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# Yellow-rumped Warblers (*Setophaga coronata*) Sipping Sap from Sapsucker Wells

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Running title: Sapsucking Yellow-rumped Warblers

The Yellow-rumped Warbler (*Setophaga coronata*, hereafter YRWA) is one of the most ecologically generalized of the warblers. It feeds primarily on invertebrates, but often switches to fruit during winter (Hunt and Flaspohler 2020), utilizing a wide array of foraging maneuvers (Bent 1953, MacArthur 1958, Morse 1968, Morse 1989). It also uses a variety of foraging substrates (Bent 1953), including ice (McNicholl and Goossen 1980) and ocean water (Kunkle 1963). The YRWA is known to use bird feeders when wax myrtle berries are scarce (Stoddard 1978). Wintering YRWA in Chiapas, Mexico, are known to protect territories including oaks with infestations of homopterans, from which they collect honeydew (Greenberg *et al*. 1993).

Published reports of YRWA taking sap from sapsucker wells are rare. Stoddard (1978) reported an occurrence in Grady Co., Georgia, and Schmitt (2011) observed a YRWA tapping fresh wells created by a Red-naped Sapsucker (*Sphyrapicus nuchalis*) in Kern Co., California. On 24 December 2020, a photograph of the phenomenon from Carmel (Monterey Co.), California, was uploaded online (Tisdale 2020).

On 4 February 2007, RT observed a YRWA sipping sap from wells made by a Yellow-bellied Sapsucker (*Sphyrapicus varius*) in his yard near Arkadelphia (Clark Co.), Arkansas. The bird moved up a series of sapsucker holes on a silver maple (*Acer saccharinum*). It paused at each hole, stared at it, then pushed its beak into the center of the hole, almost burying its beak in the process. It stayed a moment, withdrew, then proceeded to the next hole and repeated the behavior. After getting a photograph of the behavior (Fig. 1), RT used a ladder to closely examine the holes (used and unused by the warbler), and found no arthropods, ensuring that the bird was indeed sipping sap and not pursuing insects attracted by sap.

On 6 February 2022, RK observed a Yellow-bellied Sapsucker drilling holes on the trunk of a Sugar Maple tree (*Acer saccharum*) in his yard in Fort Smith (Sebastian Co.), Arkansas. The woodpecker spent several minutes in this activity and then flew away. Shortly thereafter, a YRWA flew in and methodically worked its way from the trunk upwards, stopping to sip sap from the wells. The wells were carefully examined by RK by use of binoculars, but no sign of arthropod activity was noted in or around the holes. The air temperature at that time was 5.5˚C, making it unlikely for arthropods to be active. The sequence of sapsucking behaviors by YRWA was noted again by RK at the same location on 27 February 2022, with a Ruby-crowned Kinglet (*Corthylio calendula*) also sapsucking at the wells.

Fig. 1. Yellow-rumped Warbler feeding from a sapsucker well. Photo by Renn Tumlison.

All 3 of our observations were immediately preceded by extreme cold weather with snow or ice precipitation. Snowfall of 3.8 cm was recorded in the area of the first observation on 2 February 2007. The temperature minimum for the previous night was -8.2˚C and the maximum on 4 February 2007 was -5˚C (Usclimatedata.com 2007). Similarly, the weather in Fort Smith the day before the second observation (5 February 2022) was icy and cold, with a maximum temperature of 5.5˚C and minimum of -8.3˚C. On the day of observation, the low was -3.9˚C, warming to 12.2

˚C (Weather.gov 2022). An ice storm occurred on 2 and 3 February, with precipitations of 14.9 and 12.4 mm, respectively. At the time of the observation, ice remained on the ground and trees. Conditions leading to the 27 February observations were similar to the observations for 6 February – on 24 February, 24.1 mm of precipitation had fallen, high temperature was 0.6˚C and low -3.3˚C; and on 25 February, an additional 2.0 mm of precipitation had fallen, and high temperature was 0.0˚C and low was -6.7˚C. At the time of observation, temperature had warmed to 10.6˚C with some ice remaining on the ground and trees.

The YRWA is among the most cold-tolerant warblers, and its ability to digest wax from bayberries (*Myrica* spp.) gives it the ability to winter farther north than other warblers (Bent 1953, Place and Stiles 1992, Hunt and Flaspohler 2020). Morse (1989) stated that this plasticity may help it survive cold weather events. The fact that all our observations were made during extreme cold weather leads us to hypothesize that opportunistic sapsucking from sapsucker holes may be another strategy employed by the species to meet its nutritional requirements during harsh winters. Also, considering that RK's observation was immediately preceded by the observation of a Yellow-bellied sapsucker on the same tree, it is possible that the warblers may follow sapsuckers in cold weather when insects are scarce, especially in mixed feeding flocks. Vivek Govind Kumar (pers. comm.) reported to us that he saw a Yellow-rumped Warbler following a Yellow-bellied Sapsucker and apparently probing for sap from the woodpecker's freshly excavated wells (date unknown) in Canada.

Further, with the globally declining numbers of insects (Wagner *et al*. 2021), we suggest that similar alternate strategies of obtaining resources may become more common in this and other avian species.

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