# Potential for Rufous Hummingbird Nest Failure in British Columbia from the Introduced Eastern Gray Squirrel

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Miller and Gass (1985) summarized North American records of direct predation on hummingbirds to determine if predation was a significant mortality factor. The 13 reports, all from the vicinity of flower gardens and hummingbird feeders, involved nine different predators from three animal groups, namely insects, amphibians, and birds. They suggested that predation of adult hummingbirds was "not a significant risk factor." They did, however, suggest that nesting failures could be a major source of mortality in hummingbird populations. Calder (1993) list other natural factors such as migration fatalities, disease, and accidents that could also contribute to deaths.

Baltosser (1983) monitored 148 nests of four species of hummingbirds in New Mexico and found that egg and nest predation accounted for 58.6 % and 25.3 % respectively of known losses. There are no such studies for British Columbia so observations of direct and indirect mortality on adult hummingbirds (*e.g.*, Schoeddert 2006) and their eggs and nestlings are noteworthy.

On 19 May 2009, I discovered a Rufous Hummingbird (*Selasphorus rufus*) nest in Cadboro Bay, British Columbia. It was saddled near the tip of a mature Douglas-fir (*Pseudotsuga menziesii*) branch about 3.4 m from the ground and 3.6 m from the trunk. It contained two eggs with an attendant female. Three days later I noticed two Eastern Gray Squirrels (*Sciurus carolinensis*; Figure 1) chasing each other in adjacent firs and discovered a large squirrel nest on a Douglas-fir branch about 14 m above ground. On 25 May, the female hummingbird was still incubating. I watched one squirrel jump from the hummingbird nest branch to another close by.

**Figure 1**. Eastern Gray Squirrel bounding along tree branches indirectly impacts some nesting birds in British Columbia by causing eggs or nestlings to be ejected from the nest. Cadboro Bay, BC. 22 October 2000 (R. Wayne Campbell).

The mammal's weight caused the branch to bounce, tipping the nest. Later, I found one cracked hummingbird egg with a well developed embryo, on the ground. The hummingbird nest was abandoned the following day although it remained intact.

This observation is not unique. Joe and Kathleen Hejjas (pers. comm.) have witnessed the loss of eggs or nestlings from Eastern Gray Squirrel activity near Rufous Hummingbird nests on branches at the edge of a Douglas-fir, western hemlock (*Tsuga heterophylla*), and western redcedar (*Thuja plicata*) forest in their yard in Metchosin, BC. Unfortunately dates were not recorded but they regularly see squirrels traveling in trees along their property.

Bill Holmes reported a similar incident at his home in Coquitlam, BC. He was watching a female Rufous Hummingbird feeding two young in a nest on

a conifer limb about three metres from the ground. Eastern Gray Squirrels arrived in his yard over the past decade and often traveled along tree branches to reach a bird feeder. On 12 June 2008, one squirrel bounced off the hummingbird nest limb, causing the nestlings to be tossed to the ground. One feathered nestling was found and returned to the nest and was successfully raised by the female.

In coastal British Columbia Rufous Hummingbirds nest mostly in coniferous trees, usually building their nest saddled on a branch near its tip (Figure 2). This distance may reach four metres from the trunk and seemingly would provide an unstable site, especially during storms (Campbell et al. 1990).

Eastern Gray Squirrel was introduced to Stanley Park, Vancouver, BC about 1914 and has since spread throughout the Lower Mainland east to Chilliwack.

In the 1960s, a second population became established from three squirrels released in Metchosin, on southern Vancouver Island. This population has also spread to Bamfield on the west coast and north to Ladysmith on the east coast (Nagorsen 2005).

While there are anecdotal accounts of Eastern Gray Squirrels eating eggs and nestlings of birds in the province the species is primarily vegetarian feeding on seeds, buds, fruits, and acorns from a variety of trees as well as fungi (Nagorsen 2005). They are a common sight around bird feeders.

In British Columbia, and perhaps elsewhere in the squirrel's range, indirect mortality to birds building their nests in precarious sites at the end of tree branches may be impacted more by Eastern Gray Squirrel movements than we realize.

**Figure 2.** The Rufous Hummingbird's propensity of building its nest near the tip of a branch sometimes results in egg and nestling loss from Eastern Gray Squirrels as they travel between trees. Mount Douglas, BC. 10 May 2009 (Mark Nyhof).

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