



# FrontiersEcoPics

## Too big to fit

Passerine birds disperse the seeds of many fruiting plants, but are limited in the size of the fruits and seeds they can swallow. In these pictures, taken in Tapiraí, Brazil, we see a rufous-bellied thrush (*Turdus rufiventris*) and a yellow-legged thrush (*Turdus flavipes*) attempting to swallow a berry of the palm *Euterpe edulis*, a keystone plant species in the Atlantic Forest. The fruits of *E. edulis* are consumed by dozens of frugivore species, from medium-sized passerine birds, such as thrushes, to toucans and guans, which have wider gape sizes and can swallow and disperse seeds with a broad range of sizes. Gape limitation imposes a selective pressure on the size of seeds that is only

counteracted in areas where larger-sized frugivores occur. The ongoing extirpation of large-sized frugivores due to hunting and habitat loss has generated a size-selective change in frugivore assemblages, creating an evolutionary trend of decreasing seed sizes in *E. edulis* (Science 2013; doi.org/10.1126/science.1233774). Smaller seeds have fewer nutrient supplies in the endosperm and are more vulnerable to desiccation, so the evolution toward smaller seeds may affect long-term persistence of populations. Also, because small fruits have less pulp than large ones, they are less rewarding for large-bodied frugivores, which could result in feedbacks between plant and bird fitness. The generality of these evolutionary consequences of defaunation on plant traits is still an open question.

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doi:10.1002/fee.2248



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