

Loon chicks grow fast and fledge early to give parents a break

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Credit: U.S. Fish and Wildlife Service

Raising healthy chicks is always a challenge, but in a cold, fish-free Arctic lake, it's an enormous undertaking. Red-throated Loon (*Gavia stellata*) parents must constantly fly back and forth between their nesting lakes and the nearby ocean, bringing back fish to feed their growing young, and a new study suggests that the chicks grow fast and fledge while they're still small so that they can reach the food-rich ocean themselves and give their parents a break.

Growing [chicks](#) must take in enough energy to move around, grow, and maintain their body temperature. The bigger a bird species' chicks, the more energy they require, but some species need more energy than others even after accounting for size. Daniel Rizzolo and Joel Schmutz of the U.S. Geological Survey's Alaska Science Center and John Speakman of the University of Aberdeen hypothesized that Red-throated Loons would be one of these energy-demanding species because their chicks leave the nest shortly after hatching to live in frigid Arctic lakes, where keeping warm is a challenge. To test this, they used aerial photography to find promising lakes in Alaska's Arctic Coastal Plain and then searched these areas on foot for loon nests. They monitored 36 chicks from 25 broods weekly throughout the nesting season, capturing them with nets floated on the lakes' surfaces, tracking their growth, and taking blood samples to determine their energy expenditure.

Their results were published this week in *The Auk: Ornithological Advances*. Despite their hostile environment, Red-throated Loon chicks did not use more energy than what was predicted by their body mass, possibly because of how they limit their [energy expenditure](#)—they regularly rest onshore, and very young chicks are brooded by their parents to help keep them warm. However, chicks grew faster than expected and fledged before reaching their final adult weight. The researchers suggest that they grow fast and fledge small to get to the fish-filled ocean sooner, reducing the length of time their parents have to spend flying back and forth to provide their food.

"In Red-throated Loons, natural selection seems to have lightened the load of parents raising chicks through the chicks' growth pattern. By fledging from fishless breeding lakes to the fish-filled sea before growth is complete, Red-throated Loon fledglings go to the food so that parents no longer have to bring the food to them," says Rizzolo. "As a parent myself, that's a strategy I can appreciate." Adds Dr. Patrick Jodice of Clemson University, an expert in reproductive energetics who was not

involved in the study, "When we examine life history traits we tend to see commonalities within taxonomic families, but Rizzolo et al. demonstrated that within the Gaviidae, Red-throated Loons appear to be quite unique. The energetics of post-natal growth continue to be understudied in field settings, but this paper should prompt renewed interest among researchers into the mechanisms that underlie this critical life-history component."

Conducting field work at remote Arctic lakes can be an adventure. "At the end of a particularly long day—the sun doesn't set for most of the season, after all—we had hiked out to a breeding lake to recapture a chick only to find that a brown bear had settled at the lake shore for a nap," relates lead author Daniel Rizzolo. "We, of course, did not capture the chick and choose instead to let the sleeping bear lie. When we returned the next day, the bear had left, but not before it had chewed up a temperature data logger we had deployed at the lake to record ambient and lake temperature."

More information: Fast and efficient: Postnatal growth and energy expenditure in an Arctic-breeding waterbird, the Red-throated Loon (*Gavia stellata*) is available at www.aoucospubs.org/doi/full/10.1642/AUK-14-261.1

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