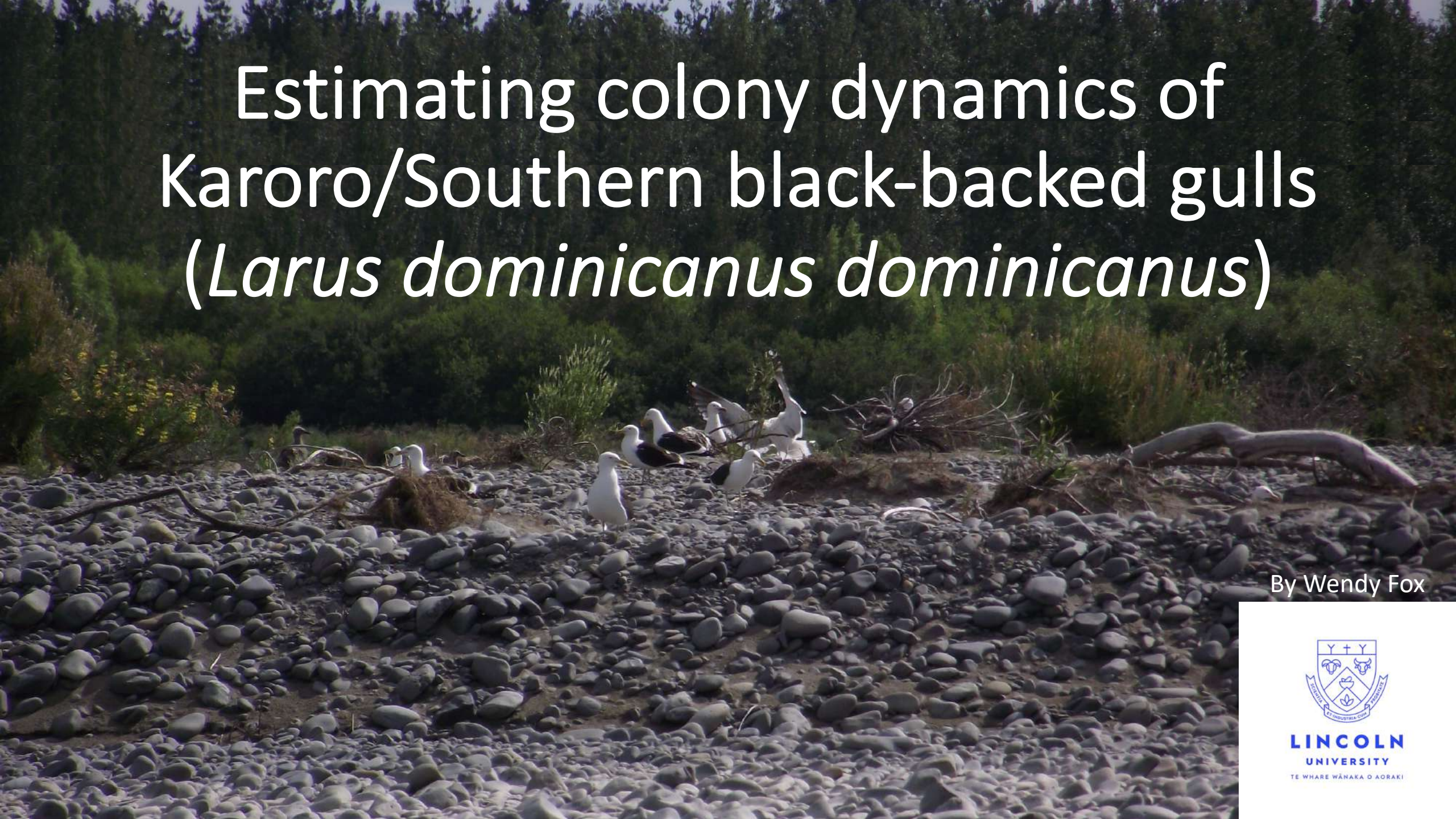
Estimating colony dynamics of Karoro/Southern black-backed gulls (*Larus dominicanus dominicanus*)



By Wendy Fox

LINCOLN UNIVERSITY
TE WHARE WĀNAKA O AORAKI

Why karoro?

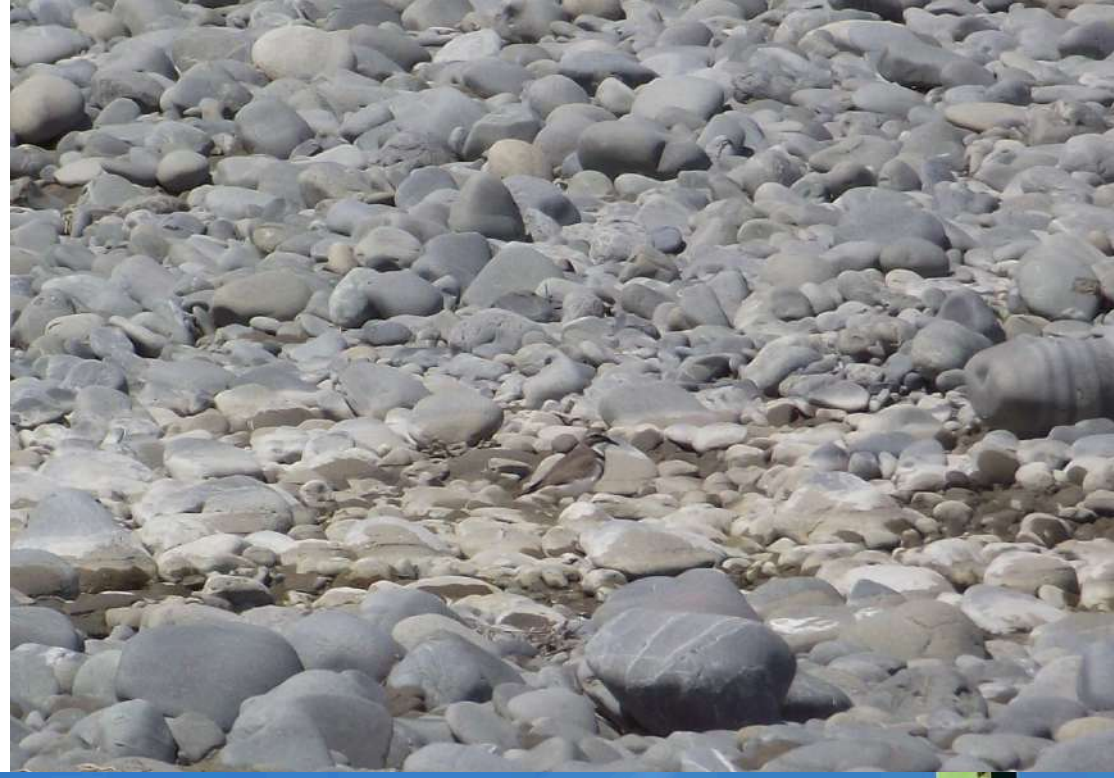
- MAST120
- BRaid 2019
- South Island Wildlife Hospital
- Personality!

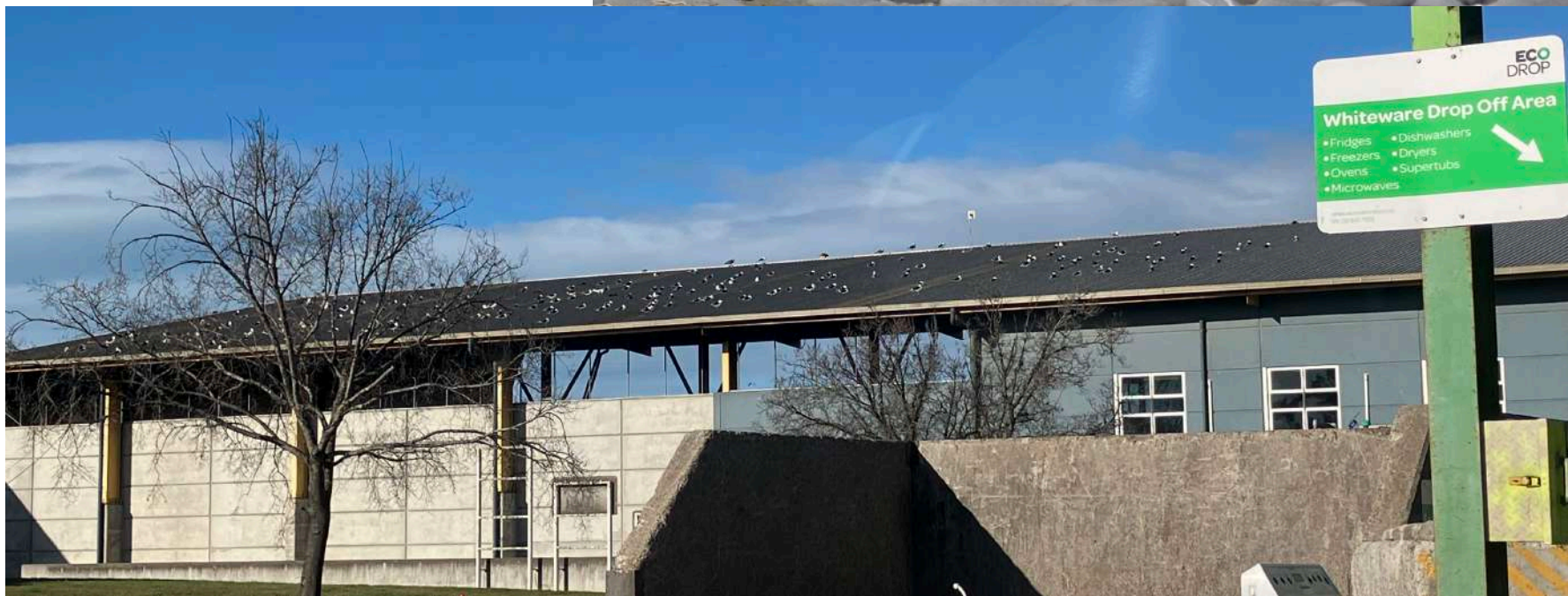
Karoro/SBBG

- Wingspan ~130cm
- Weight ~800-1000 g
- Nest
  - Riverbeds
  - Roofs
  - Coastal areas
- Diet – everything!

Big gulls causing trouble

- Predatory
- Competition
- Disease
- Nuisance
- Bird strike risk





Control

- Global & national control of large gulls
- Europe 1930s
- USA 1950s
- Aotearoa 1960s

Control

- Great black-backed gull
- Herring gull
- Yellow legged gull
- Karoro/SBBG/kelp gull

Great black-backed gull - By Andreas Trepte - Own work, CC BY-SA 2.5, https://commons.wikimedia.org/w/index.php?curid=10944563

Herring gull - By John Haslam from Dornoch, Scotland - Nesting Herring Gull, CC BY 2.0, https://commons.wikimedia.org/w/index.php?curid=4105981

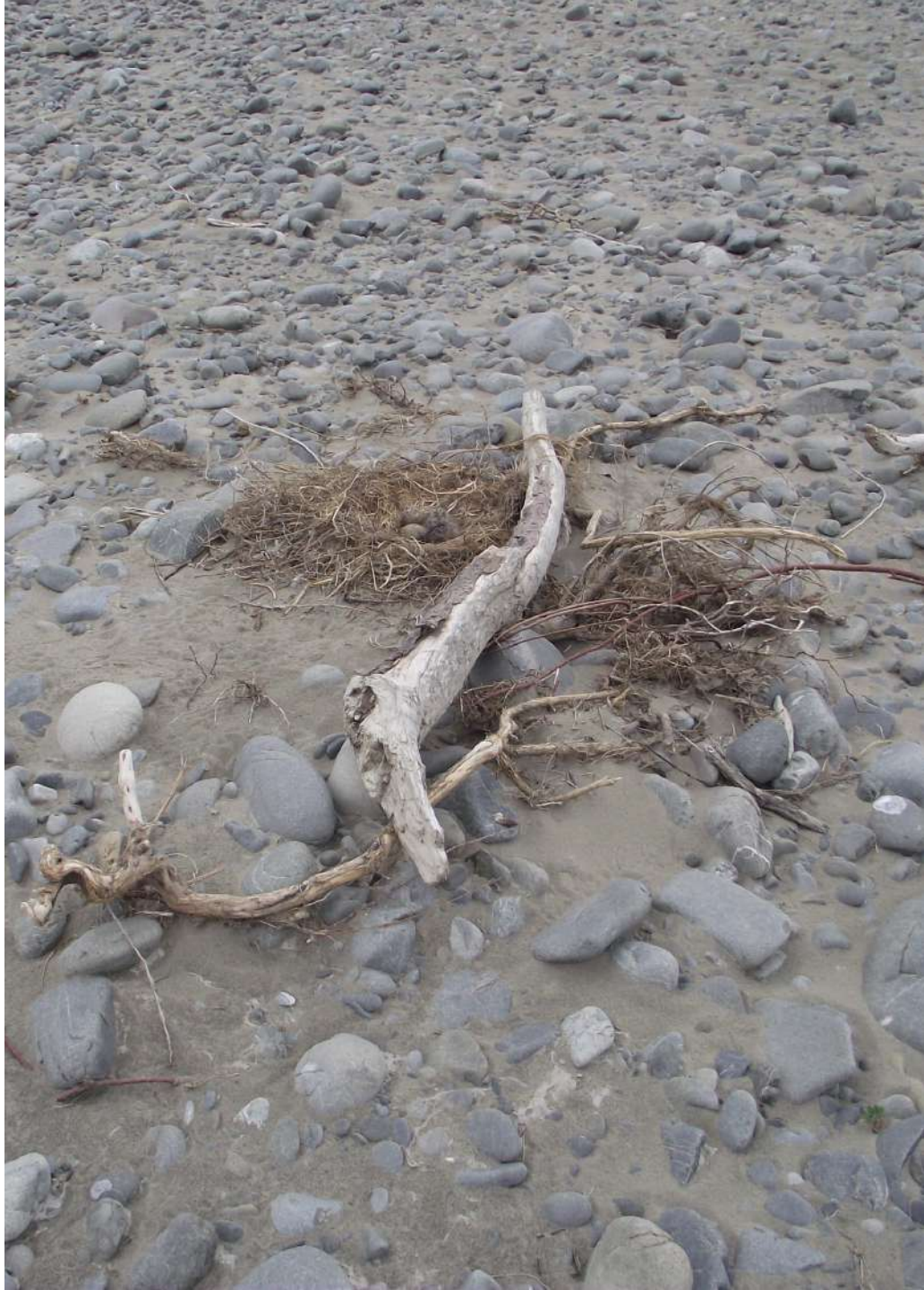
Yellow legged gull - By Fernandopascullo - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=4312192

Karoro - By Phillip Capper - originally posted to Flickr as Black Backed Gull family, Matiu/Somes Island, Wellington, 28 Dec. 2009, CC BY 2.0, https://commons.wikimedia.org/w/index.php?curid=8860496

Have control methods been successful?

Research

- Estimate recruitment rate
- Breeding data
  - No. nests
  - No. eggs per nest
  - No. chicks hatched per nest (when possible)
  - No. chicks fledged



Research

- Data analysed in population model (Bosch et al., 2000)
- Demographic data of Caspian gull (*Larus cashinnans*) in Spain
- Breeding success - “number of chicks fledged as a percentage of eggs laid”
- Calculate potential egg harvest rates – variable

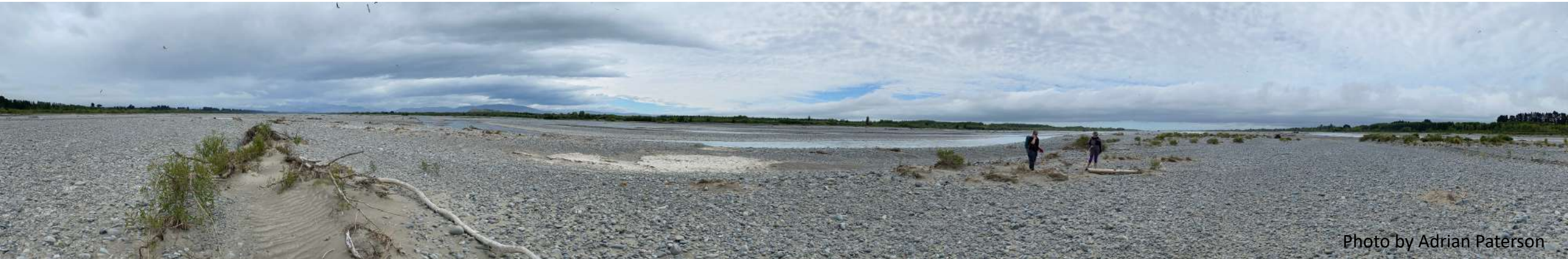


Photo by Adrian Paterson

Research

- Find literature of mahinga kai and mātauranga Māori knowledge surrounding karoro
- Use trail cameras to observe nest activity
- Transmitters – daily movements

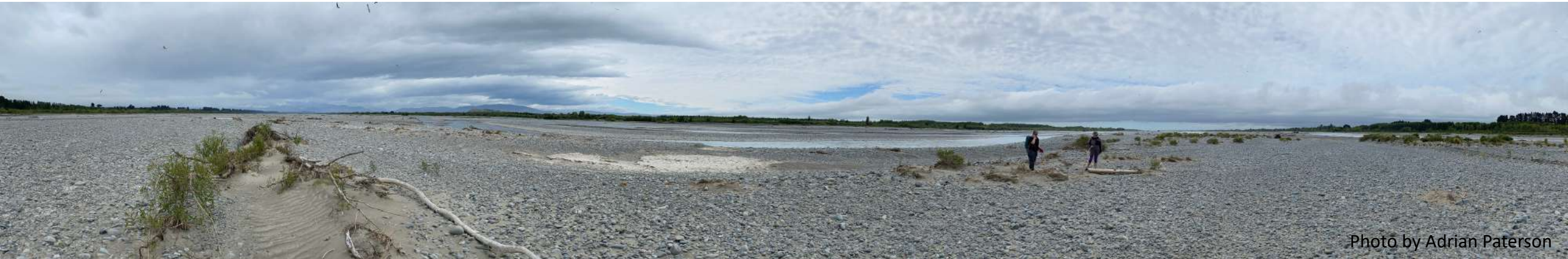


Photo by Adrian Paterson

Objectives

I. Estimate breeding success of karoro/black-backed gull on the Waimakariri & Hakatere/Ashburton Rivers

II. Estimate potential egg harvesting rates using population model of breeding success parameters (Bosch et al., 2000)

III. Gain understanding and knowledge of mahinga kai and Mātauranga Māori surrounding karoro/black-backed gull

Objectives

IV. Use cameras to observe nest activity

V. Use transmitters to analyse daily movements

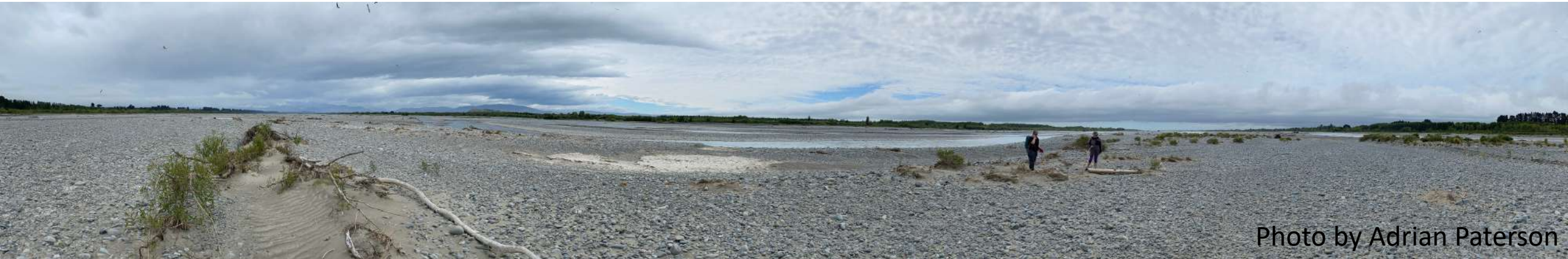
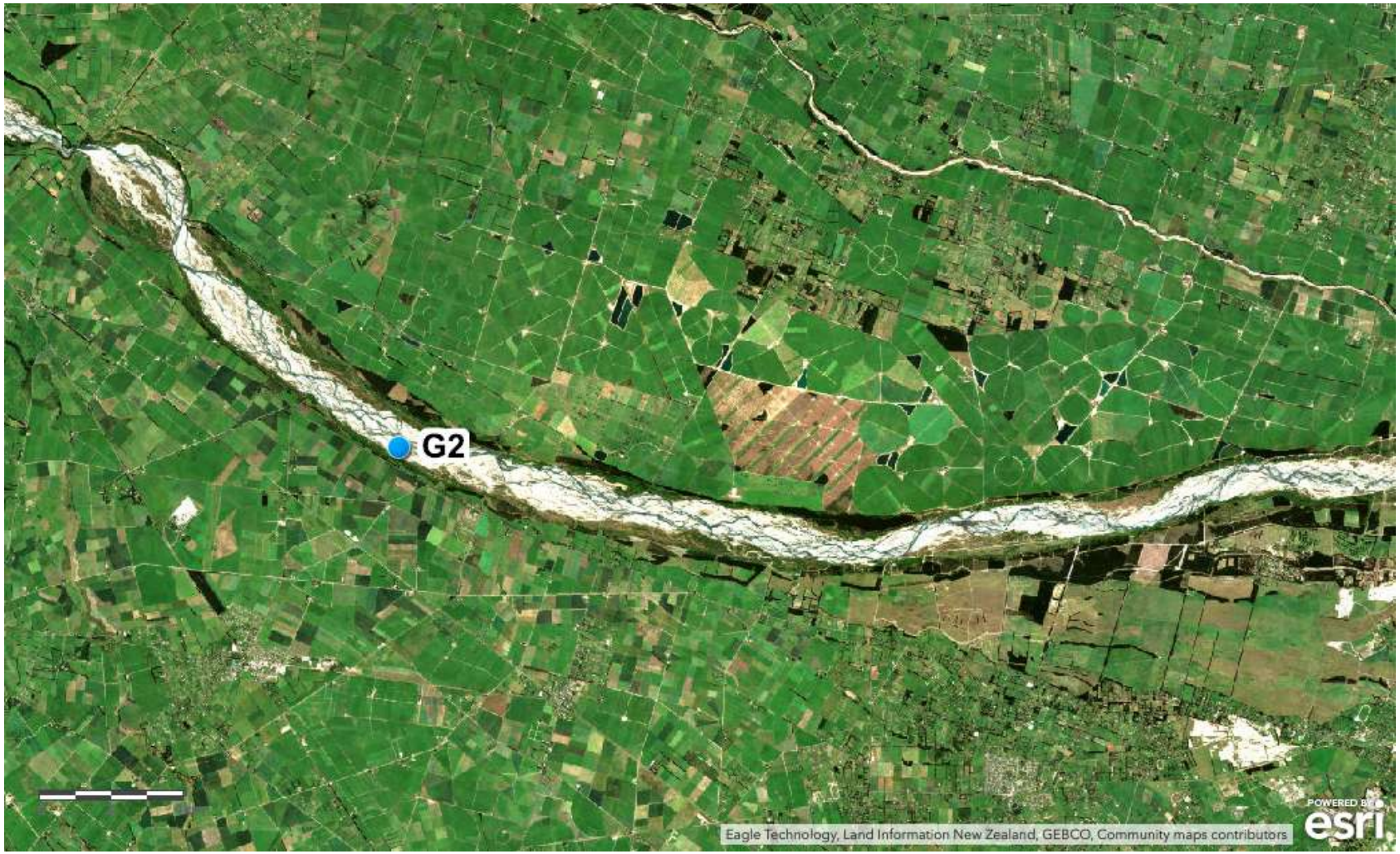


Photo by Adrian Paterson

Preliminary season

- Waimakariri River
- 1 colony
- 58 nests
  - 46 used
  - 10 unused
  - 2 lost



Preliminary season

- 130 eggs
- 72 fledglings
- 55% success

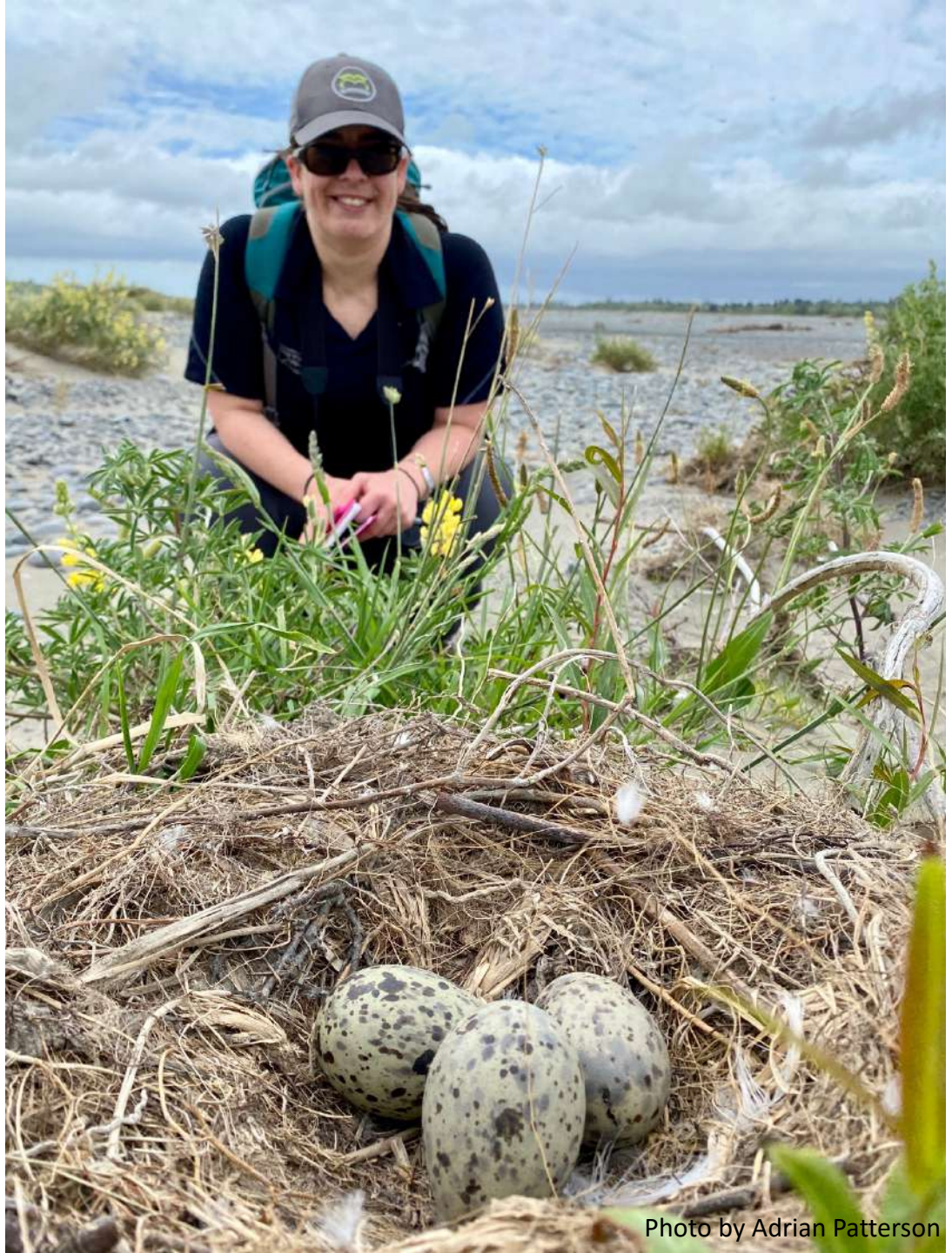


Photo by Adrian Patterson

Preliminary season

1st clutch

- 108 eggs
- 72 fledglings
- 66% success

Preliminary season

2nd clutch

- 22 eggs
- 5 nests reused
- All second clutches failed

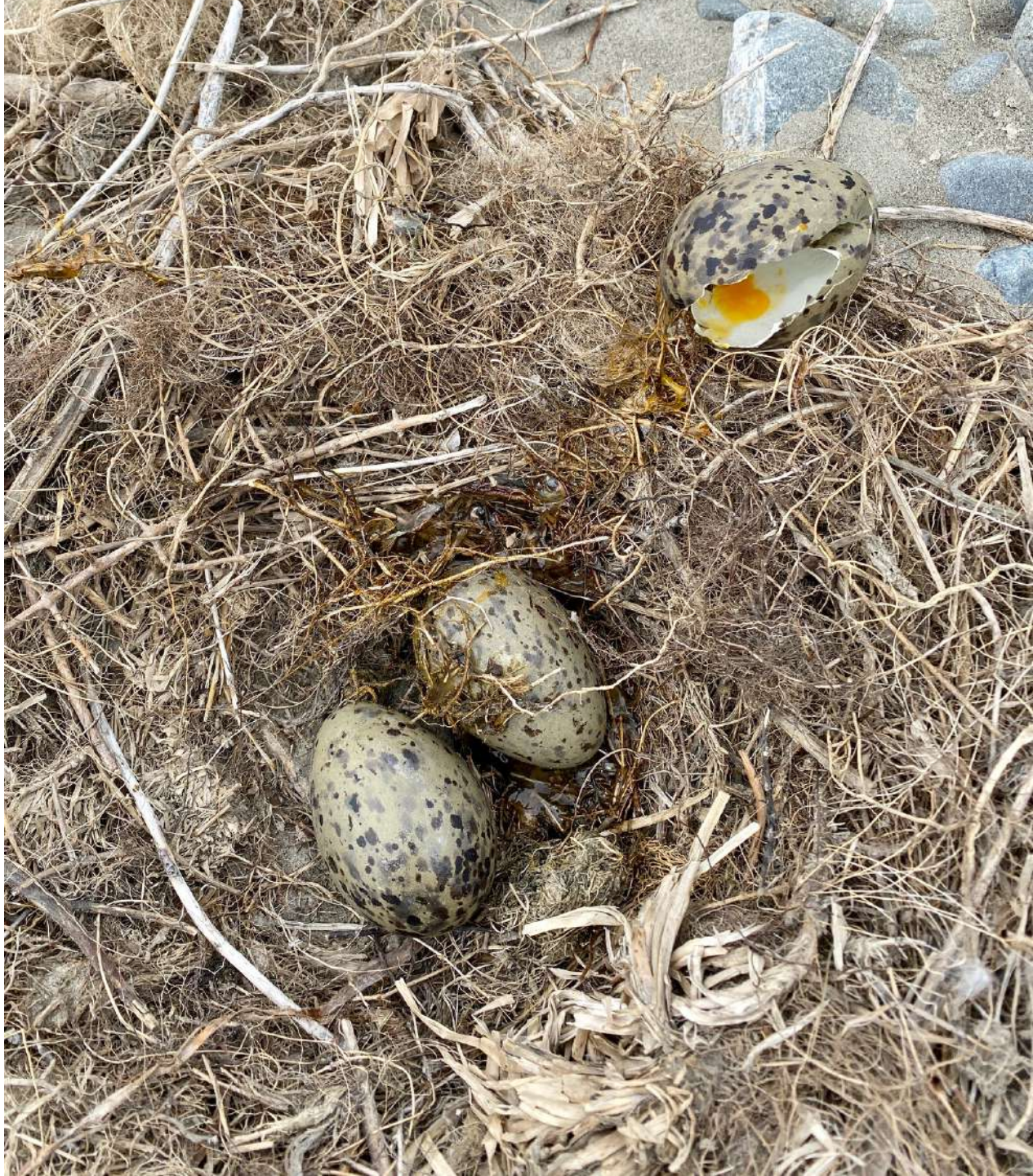
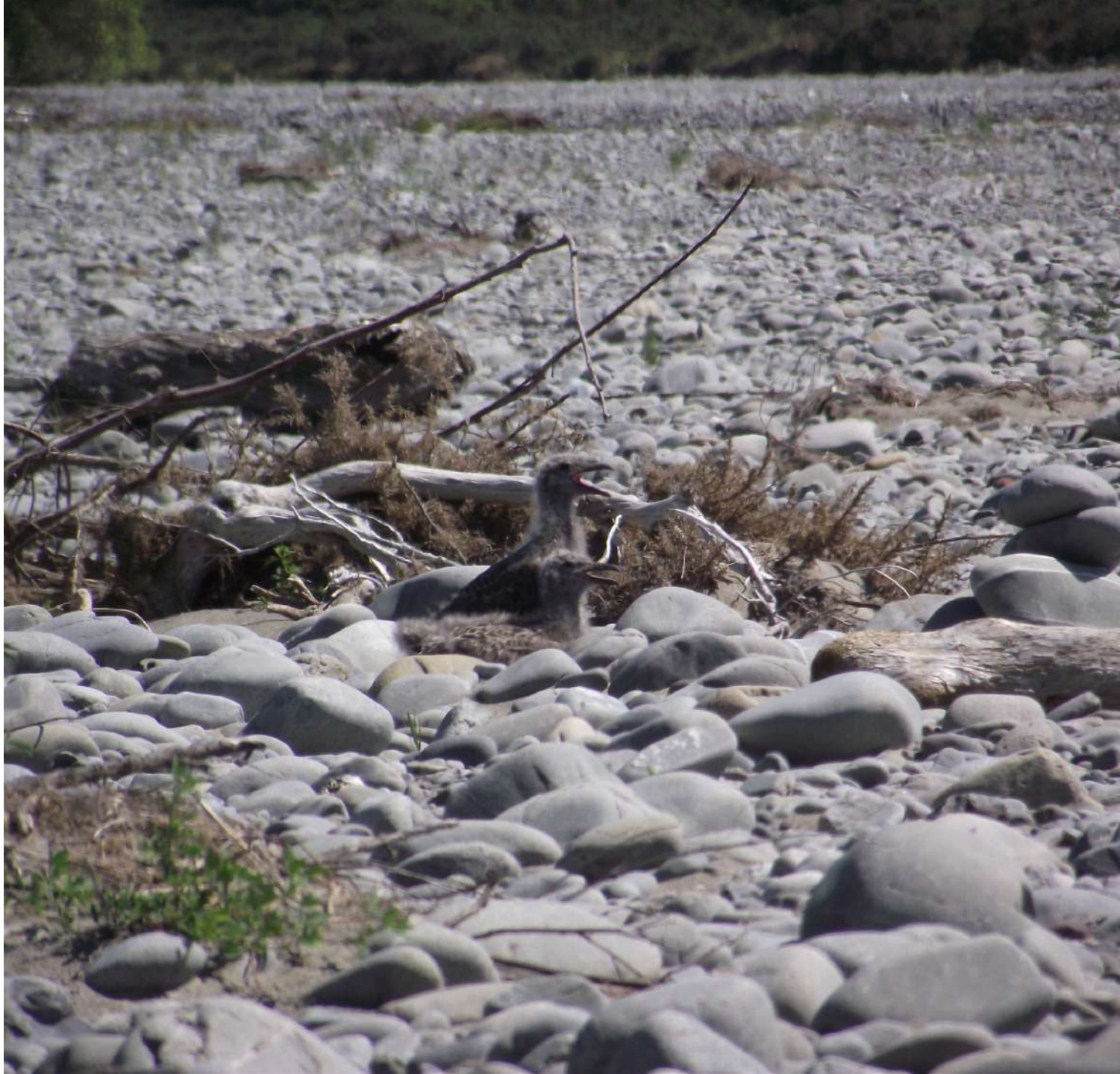


Photo by Adrian Patterson

Next season

Locations

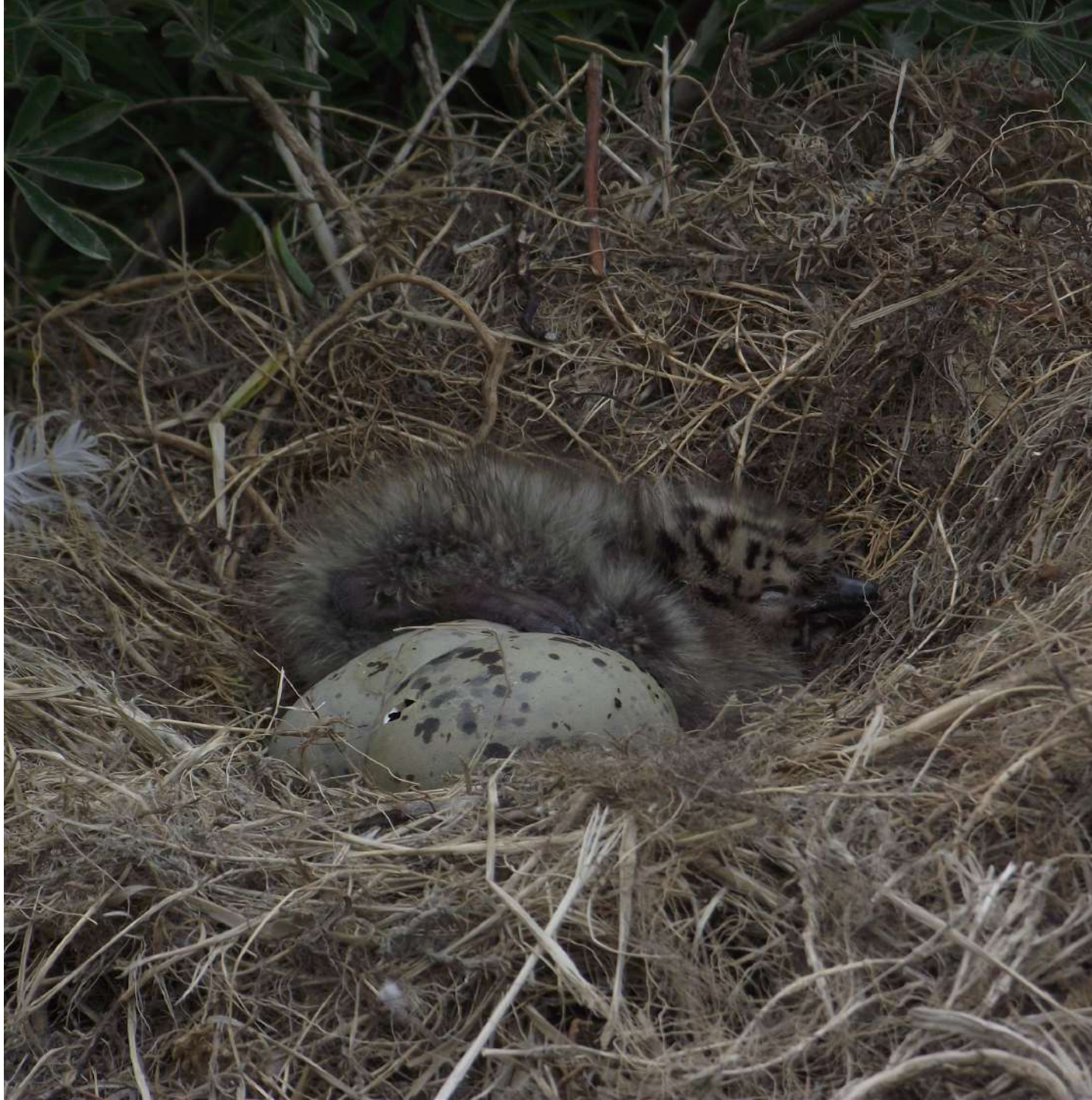
- Waimakariri River
- Hakatere/Ashburton River
- Minimum 2 colonies per river



Next season

Data

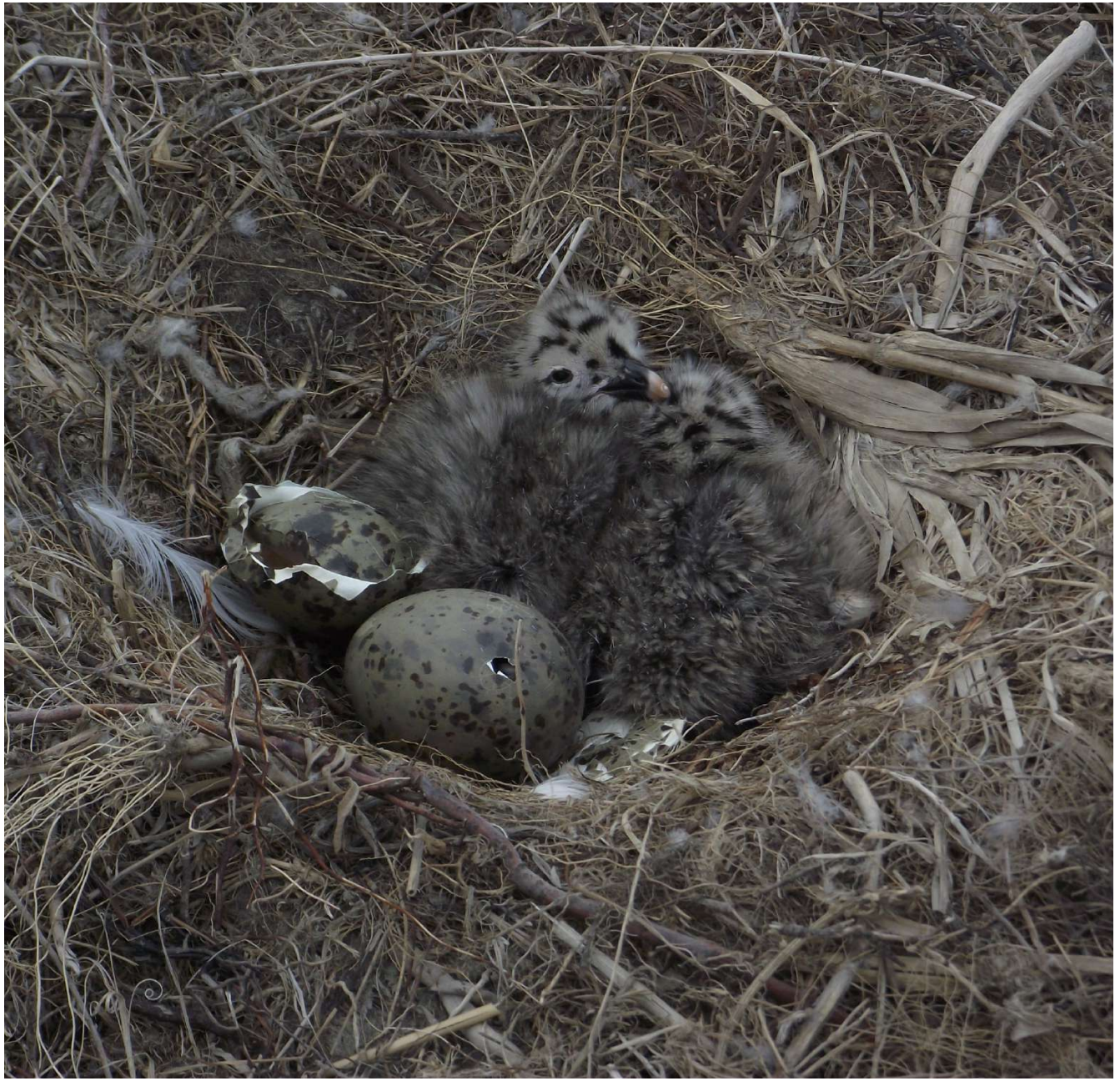
- No. nests
- Location of nests
  - GPS/paint pens
- No. eggs
- No. eggs hatched
- No. chicks fledged



Next season

Population model

- R studio
- Bosch et al. (2000)
- Analyse breeding success data
- Calculate egg harvest rates



Next season

Cameras

- Observe nest activity
- Interactions
- 2nd clutches

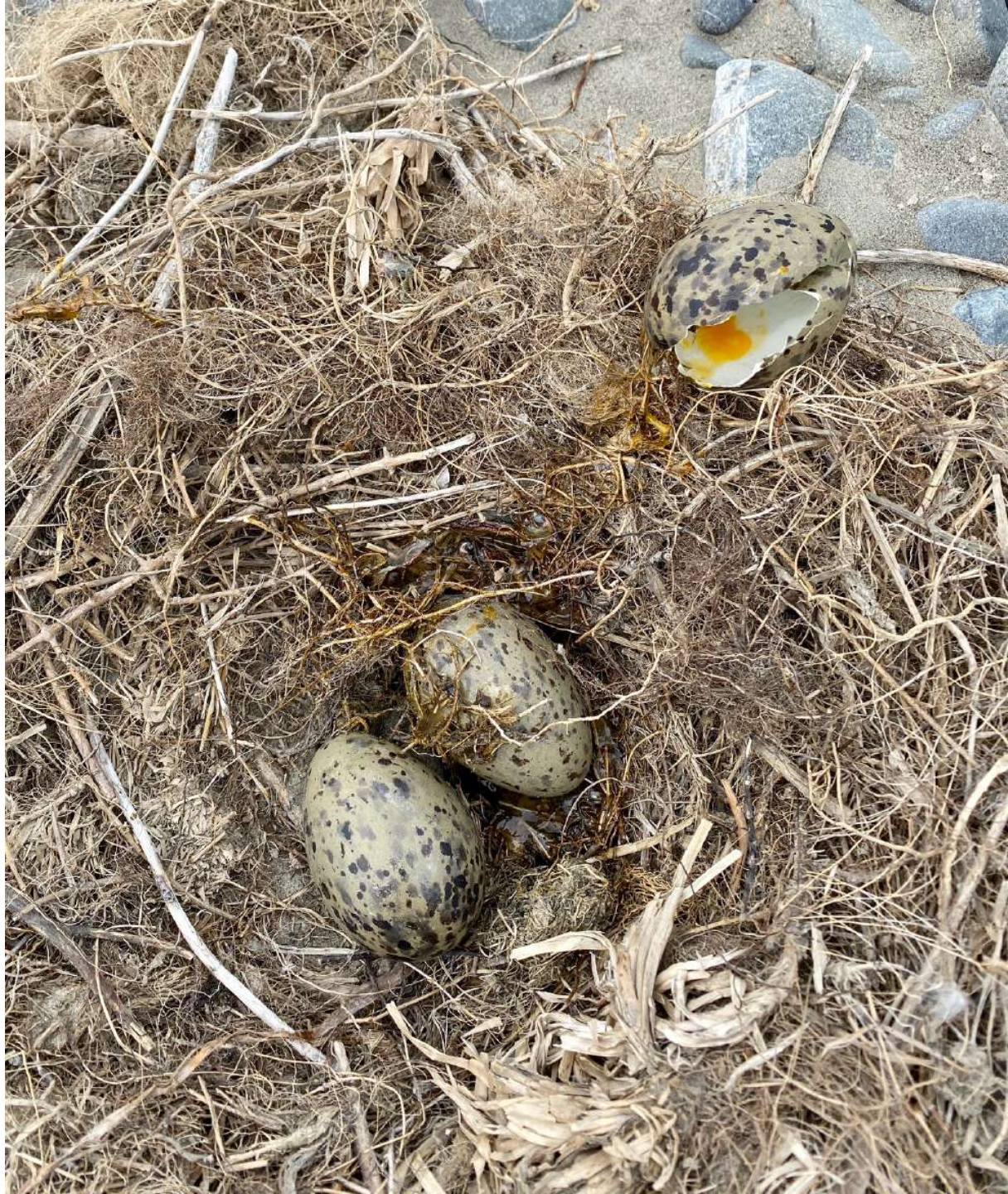


Photo by Adrian Paterson

Next season

Transmitters

- ECan project
- Hakatere/Ashburton River
- 10 units
- Daily movements

Siberian gull - https://druid.tech/product-intro/product-series/lego/

Next season

Transmitters

- Druid lego
- ~20-30 g unit
- Elevated solar panel

Siberian gull - https://druid.tech/product-intro/product-series/lego/

Call out

- Mahinga kai
- Previous data on karoro movements
  - Banding
  - Transmitters
- Field work
  - Fitting transmitters