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POSSIBLE TOOL USE BY A WILLIAMSON'S SAPSUCKER

ANTHONY J. BRAKE and YVONNE E. MCHUGH, 1201 Brickyard Way, Richmond, California 94801; tonybrake@sbcglobal.net

Tool use has been demonstrated in a number of avian species (Lefebvre et al. 2002). Perhaps the best-known example is the Woodpecker Finch (*Camarhynchus pallidus*) of the Galápagos Islands, which breaks off cactus spines or twigs for use in extracting wood-boring insects (Eibl-Eibesfeldt 1961, Eibl-Eibesfeldt and Sielman 1962, Tebbich et al. 2002). New Caledonian Crows (*Corvus moneduloides*) display exceptional skill in selecting, manufacturing, and utilizing objects to obtain food items that they are otherwise unable to reach (Hunt 1996). In North America, Brown-headed Nuthatches (*Sitta pusilla*) have been observed to use flakes of pine bark to remove other pieces of bark in order to capture insects underneath (Morse 1968, Pranty 1995). All of the above behaviors are considered true tool use in that they involve a tool being held directly by the beak or foot of the bird (Lefebvre et al. 2002). Numerous woodpecker species have been observed to use "anvils" such as tree forks or crevices into which food items are wedged to facilitate consumption (Bondo et al. 2008). Most such cases represent proto-anvils consisting of natural crevices. Great Spotted Woodpeckers (*Dendrocopos major*), however, use "true anvils" that they excavate in tree trunks. Here we report observations of a Williamson's Sapsucker (*Sphyrapicus thyroideus*) using a wood flake for foraging.

We observed this behavior at the Mono Mills Historic Site in Inyo National Forest, approximately 16 km southeast of Lee Vining in Mono County, California. This site is at an elevation of 2240 meters at the northern edge of an extensive forest dominated by Jeffrey pine (*Pinus jeffreyi*). We first visited this site on 14 June 2013 while on a "Birds and Burns" field trip led by Stephen Shunk as part of the 2013 Mono Basin Bird Chautauqua. At that time we observed a pair of Williamson's Sapsuckers attending nestlings in a cavity in a Jeffrey pine approximately 20 meters from the tree on which the following behavior took place.

On 17 June 2013 at approximately 09:30, a male Williamson's Sapsucker landed on the trunk of a Jeffrey pine approximately 10 meters from our observation point and began to move down the trunk while probing the bark. McHugh first noted that this individual was holding a wood flake in its bill and was inserting this flake into the crevices or holes in the bark as it moved up and around the trunk. After slightly over one minute, it flew off toward a more distant tree and then out of our view. We did not see this individual or the female of the pair return during our visit.

During this period, Brake took 55 photographs, nearly one per second, which revealed more details of the observed behavior. In the first few photos taken, the sapsucker was not holding the wood flake. As seen in the upper photo on this issue's outside back cover, the cream-colored wood flake is just below the sapsucker, wedged into a crevice in the bark, possibly cached there after previous use. A few seconds later the sapsucker moved up the trunk, with the wood flake held in its bill (lower photo on this issue's outside back cover). Subsequent photographs show the sapsucker alternately perching on the trunk with the flake resting in a hole or holding the flake in its bill and inserting it into holes or crevices (upper photo on this issue's inside back cover). In the lower photo on this issue's inside back cover, the sapsucker appears to be taking sap into its bill from the wood flake. In photographs taken shortly before the sapsucker flew out of view, the original wood flake appears to have broken, with two pieces visible. We did not see whether the sapsucker retained a piece of the wood

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flake as it flew away. A series of photos showing the entire sequence is at <http://youtu.be/HBbjhvUVHKY>.

These observations and photographs demonstrate that this Williamson's Sapsucker used a wood flake while foraging, although we are uncertain of its utility. When not breeding, Williamson's Sapsuckers feed primarily on sap and phloem (Gyug et al. 2012). While caring for nestlings, they forage primarily for ants to feed the young (Gyug et al. 2014) but continue to feed regularly on sap. In the first week after hatching, the young are fed a bolus of sap and/or ants (Wheelock 1905, Crockett and Hansley 1977). In some photographs the sapsucker appeared to be ingesting sap from the wood flake, which raises the possibility that the wood flake might have been used as a scoop. This would be surprising since sapsucker tongues are quite specialized for obtaining sap from wells the bird excavates. The wood flake would not reach any farther than its tongue. Another possible explanation is that it used the wood flake to crush ants in sap for consumption, just as Red-naped Sapsuckers (*S. nuchalis*) sometimes crush prey items before feeding them to their young (Wible 1960). Additionally, Red-headed Woodpeckers (*Melanerpes erythrocephalus*) have been observed to use pieces of bark to cover food stores such as acorns cached in the bark of trees (Kilham 1958). Although the wood flake used by this sapsucker was wedged in a crevice the bird subsequently probed, the flake did not completely block this hole, so it is unlikely that it was used to cover a sap well or food cache. The holes probed by the sapsucker did not appear to resemble the usual pattern of sap wells seen in other types of conifers (Gyug et al. 2009). The forest where these observations were made is composed almost entirely of Jeffrey pine. Differences in the bark structure of these trees might be responsible for the different pattern. Alternatively, the fact that these holes were spaced quite sparsely and irregularly could mean they were not sap wells but the result of probing for invertebrates.

A search of the area of these observations yielded numerous wood flakes of a similar size, but none matching the appearance of the flake in the photographs. This raises the question of whether the wood flake occurred naturally, or whether this sapsucker modified a piece of bark or other wood to use in foraging.

We found no literature references to reports of tool use by Williamson's Sapsucker. This may be a rare or localized behavior. Tool use by the Brown-headed Nuthatch was first suggested to be highly localized, but subsequent observations at other locations demonstrated that it was more widespread than initially thought. Further observations of Williamson's Sapsucker should focus on looking for tool use to determine whether it recurs at the same location and whether it occurs elsewhere.

Stephen A. Shunk showed us the location of the Williamson's Sapsucker nest and encouraged us to publish these photos and observations. Ann Ruffer was present during these observations. Les Gyug critically reviewed the manuscript.

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“Featured Photos” by © Anthony J. Brake of Richmond, California: Williamson’s Sapsucker (*Sphyrapicus thyroideus*) approaching a flake of wood wedged in a bark crevice (top) and carrying the flake toward a sap well (bottom)—implying making and use of a tool. Inyo National Forest, Mono County, California, 17 June 2013.