Factors influencing breeding success of a coastal population of pohowera/banded dotterels

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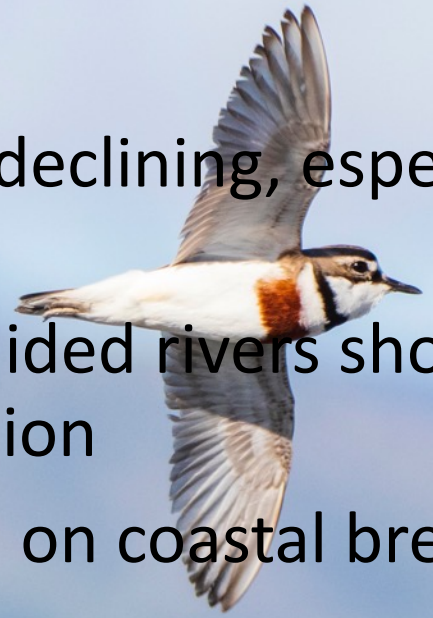
Background



- Banded dotterels are steadily declining, especially on South Island braided rivers
- A lot of work published on braided rivers showing very low breeding success –largely due to predation
- Limited information published on coastal breeding
  - Predation a problem
  - Many forms of disturbance
- Breeding concerns at South Bay were recognised in 2013-14. A pilot study at Kaikōura in 2015-16 indicated predation and disturbance important – and management likely needed

Study aims

1. To measure the productivity of banded dotterels in coastal Kaikōura
2. To identify any factors that limit breeding success
3. To identify which limiting factors could be managed

At the beginning of the study, an advocacy programme was started aimed at making people more aware of the presence of nesting dotterels.

In our second season hedgehogs and cats were identified as particular threats. A small trap line was set up along the upper beach edge, and advocacy for responsible cat ownership began in the Kaikōura community

Study area:


Beach Rd
ww20 RR|WO (F)
Chicks:G+O
ww31 UB
WW57 UBF UBM
WW52 RRWR
ww48 ubf
WW02
WW56 RRLB RRGY
WW01
WW40 rbbw (m)
Kaikoura
G1 RR|LY (F) CHICKS
RR|GW
N01 RWWB LB
N08 WT pair
N04 RWBB
N38 Ron RWBY
South Bay

Methods

- 6 seasons 2016 – 2022
- August - February
- 14 – 35 pairs/season (South Bay)
- 11 – 50 pairs/season (Township, 2020-22 only)
- Multiple nesting attempts/pr monitored
- Colour banded: 91 adults and 99 juveniles. Juvenile banding now occurs only if fledging can be reasonably assured
- Nest observations from a distance to minimise disturbance
- Ability to recognize nesting outcomes has improved over time
- Some trail camera monitoring

Results

- 245 nests (South Bay)
- 80 nests (Kaikōura Township)

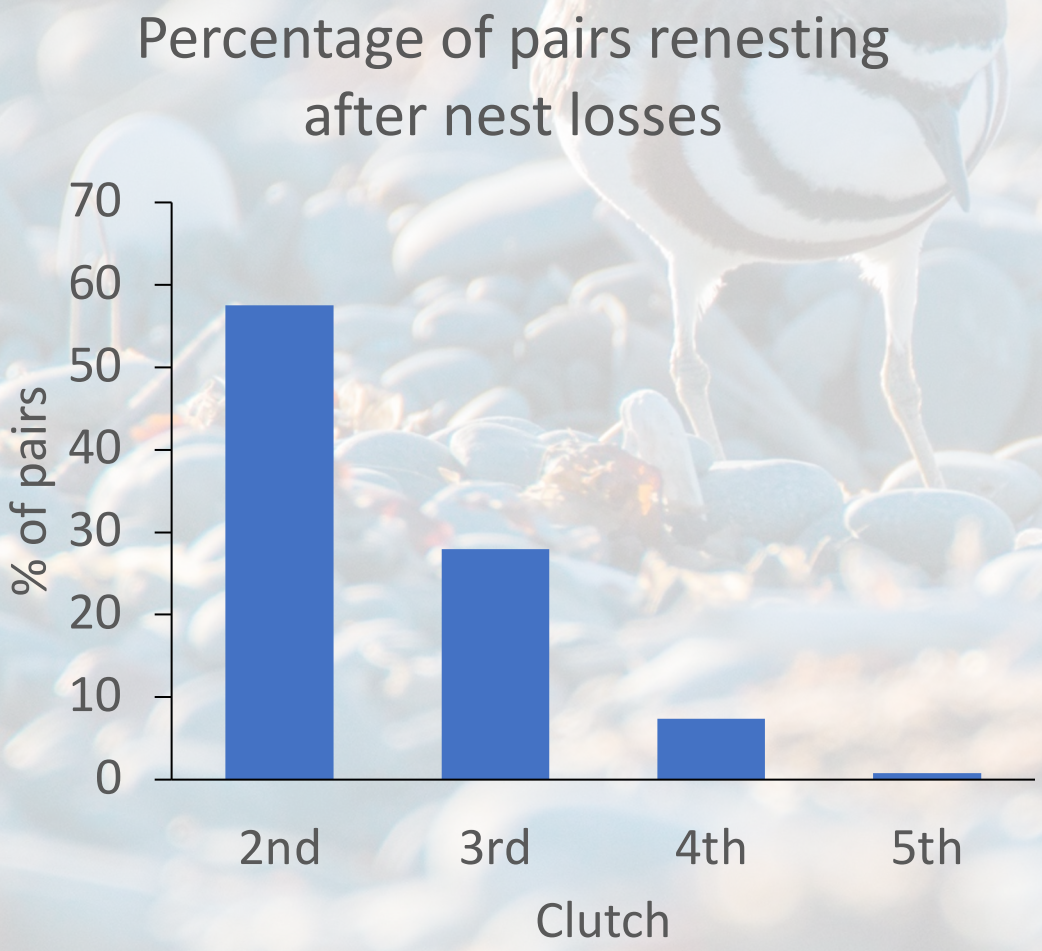
<u>Overall productivity (South Bay):</u>

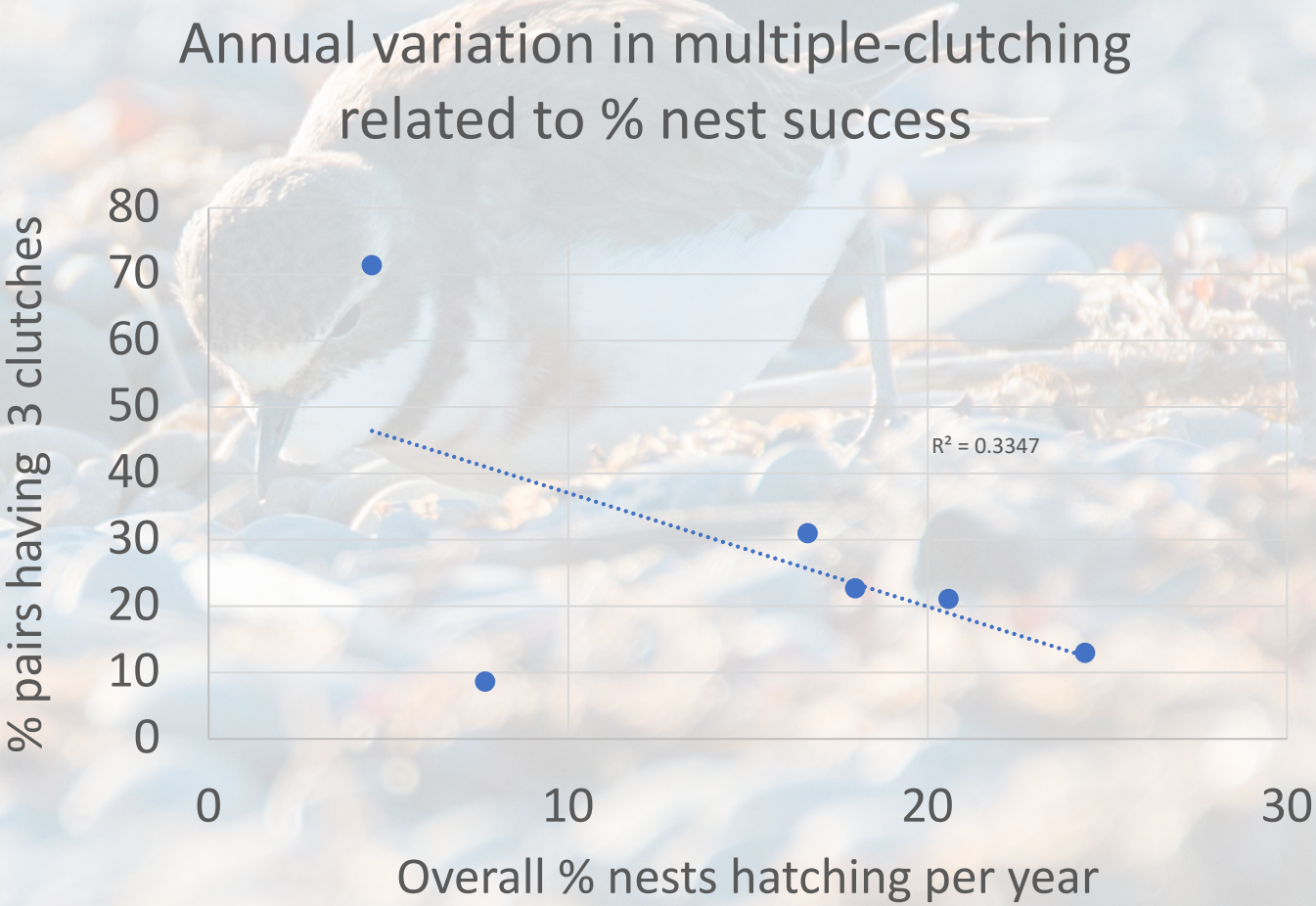
- 2.77 eggs/clutch (1 – 3)
- 0.88 chicks hatched/clutch (0 – 3)
- 0.21 chicks fledged/clutch (0 – 2)

<u>Overall productivity (Kaikōura Township):</u>

- 2.75 eggs/clutch (1 – 3)
- 0.62 chicks hatched/clutch (0 – 3)
- 0.08 chicks fledged/clutch (0 – 1)

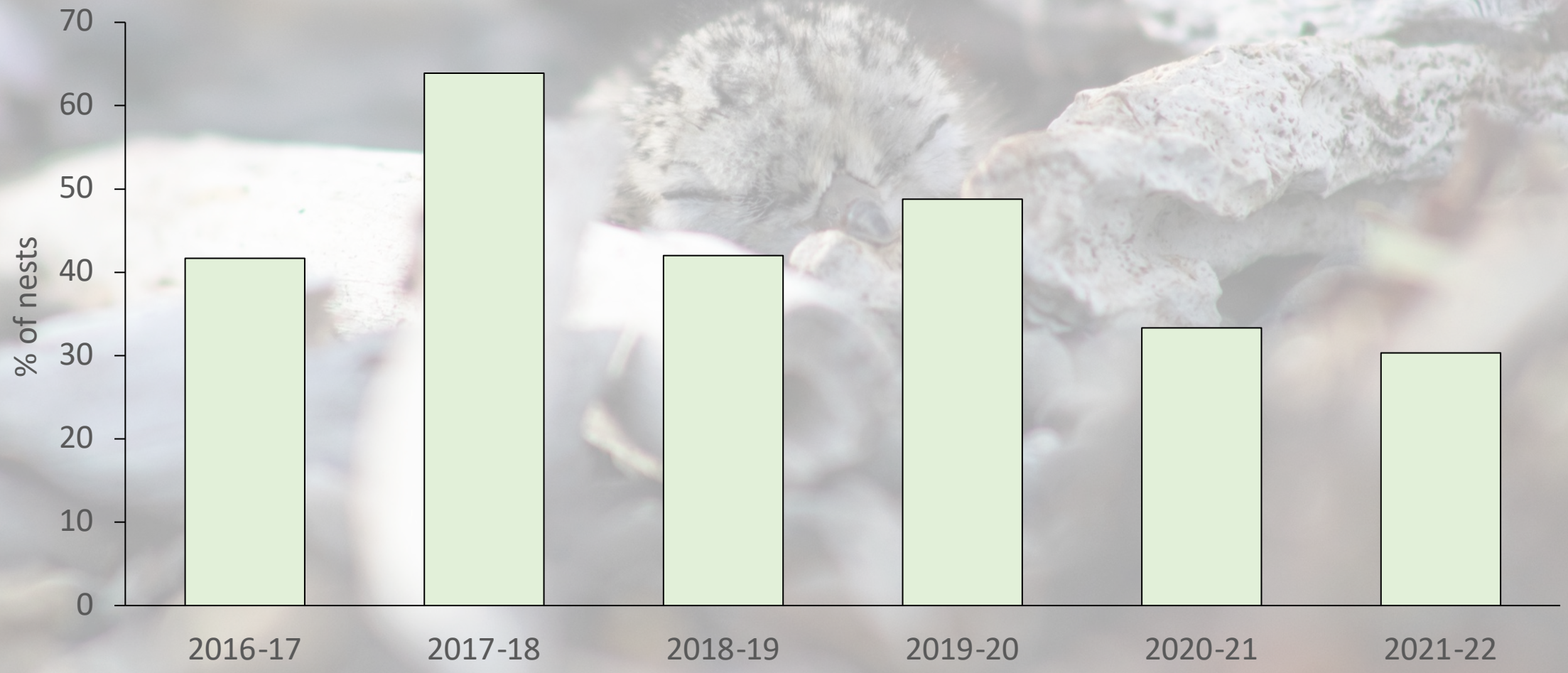
Renesting frequent following losses





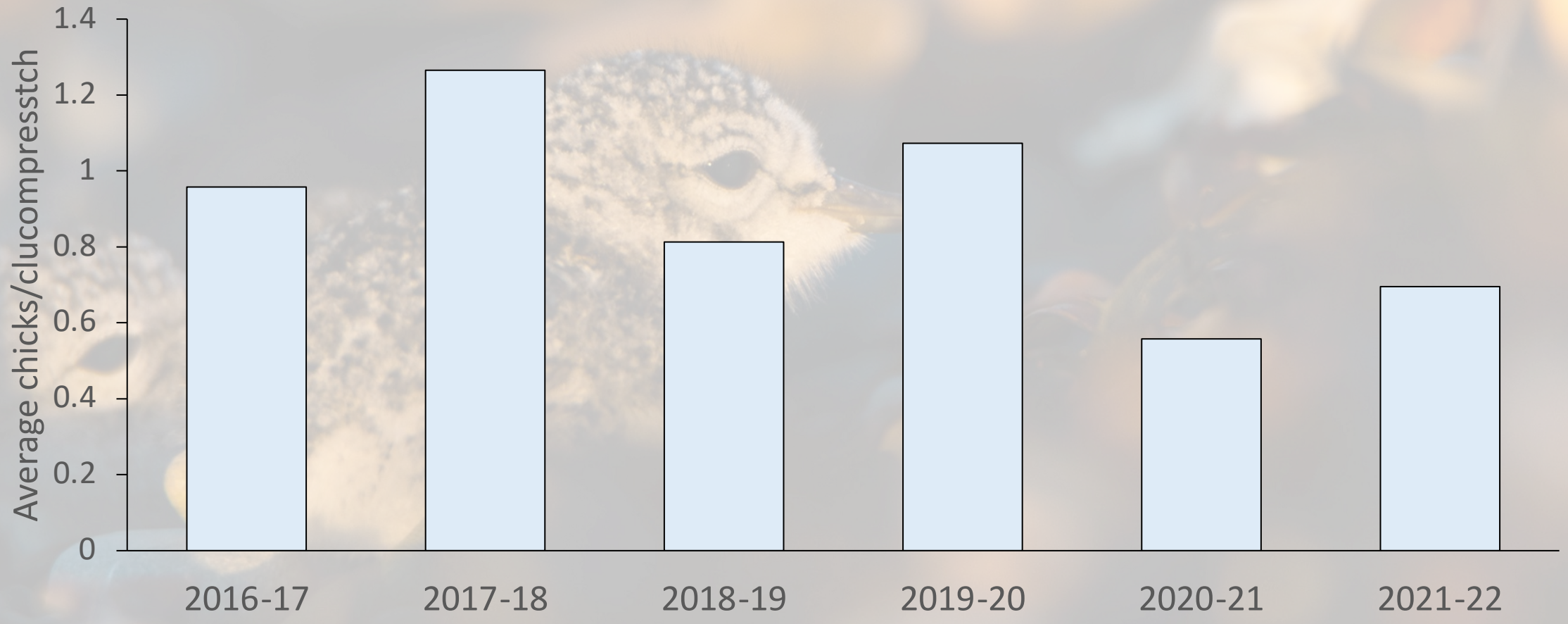
Hatching success

- Proportion of nests hatching varied markedly from year to year



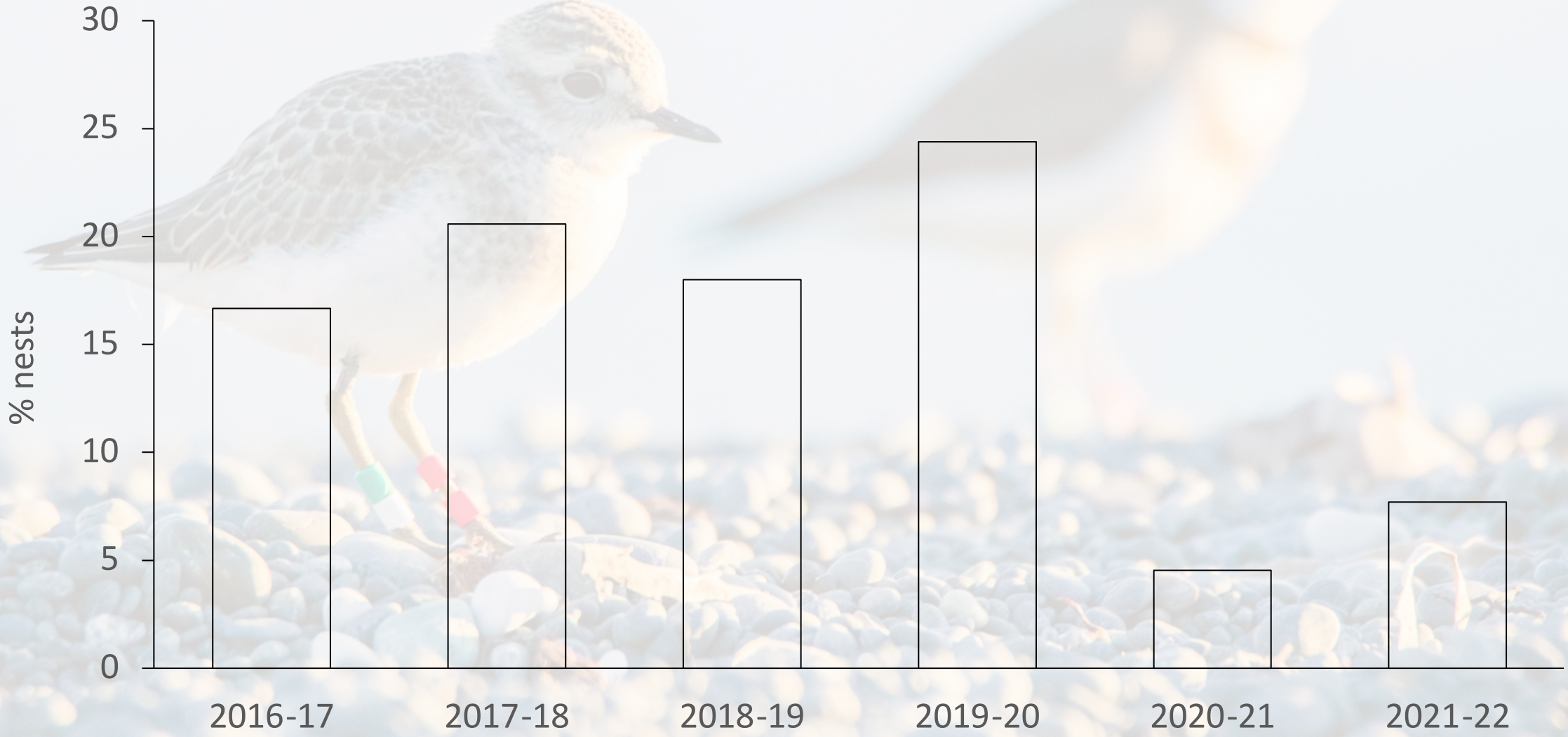
Hatching success

- Chicks hatched/nest/yr



Fledging success

Percentage of nests fledging young (0.2 chicks fledged/nest)



Percentage of pairs with adults killed by predators

Causes of nest failures (n = 156 nests)

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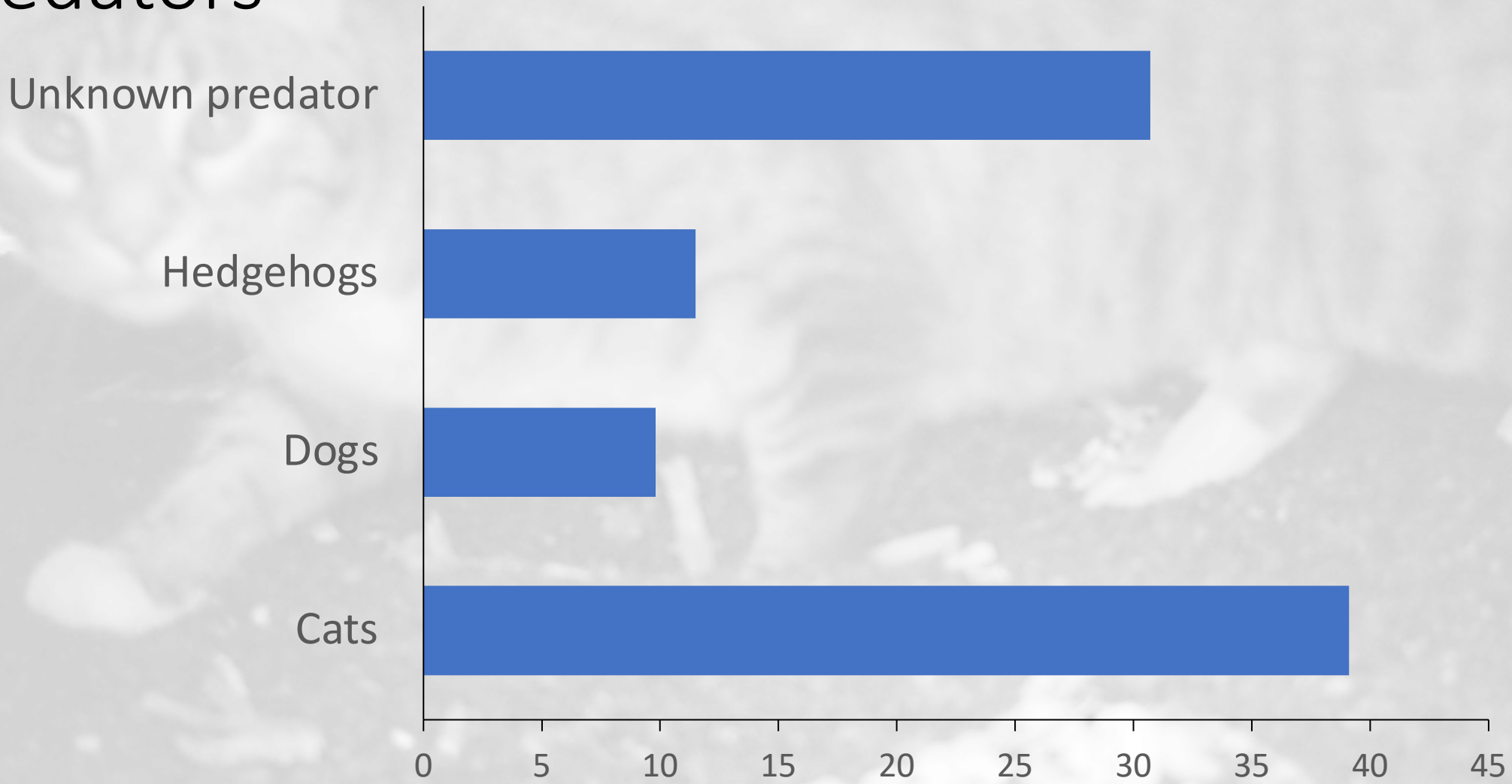
Predators


Unknown predator
Hedgehogs
Dogs
Cats
0
5
10
15
20
25
30
35
40
45
% of identified predation events (n = 88)

Summary – breeding success

- Clutch size similar to previous studies (range 2.5 – 3 eggs, 7 estimates - other studies)

- Average hatching success
  - 38.5% nests hatched (range 33.3 – 63.9%) - Kaikōura (6 seasons)
  - 41.0% nests hatched – no predator control (range 3.3 – 87%; 24 estimates - other studies)
  - 57.6% nests hatched – predator control (range 24 – 96%; 29 estimates - other studies)

- Fledging success (few estimates)
  - 7.5% eggs fledged young at Kaikōura
  - Average of 13.5% (range 3 – 21%, 4 studies with no predator control)

Summary – Causes of failures

- Predation, disturbance and natural events (usually flooding of some kind) important in other studies
- Comparison with 33 nests monitored by Kearvell (2011; Ashley coastal rivermouth)
  - Most fates known at Ashley (93.7% versus 54.5%)
  - Higher % lost through natural causes (56.2% versus 8%)
  - Lower % lost because of predation (12.5% versus 30.8%)
  - Higher % lost through human disturbance (28.8% versus 4.2%)

  - However, given 11.5% abandoned and 45.5% fate unknown at Kaikōura, the true proportions lost to these 3 factors is uncertain.

Conclusions:

- Productivity low despite current management levels
- Some resilience because of ability to renest numerous times
- Loss of adult breeders a concern
- Ramping up conservation management urgently needed
    - Keeping domestic cats indoors at night
    - Reduction in human and vehicle use of sensitive areas of the beach during breeding
    - Dog control measures
    - Increased intensity of predator control
- Need to develop population model to look at long-term consequences for the population

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Questions?