

# The Canadian Field-Naturalist

## SUPPLEMENTARY MATERIALS:

### Conspecific nest attendance behaviour of Common Eider (*Somateria mollissima*) in response to Polar Bear (*Ursus maritimus*) foraging activity: error or intent?

CASSANDRA A.B. SIMONE, ERICA A. GELDART, CHRISTINA A.D. SEMENIUK, OLIVER P. LOVE, H. GRANT GILCHRIST, and ANDREW F. BARNAS

**APPENDIX S1.** Detailed field observations of conspecific nest attendance behaviours of Common Eider (*Somateria mollissima*) in response to Polar Bear (*Ursus maritimus*) foraging activity, East Bay Island, Nunavut, Canada.

We organized observations involving the same group of interacting Common Eider (*Somateria mollissima*) individuals having flushed in response to the same Polar Bear (*Ursus maritimus*), into discrete “events”. We use the naming convention of “COEI\_####” to describe individuals with known identities (i.e., the assumed owner of the nest, which we were able to observe the original flush from), and “Unknown\_#” to describe unidentifiable individuals (i.e., individuals which we could not trace to a nest location or came into the field of view from off camera).

Distance measurements were obtained from 3 cm ground sampling distance georeferenced map of East Bay Island produced from drone imagery in 2019. Distances were measured using ArcMap version 10.7.1 (ESRI, Redlands, California, USA).

#### Event 1

##### Observation #1—1836, 15 July 2017, COEI\_138

COEI\_138 flushed from its nest in response to a nearby Polar Bear, and the bear visited the now unattended nest and consumed the eggs. Another eider nesting 2 m away, COEI\_142, flushed from her own nest (also in response to the bear) without covering her clutch. COEI\_138 visited COEI\_142’s now exposed nest to cover the eggs and then immediately sat on the nest. COEI\_138 remained on the nest for 25 s until COEI\_142 returned and chased COEI\_138 off the nest (note that COEI\_142 did not sit on her own nest here). COEI\_142 then left again (see *observation #3*) and COEI\_138 once again returned to sit on COEI\_142’s unattended nest for 6 s. COEI\_138 then left the nest and did not return before the drone stopped recording 8 min and 47 s later. During this event, the nest of COEI\_142 was not visited by predators. Duration of observation: 10 min, 26 s.

##### Observation #2—1836 15 July 2017, COEI\_136

Having previously flushed in response to the Polar Bear from *observation #1*, COEI\_136 visited the nest belonging to COEI\_135 (5 m away) and chased COEI\_135 off its nest. COEI\_136 then sat on COEI\_135’s nest for 11 s and then left the area of the nest. COEI\_135 remained nearby, walked back and forth but did not return to her nest before the drone stopped recording. Neither nest was visited by predators. Duration of observation: 10 min, 29 s.

##### Observation #3—1836 15 July 2017, COEI\_142

After leaving her nest for the second time in *observation #1*, COEI\_142 visited the nest belonging to COEI\_135 (5 m away). This occurred shortly after COEI\_136 departed the nest of COEI\_135 (in *observation #2*). COEI\_142 sat on the exposed nest of COEI\_135 for 12 s before leaving. Neither nest was visited by predators. Duration of observation: 10 min 25 s.

##### Observation #4—1841 15 July 2017, COEI\_148

COEI\_148 and COEI\_145 both flushed in response to a Polar Bear consuming eggs from nest COEI\_138 (see *observation #1*). COEI\_148 briefly visited the nest of COEI\_145 (4 m away) to cover eggs with down feathers (for 4 s) but then left and continued walking around her own nest but never returned to incubate before the drone stops recording. Neither nest was visited by predators. Duration of observation: 5 min, 37 s.

##### Observation #5—1836 15 July 2017, Unknown\_1

COEI\_141 flew off her nest in response to an approaching bear and left the field of view. An unknown eider, Unknown\_1, arrived and sat partially on the nest (i.e., half on the nest) for 23 s before leaving. Two minutes and 50 s later a gull approached the nest on foot and began pecking at eggs (no eggs were removed) when another unknown eider, Unknown\_2, arrived from off screen (potentially COEI\_141 but

this is unknown), chased the gull away and then sat on the exposed nest. Unknown\_2 remained on the nest for the rest of the recording. We were unable to assess potential damage caused to the eggs by the gull; as such, the nest fate is unknown. Duration of observation: 9 min, 36 s.

*Observation #6—1841 15 July 2017, Unknown\_3*

COEI\_152 flew off her nest in response to an approaching bear and an unknown eider, Unknown\_3, arrived and sat on the nest for 38 s. Unknown\_3 departed and COEI\_152 returned to sit on the nest. COEI\_152's nest was not visited by any predators, it is unknown if Unknown\_3 had a nest. Duration of observation: 1 min, 1 s.

**Event 2**

*Observation #7—1737 15 July 2017, COEI\_126*

A Polar Bear consumed the eggs from the nest of COEI\_124 (which had previously flushed and flown away). While the bear was eating the unattended eggs, COEI\_126 (1.5 m away) flushed off her nest and walked a large circle behind the bear. When the bear began to approach the nest of COEI\_126, COEI\_126 ran in front of the bear while beating her wings in a broken wing display. The bear lunged at COEI\_126 and this redirected the bear away from the exposed nest (Figure S1). The ducklings of COEI\_126 scattered from the nest and at least one was immediately consumed by gulls. Another duckling fell into the nearby vacant nest of COEI\_124 and COEI\_126 quickly ran over to cover her duckling in the nest of COEI\_124. The gulls were unable to access the surviving duckling and COEI\_126 remained on the nest of COEI\_124 for the remainder of the observation period while the Polar Bear moved away toward other nests. Duration of observation: 4 min, 54 s.

**Event 3**

*Observation #8—1613 16 July 2017, COEI\_188*

As a Polar Bear moved towards the nests of both COEI\_188 and COEI\_189, both eider hens flushed off their nests and remained standing 2 m away (Figure S2). When the bear subsequently stopped to inspect another nest, COEI\_188 returned and sat on the nest of COEI\_189. Meanwhile, COEI\_189 sat down nearby. When the bear began moving again ~6 s later, both birds flushed and flew from the field of view. The bear moved past both nests without consuming them and neither nest was visited by predators during the remaining recording. Duration of observation: 59 s.

**Event 4**

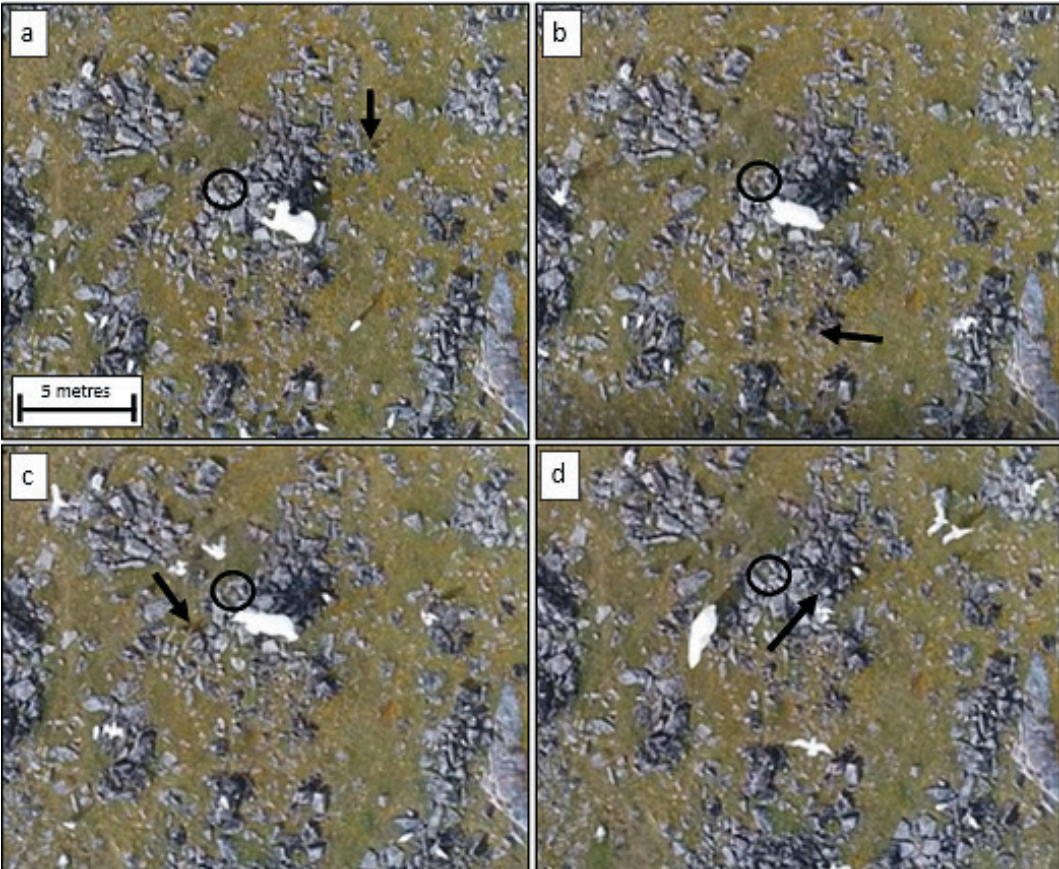
*Observation #9—1055 15 July 2017, COEI\_088*

COEI\_088 and COEI\_086 both flushed from their nests in response to an approaching bear. COEI\_088 flew a large circle around the moving bear and landed directly on the uncovered nest of COEI\_086 (2 m away) 25 s later. She remained there and was lost from view when the drone moved away from the area 5 s later. Neither nest was visited by predators. Duration of observation: 30 s.

**Event 5**

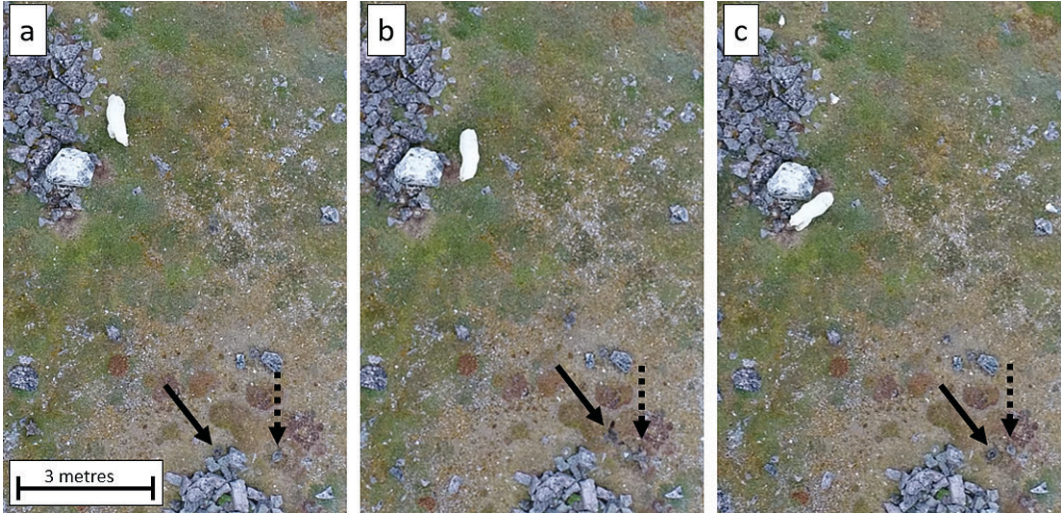
*Observation #10—1743 15 July 2017, Unknown\_4*

While a bear consumed eggs from another eider nest, COEI\_129 was sitting on her own nest, when she was approached by an unknown eider hen, Unknown\_4. Unknown\_4 physically removed COEI\_129 from the nest and both birds began a skirmish in which each hen pulled at each other's feathers with their bills. Unknown\_4 left and COEI\_129 remained on her own nest for the remainder of the observation period. COEI\_129 was not visited by any predators. Duration of observation: 3 min, 14 s.



**FIGURE S1.** Screenshots from observation 7 drone footage of Common Eider (*Somateria mollissima*) flushing in response to a foraging Polar Bear (*Ursus maritimus*), East Bay Island, northern Hudson Bay, Nunavut, Canada. a. A Polar Bear consumes eggs from the nest of COEI\_124, sitting ~1.5 m from the nest of COEI\_126 (indicated by black circle). COEI\_126 (indicated by black arrow) runs around the right side of the bear, which turns its head in response. b. The Polar Bear begins moving toward the nest of COEI\_126. c. COEI\_126 stands flapping her wings in front of the bear and the bear lunges at COEI\_126. d. COEI\_126 flies away and lands near her ducklings in the nest of COEI\_124. The Polar Bear continues moving away in a new direction, while Herring Gulls (*Larus argentatus*) forage alongside the bear. Video footage collected via drone on 15 July 2017, ~30 m above ground level. Photos: Cody Dey and Evan Richardson.





**FIGURE S2.** Screenshots from observation 8 drone footage of Common Eider (*Somateria mollissima*) flushing in response to a foraging Polar Bear (*Ursus maritimus*), East Bay Island, northern Hudson Bay, Nunavut, Canada. a. COEI\_188 (solid arrow) and COEI\_189 (dashed arrow) on their respective nests prior to flushing. b. Both individuals flush off their nest. Note the conspicuous uncovered eggs. c. Shortly afterwards COEI\_188 sits on the nest of COEI\_189, while COEI\_189 sits nearby. Video footage collected via drone on 16 July 2017, ~30 m above ground level. Photos: Cody Dey and Evan Richardson.