



GOLDEN-CROWNED KINGLET. Photo by Ryan Jones.

Depredation of Golden-crowned Kinglet by a presumed American Bullfrog in an urban park

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On the morning of 6 April 2020, I was observing birds with Caroline J. Cooper on the southwestern shore of the Washington Park Lagoon. We were following a pair of Golden-crowned Kinglets (*Regulus satrapa*) as they foraged less than six inches above the ground, at times alighting on the ground itself. We followed the birds westwards along the shoreline, attempting to get photographs, until one individual hopped out onto a small branch partially hanging over the water. This first bird, after alighting briefly, quickly flew to a higher perch as the branch upon which it sat “wobbled” (Figure 1). I initially assumed the perch was unstable, and was soon distracted as the second Golden-crowned Kinglet perched on a slightly more exposed part of the branch. As the bird flutter-gleaned on the branch ca. 8 inches above the water, I was shocked to see a quick splash of water as something approximately six to eight inches long and three to four inches wide leapt up and grabbed the bird with its mouth. The unexpected encounter was brief, but I was left with the image of the bird's left wing fluttering as the rest of the bird disappeared into the mouth of what is assumed to be an American Bullfrog (*Lithobates catesbeianus*). We inspected the shoreline, but were unable to find the frog due to the murkiness of the water; the next day, we were able to confirm the presence of large American Bullfrogs in the pond, and obtained a photograph of one individual in a different part of the lagoon.

Predators of the Golden-crowned Kinglet are not well known, although confirmed predators include Sharp-shinned Hawk (*Accipiter striatus*), Eastern Screech-Owl (*Megascops asio*), and Bobcat (*Lynx rufus*); predation is also suspected around nest sites by Red Squirrel (*Tamisciurus hudsonicus*), Canada Jay (*Perisoreus canadensis*), and Blue Jay (*Cyanocitta cristata*) (Swanson, Ingold & Galati 2020). Kinglets often join mixed species flocks in migration and during winter, and respond to scold notes from Black-capped Chickadees (*Poecile atricapilla*) (Swanson, Ingold & Galati 2020). Given that Golden-crowned Kinglets nest in boreal and subalpine coniferous forest (Swanson, Ingold & Galati 2020), it is likely only during migration and winter time periods when depredation by American Bullfrogs is possible, and even then it is probably infrequent unless Golden-crowned Kinglets are foraging extremely close to water in the range of the American Bullfrog at times of year that American Bullfrogs are active.

Reviewing the literature, it is clear that American Bullfrogs are voracious predators that will devour anything they can fit inside their large mouths, as they have been recorded eating creatures as large as small American Alligators (*Alligator mississippiensis*) and Domestic Cats (*Felis catus*) (Frost 1935; Campbell & Ryder 2004; Jancowski & Orchard 2013). While many accounts on life history for bird species do not note depredation by American Bullfrog, I have found several references

to 28 species of bird (either as young or adults) being eaten by American Bullfrogs in the literature, as follows: Canada Goose (Campbell & Ryder 2004), Wood Duck (Campbell & Ryder 2004), Blue-winged Teal (Campbell & Ryder 2004), Gadwall (Campbell & Ryder 2004), Mallard (Campbell & Ryder 2004), Rufous Hummingbird (Campbell & Ryder 2004), Virginia Rail (Campbell & Ryder 2004), American Coot (Campbell & Ryder 2004), Spotted Sandpiper (Campbell & Ryder 2004), Solitary Sandpiper (Campbell & Ryder 2004), Chestnut-backed Chickadee (Jancowski & Orchard 2013), Cliff Swallow (Brown & Brown 2009), Bushtit (Campbell & Ryder 2004), Red-breasted Nuthatch (Jancowski & Orchard 2013), Marsh Wren (Campbell & Ryder 2004), European Starling (Campbell & Ryder 2004), Cedar Waxwing (Gollob 1978; Campbell & Ryder 2004), House Sparrow (denoted as probable) (Cochran & Goolish 1980; Cook 1987), Pine Siskin (Campbell & Ryder 2004), Dark-eyed Junco (Campbell & Ryder 2004; Jancowski & Orchard 2013), Savannah Sparrow (Jancowski & Orchard 2013), Song Sparrow (Campbell & Ryder 2004), California Towhee (Howard 1950), Spotted Towhee (Jancowski & Orchard 2013), Yellow-headed Blackbird (Campbell & Ryder 2004), Red-winged Blackbird (Korschgen & Moyle 1955; Campbell & Ryder 2004), Common Yellowthroat (Howard 1950; Campbell & Ryder 2004), and Yellow Warbler (Campbell & Ryder 2004).

This observation appears to be the first observation of an American Bullfrog eating a Golden-crowned Kinglet, but this observation is unsurprising when taken in the context of documented diet of the American Bullfrog. One published observation describes an American Bullfrog jumping at least two feet out of the water to (successfully) catch a Rufous Hummingbird (Campbell & Ryder 2004), demonstrating that any bird relatively close to water could be at risk from American Bullfrog attacks. Several unidentified species of birds have been noted in the literature (Frost 1935; Campbell & Ryder 2004; Jancowski & Orchard 2013), and one other observer has related to me that they have seen warblers being eaten by American Bullfrogs in the western United States (H. Garrod, pers. comm.). Depredation of birds by large amphibians is likely more widespread than is currently noted, and certainly not widely documented due to both the infrequency of these events and the difficulty of documenting events and collating observational data.

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FIGURE 1: The first Golden-crowned Kinglet jumping from the thin branch adjacent to the water where the second kinglet was soon after devoured by a presumed American Bullfrog.