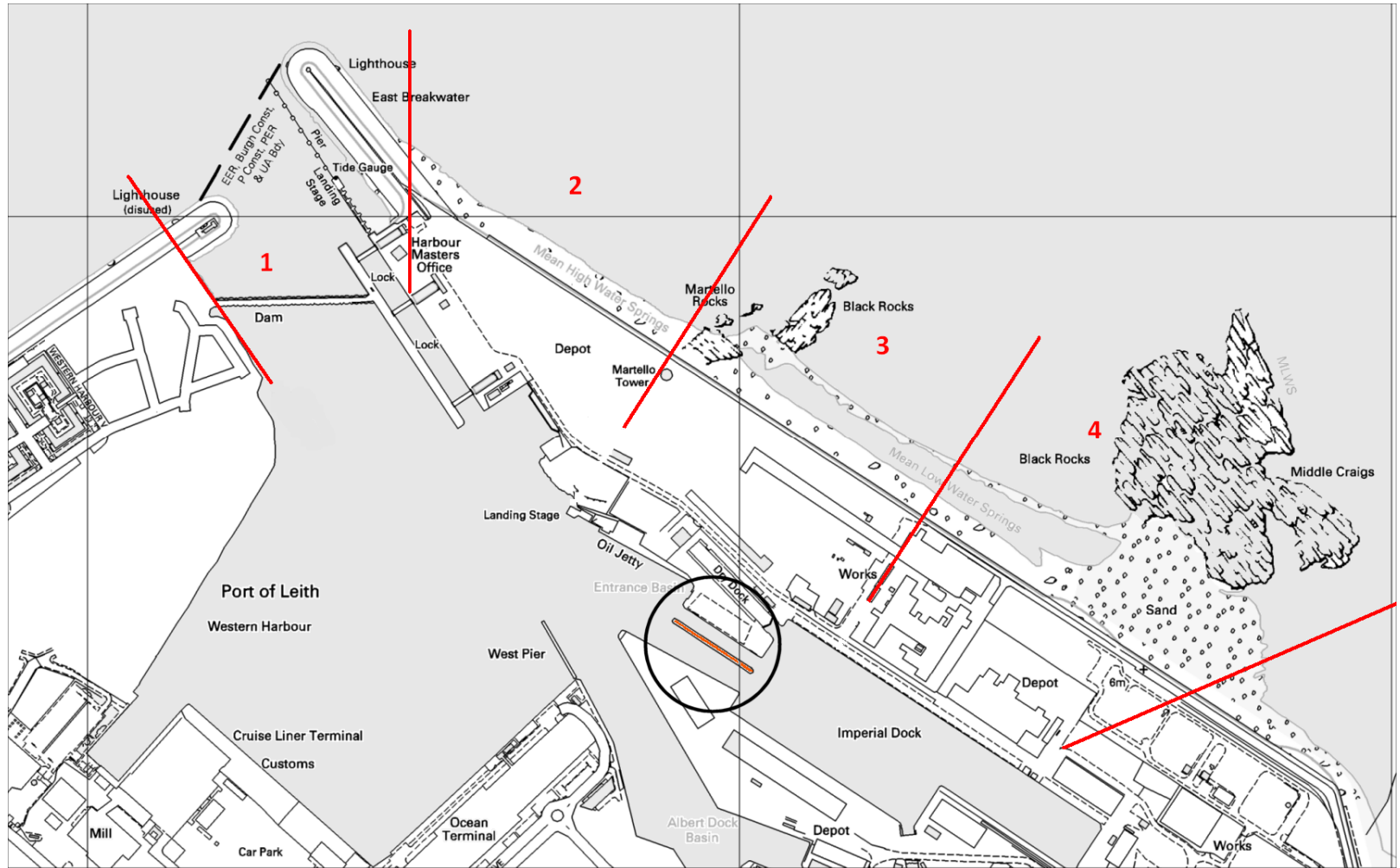


Foraging Ecology

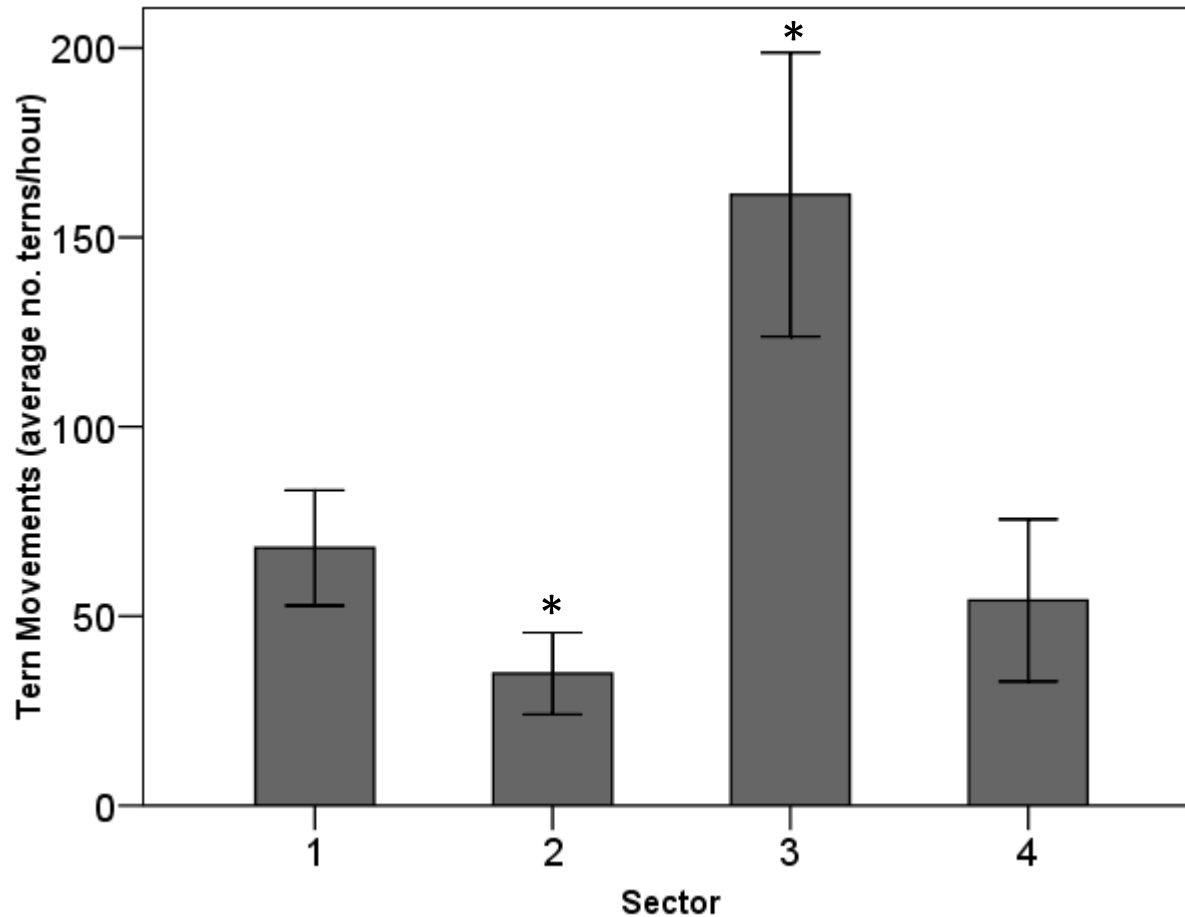
Where?



Foraging Routes

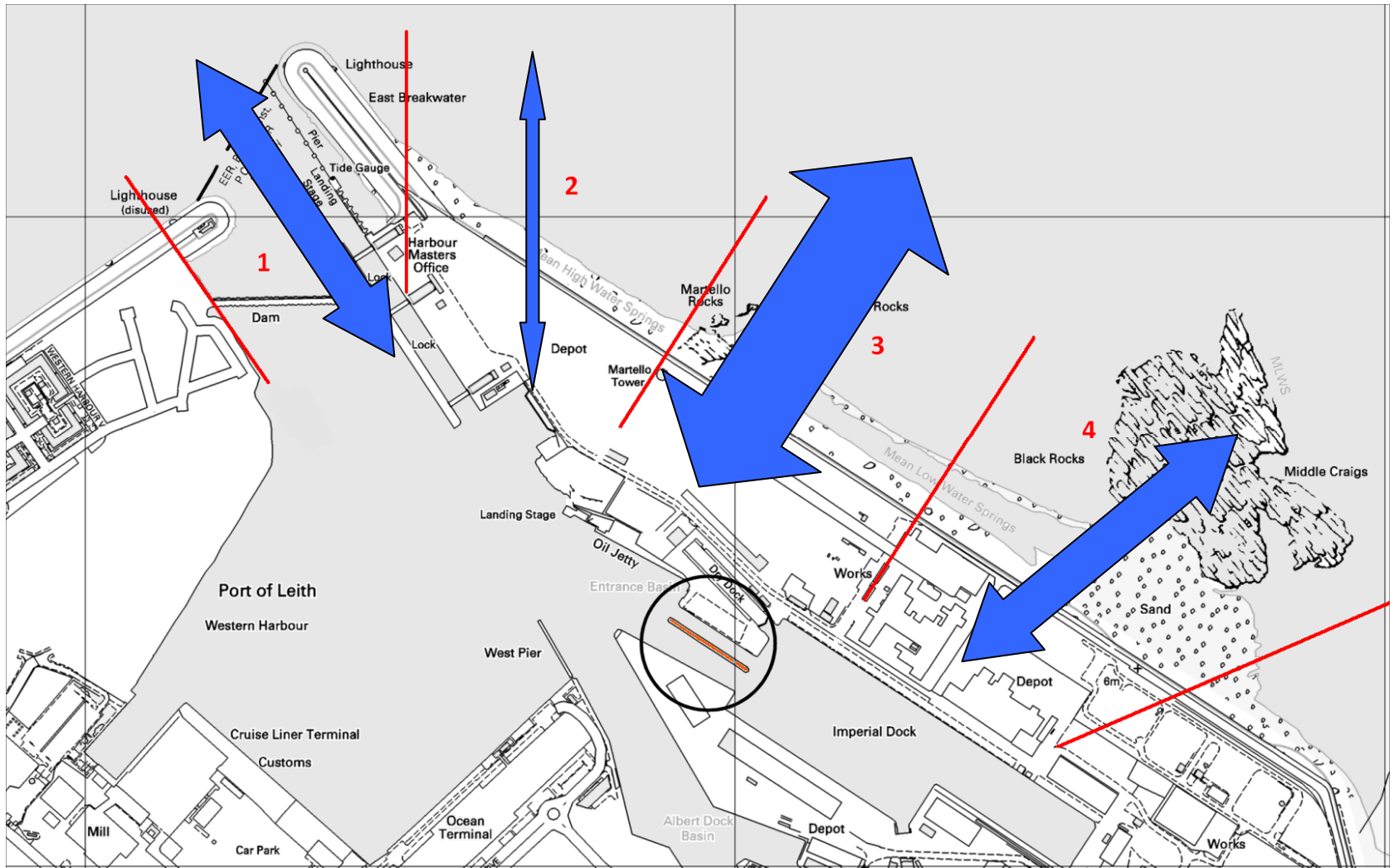


Number of terns using each sector



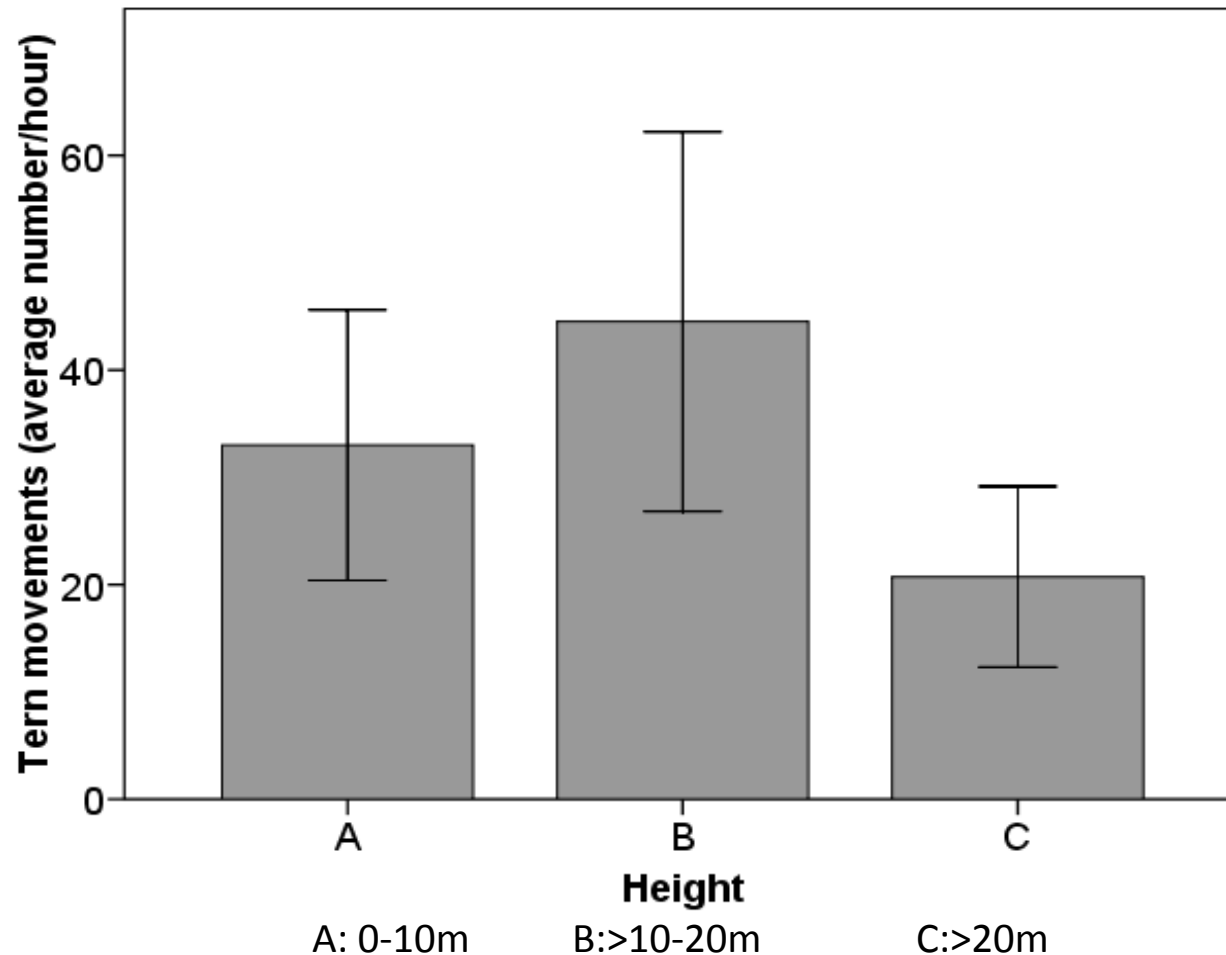
* $P < 0.001$

Error bars: 95% CI



Height of flight paths in the docks

Most birds fly below 20m



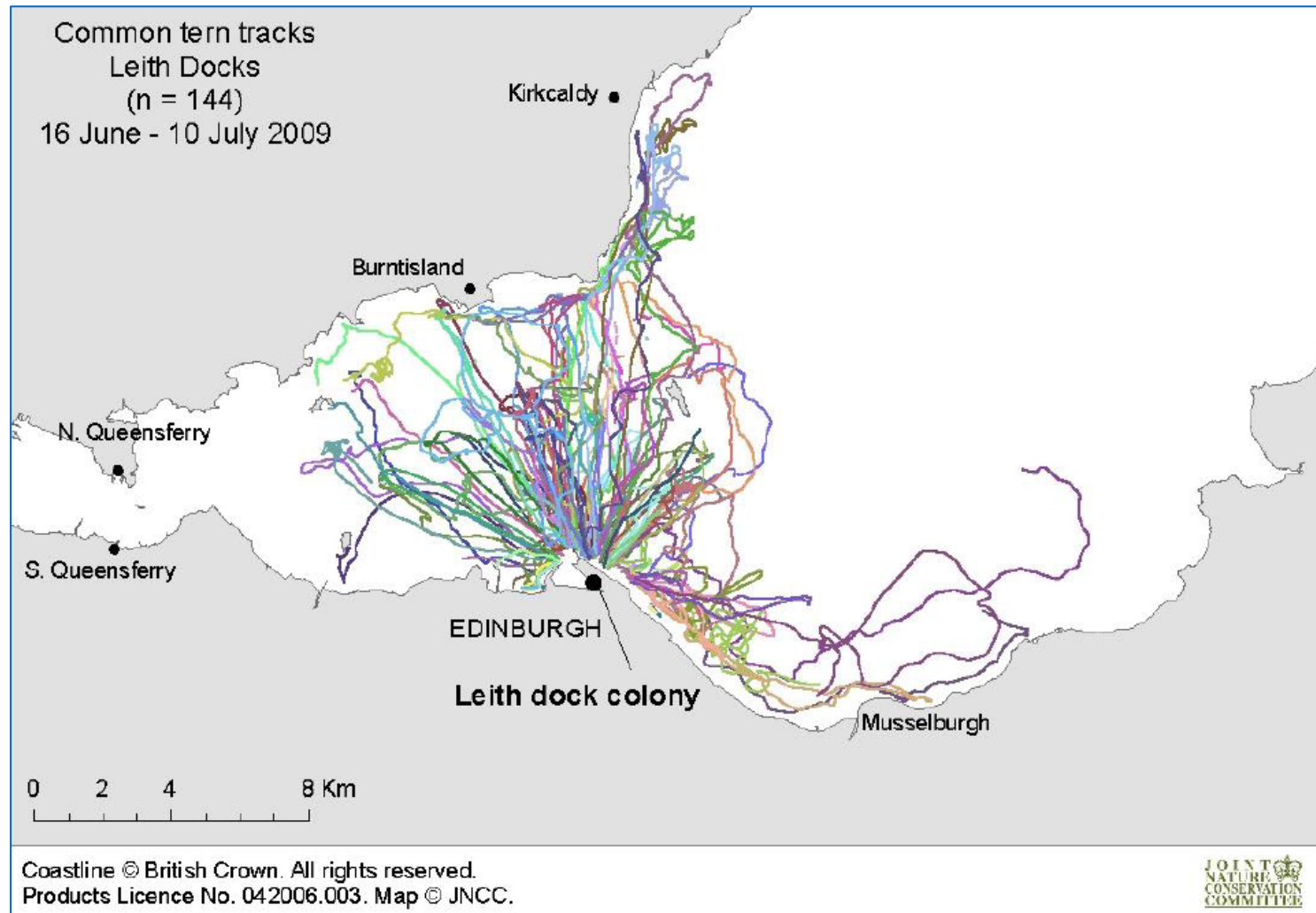
Error bars: 95% CI

Foraging Areas

JNCC Marine SPA Work

- Existing SPAs provide protection at breeding colony
- Marine SPAs would protect important areas at sea,
i.e. **feeding sites**
- JNCC to recommend possible marine SPAs for common, arctic, little, sandwich and roseate terns
- Funded by SNH
- Species-specific habitat suitability models using...
 - existing marine habitat data
 - **at-sea tern distribution data**

JNCC Marine SPA Work



Wilson, L.J., Bingham, C.J., Black, J., Kober, K., Lewis, M., Webb, A. and Reid, J.B. (2009) Identifying important areas for marine terns. Unpublished JNCC 1st interim report, December 2009

Foraging Ecology

What?

Feeding observations

- 1) Courtship feeding: scan sampling, whole colony
- 2) Chick feeding: focal nest observations, 20 nests
 - Recorded prey type and size (bill lengths)



Courtship feeding

Clupeids/gadids = 64%

...but mostly clupeids!

Sandeel = 36%

N = 2978

Chick rearing

Clupeids = 68% (68%)

Sandeel = 16% (25%)

Gadids = 16% (8%)

N = 325

>60% clupeids



Predation

Predation

Crows

Herring gull

Lesser black-backed gull

~1 chick every 2 hours

> Specialists?



Predation and development

- Possible increase in predators
...number and diversity
e.g. rats, foxes, cats, plus gulls/corvids

Major threat **indirect** via impact on predatory species

- > Waste control
- > Habitat management

Summary



- Recent colonisation from natural Forth islands
- Tolerate general dock activity – but response depends on timing and nature of disturbance
- Flight paths widespread across sea wall, mostly below 20m
- Main feeding areas in the Firth of Forth, within 10km of colony
- Generalists, but feed mostly on clupeids: would suggest good stocks nearby
- Major impact of development in the area is likely to be indirect, via effect on predatory species

Thanks!

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- Dr Duncan Smallman
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- Zara Gladman



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