Anthropogenic Conditioning of Gray Jays to a Nutritious, Seasonal Aquatic Food Source

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Gray Jays (*Perisoreus canadensis*) readily learn that humans can be excellent sources of food (e.g. Rutter 1969) and therefore are common in many picnic areas, campgrounds and other areas frequented by humans in the Rocky Mountains. Besides rapid recognition of humans as sources of food, Gray Jays also do not appear to readily forget a discovered food source (e.g. Rutter 1969). Gray Jays also optimize food selection on the basis of caloric intake and the effort required to identify and handle the food items (Maccarone and Montevecchi 1986) again, making places such as picnic areas, campgrounds and other human-frequented areas optimal places to forage.

Such is the case at the Sprague Lake picnic area in Rocky Mountain National Park, Colorado. This is a popular and frequented picnic site where Gray Jays are abundant and bold in seeking human food. As its name implies, this picnic ground is located near Sprague Lake, with the lake's inlet stream running adjacent to the picnic ground. It is here that we observed Gray Jays conditioning to another human-enabled, but aquatic, food source.

Fig. 1. A Gray Jay picks up eggs released from a female brook trout when handled by a fisherman for hook removal in October 2010. Photo by C. Wiloth

During the fall there is a spawn run of non-native brook trout (*Salvelinus fontinalis*) from Sprague Lake into the inlet creek beside the picnic ground. At this time the spawning fish are targeted and readily caught by fishermen. Many of the ripe females are bulging with eggs and often release varying amounts of eggs when handled by fishermen for hook removal or even just through struggling at the end of the line. Gray Jays apparently have learned these eggs are a food source and have developed the behavior of following fishermen, or waiting nearby a fisherman, and then quickly moving in to pick up eggs when released from a captured fish. We first observed this behavior in October 2010 (Fig. 1) and we subsequently observed it during the brook trout spawn runs in 2011 and 2012 (Fig. 2). Given the Gray Jay's quick recognition of a novel food source, that the Gray Jays around the picnic area are already conditioned to seeking food from humans and that Gray Jays optimize foraging according to effort and caloric intake, it is not surprising that they learned to follow fishermen as an efficient means to scavenge a nutritious protein-rich food source that otherwise would not be available to them.

We also observed other birds consuming brook trout eggs during the spawn runs from 2010 - 2012. The stream sections where many of the spawning redds (nests) are located are very clear and shallow (often only 15-25 cm in depth) making it easy to observe Mallards (*Anas platyrhynchos*) and American Dippers (*Cinclus mexicanus*) foraging in the redds. Yet only the Gray Jays appear conditioned to follow fisherman in wait of a fish egg reward. This behavior can only occur during the fall brook trout spawn run as there are no spring or summer spawning species at Sprague Lake.

The situation, not unexpectedly, was much different in 2013. A visit to Sprague Lake on 2 Sept. 2013 showed the vanguard of the brook trout spawn run entering the stream, but actual spawning activity had not yet begun. During the week beginning 9 Sept., the Estes Park/Rocky Mountain National Park area experienced consecutive days of heavy rains leading to significant flooding on all streams regionally. Floods destroyed the primary access routes to Rocky Mountain Park. Subsequent to the flood damage, the park was closed for nearly two weeks in early Oct. due to a lapse government funding. Observations at Sprague Lake were again made on 18 Oct. The stream had obvious impacts from the flooding, but a large number of brook trout were in the stream and spawning. Undoubtedly, the flooding had scoured the stream of any eggs laid prior to the rains and probably delayed spawning fish from entering the stream. The flood effects coupled with the park closure meant that the Sprague Lake picnic area had few if any visitors. Thus, the attraction to anthro-

pogenic food sources at the picnic ground vanished, including trout eggs released during the capture of spawning brook trout. No Gray Jays were observed during the brief visit to the picnic ground nor were they seen in conjunction with the lone fisherman at the stream, although captured female trout were releasing eggs when handled for hook release. Dried eggs from a previous day were observed on the bank, something never observed in the three previous years, as Gray Jays, or possibly other animals would rapidly consume them. Another visit to the location was made on 14 Nov. 2013. There were only a few spawning brook trout remaining and just one fisherman was present and no Gray Jays were observed. It will be interesting to observe the behavior of Gray Jays during the 2014 spawn run to see if they once again follow fishermen, opportunistically feeding on trout eggs.

LITERATURE CITED

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Fig. 2. A Gray Jay holds a brook trout egg in its mouth after being released from a female brook trout when handled by a fisherman for hook removal in November 2012. Photo by R. Engeman