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

Images: Forth Ports
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

- A: 0-10m
- B: >10-20m
- C: >20m

Most birds fly below 20m.
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
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!

- Prof. Bob Furness
- Dr Derek McGlashan
- JNCC Marine SPA Team - Linda Wilson, Kerstin Kober, Craig Bloomer
- Lothian Ringing Group - John Davies
- Iain Muir
- Dr Duncan Smallman
- Lindsay Henderson
- Zara Gladman

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