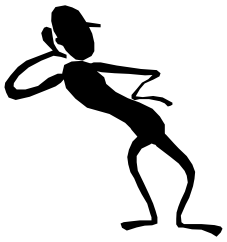

ScienceWatch – Listening to Others

"A previously unsuspected level of discrimination in interspecific eavesdropping"

Black-capped chickadees (*Poecile atricapilla*) have one of the most sophisticated alarm calls in the avian world. The chickadee, in fact, has two alarm calls: a soft, high-pitched *seet* call and the louder *chick-a-*dee. The *seet* call is used to warn others of predators flying overhead, while the *chick-a-dee* call is not only used to identify flockmates, but is also a warning of stationary predators and a mobbing call that recruits other chickadees (and other species) to harass a perched predator.

In 2005 Christopher Templeton, from the University of Washington, Seattle, WA, showed that the *chick-a-dee* mobbing call communicates predator size to other chickadees. Smaller predators, such as the northern pygmy owl (*Glaucidium gnoma*) illicit more *dees* than larger ones, such as the great horned owl (*Bubo virginianus*), and chickadees exhibit more intense mobbing behavior when they hear a call with more *dees*. Since smaller predators are more maneuverable, and therefore more dangerous to chickadees than larger ones, this system makes great survival sense for chickadees -*see - Sciencewatch – Chickadee Chatter* (September 2005) or at www.hras.org.

Now Templeton has extended his findings to show that the red-breasted nuthatch (*Sitta canadensis*), which co-occurs with chickadees, listens and responds to these signals in the same way. Writing in the March 27, 2007 issue of the *Proceedings of the National Academy of Sciences*, Templeton and Erick Greene of the University of Montana, Missoula, MT, tested whether red-breasted nuthatches could discriminate among different pre-recorded *chick-a-dee* calls. The chickadee alarm calls were recorded in response to the presence of a live pygmy owl (high threat, five *dee* notes) or a live great horned owl (low threat, two *dee* notes) or a live house sparrow (*Passer domesticus*) as a control (less than two *dee* notes).The calls were then played back from a speaker placed at the base of a tree to pairs of wild nuthatches in the field.

Overall the nuthatches responded more strongly to the chickadee mobbing call generated by the smaller predator than by the larger one. In 13 separate trials, and in the absence of chickadees, nuthatch pairs were more likely to exhibit mobbing behavior in response to the small-predator alarm call vs. the large-predator alarm call as measured in several ways. They approached the speaker more often (92% vs. 69%). They were twice as likely to fly to the tree with the speaker and twice as likely to exhibit agitation (wing flick displays). Nuthatch pairs were also more likely to do their own vocalizing in response to the small-predator alarm call (91%) vs. the large-predator-alarm call (65%). In all these tests the response rate to the control was much lower at about 25%.

Red-breasted nuthatches are similar in size to chickadees and are commonly found in mixed flocks with them throughout the northern United States and Canada, especially in winter. Therefore, they are attacked by the same animals that prey on chickadees, and eavesdropping on their noisy neighbors who are sentinels of the forest makes a lot of sense. Many other species respond to the chickadee's mobbing call, but the nuthatch has learned to decode the nuances of the alarm system and exhibits a greater mobbing response toward the more dangerous predators. According to Templeton and Greene, this selective response of the nuthatch may help it to conserve energy during the winter months. Whatever the reason, nuthatches are apparently able to do what many of us cannot-learn a foreign language.

Saul Scheinbach