

# Birds 'weigh' peanuts and choose heavier ones

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Mexican Jays (*Aphelocoma wollweberi*) handling peanut pods appear to evaluate the pod content by 'weighing' the pods and by 'listening to' them. Credit: M. Fuszara

Many animals feed on seeds, acorns or nuts. The common feature of these are that they have shells and there is no direct way to know what's inside. How do the animals know how much and what quality of food is hidden inside? A simple solution would be to break the shells, which often takes time and effort—it would be a big disappointment to know that it's rotten or bad after the hard effort of opening the nuts!

Can animals evaluate the food hidden inside the nuts? This is especially important for some animals who cache the food items for later use without opening and checking each item. We can detect which one is heavier by moving the items up and down several times and focusing on the "feeling of heaviness" we perceive. Humans can also detect the quality of a water melon by knocking on it.

A new study published in *Journal of Ornithology* suggests that some birds can also use similar tricks in choosing the peanuts from the feeder. The study was carried out in Arizona by an international research team from Poland and Korea and revealed that the Mexican Jays (*Aphelocoma wollweberi*) may be able to "weigh" peanuts and maybe even "listen to" peanuts while handling them in their beaks. Drs. Sang-im Lee, Piotr Jablonski, Maciej and Elzbieta Fuszara, the leading researchers in this study, together with their students and helpers, spent many hours delicately opening shells of hundreds of peanuts, changing the contents and then presenting them to the jays in order to see if the birds can figure out the differences in the content of identically looking peanut pods (peanuts in shell).

"When we presented the jays with ten empty and ten full identically looking pods (pods without or with three nuts inside), we noticed that after picking them up the birds rejected the empty ones and accepted the full peanuts, without opening them." says Dr. Sang-im Lee of Seoul National University—the corresponding author of the paper. A series of similar experiments with identically looking normal nuts and nuts that

were 1g heavier (pods with some clay added) confirmed that jays always were able to distinguish and preferred the heavier nuts. How did they know which were empty without opening them? The researchers used slow motion videos to see what happens when the bird is deciding whether to drop or take away the peanut pod. "We found out that birds shake the nuts in their beaks. We think that these movements may provide them with the information generally similar to our feeling of "heaviness" when we handle an object in our hands", says Dr. Jablonski.

In another experiment the researchers prepared one type of peanut pods by opening the shell, removing two out of the three nuts and closing the shell again. The second type of pod was prepared by opening a small pod, which normally contains only one nut, and closing it. Thus, the jays were to choose between nuts of similar content and mass but of different size. "The jays figured out that the larger pods did not weigh as much as they should and the birds preferred the smaller pods, which weighed as expected for their size", comments Dr. Fuszara. They behaved as if they knew that "something is wrong" with the larger nuts.

So how do they know it? When they shake the [nuts](#) in their beaks, the birds produce sounds by opening and closing their beaks around the [peanut](#) shell for brief moments. The researchers think that the jays also take this sound into account. "Our next goal is to disentangle the role of sound relative to the perception of "heaviness", and to determine if [jays](#) use the same sensory cues for acorns—their natural food", conclude Dr. Lee and Dr. Jablonski.

**More information:** Jablonski PG, Lee SI, Fuszara E, Fuszara M, Jeong C., Lee WY. 2005. Proximate mechanisms of detecting nut properties in a wild population of Mexican Jays (*Aphelocoma ultramarina*). *Journal of Ornithology*, [DOI: 10.1007/s10336-015-1193-6](https://doi.org/10.1007/s10336-015-1193-6)

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