

SHORT COMMUNICATIONS

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SIBLICIDE AND CANNIBALISM IN ALASKAN BOREAL OWLS

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Asynchronous hatch order is seen in many bird species and produces complex nest dynamics (Clark and Wilson 1981). Many hypotheses exist to explain the evolutionary advantage of asynchronous hatch (Stenning 1996). One such hypothesis, the “brood reduction hypothesis” (Lack 1954), proposes that asynchrony is a parental strategy for coping with an unpredictable food supply. It ensures that the oldest nestlings will have an essential advantage over the youngest in years of low food availability, with the youngest being unable to compete and thus, effectively reducing the brood to a level that the available food supply can support (Lack 1954). Thus, the survival of nestlings in asynchronously hatching birds is highly variable from year to year. One method for achieving this brood reduction within the nest is sibling aggression (Mock et al. 1990), resulting in the death, and occasionally consumption (Ingram 1959, Mock 1984), of the weakest individuals.

Sibling aggression resulting in siblicide and cannibalism has been documented in many avian species, but rarely are these events directly observed. These reports are usually indirect observations based on remains of nestlings found in the nest. Not only is direct observation of the events lacking, but the factors that lead to such aggressive behaviors are often little known. Some studies indicate a possible causal link between food deficiency and sibling aggression, but appropriate evidence of food deficiency correlated with acts of siblicide and cannibalism are uncommon (Estes et al. 1999).

Here, we document two of the first observed incidences of siblicide and cannibalism in the Boreal Owl (*Aegolius funereus*). Boreal Owls hatch asynchronously, with up to 2 wk between the first- and last-hatched nestlings (Korpimäki and Hakkarainen 2012). This results in large developmental differences among nestlings, facilitating the dominance of the older, more developed owlets. Compounding the developmental advantage, Boreal Owls also exhibit extreme reverse sexual dimorphism, the most extreme of any North American owl species, with adult females being up to 50% more massive than adult males (Korpimäki and Hakkarainen 2012). This can further skew size differences within the nest, as first-hatched females can be much larger than later-hatched siblings, or first-hatched males can be dwarfed by later-hatching females. Over the last four field seasons, 69 of the 168 owlets we monitored perished prior to fledging. Indirect observations of cannibalism in the form of partially eaten nestlings indicated the possibility of siblicide and cannibalism, but until our recent use of nest box cameras, no direct observations existed. Here, we report two cases of siblicide and cannibalism in the Boreal Owl revealed by continuous video monitoring of nests.

METHODS

Our observations occurred at nest boxes that are part of a long-term study investigating prey types, nestling growth, and survivorship of Boreal Owls in interior Alaska around Fairbanks. This study utilized 200 nest boxes maintained by Alaska Department of Fish and Game. Occupied nest boxes were identified in early May 2014 and monitoring began after all nestlings had hatched. We recorded morphometric data of developing nestlings every other day throughout the nesting period. We installed interior nest box cameras in six boxes on 11 June 2014 and

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