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Risk Assessment and Flight Decisions in Adult versus Juvenile Squirrels (Sciurus carolinensis)

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Risk assessment and flight decisions in adult versus juvenile squirrels (*Sciurus carolinensis*)

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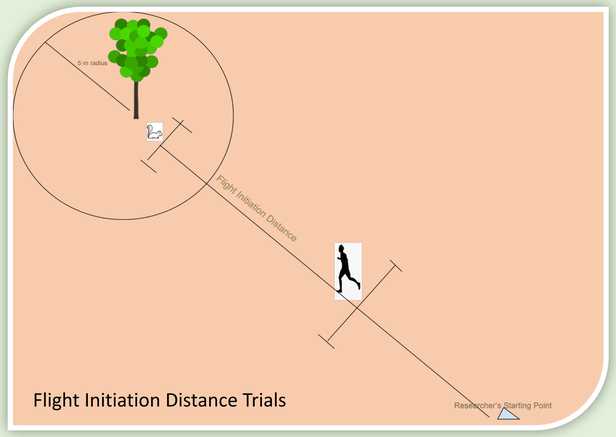
Introduction

When chased by predators, juveniles of most species generally flee to a refuge earlier than do adults because they are more vulnerable. Flight Initiation Distance (FID) is the distance between the prey and predator when the prey initiates flight.

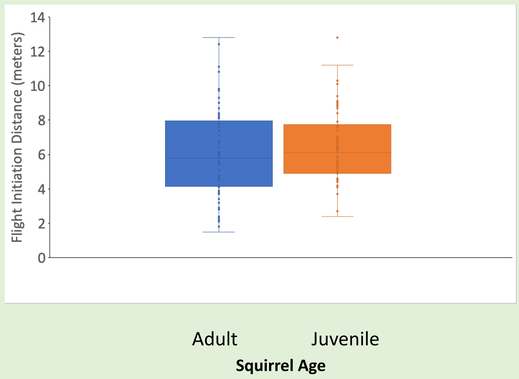
FID is thus typically longer for juveniles across many species, including Eastern Grey Squirrels (*Sciurus carolinensis*). However, our observations suggested this might not always be the case.

We used a human to simulate a predator and tested FID of juvenile vs adult squirrels on an urban campus, and we found something new.



How we ran the trials:

- We identified juvenile squirrels versus adults by body size, tail length/tapering, coat thickness.
- For each trial, an adult human male approached a squirrel at a very fast walk (2 strides/sec). He dropped a rock when the squirrel fled to the refuge to mark FID. We measured the squirrel's initial distance to refuge, FID, and initial distance of researcher to squirrel.
- We selected squirrels that were within 5 meters of refuges to reduce variability and selection of more distant refuges. and also because a more equal distribution of juveniles and adults could be found within 5 meters. We avoided chasing squirrels on walkways where they might be more accustomed to human activity.



Flight Initiation Distance Results

There was no significant difference in FID between adult and juvenile squirrels (Mean juvenile FID = 6.53; mean adult FID = 6.08)

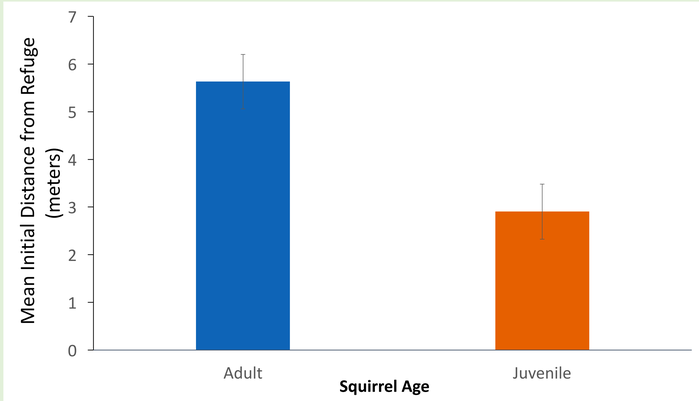
Since adult and juvenile squirrels did not differ in FID, how do juvenile squirrels avoid predation?

VS.

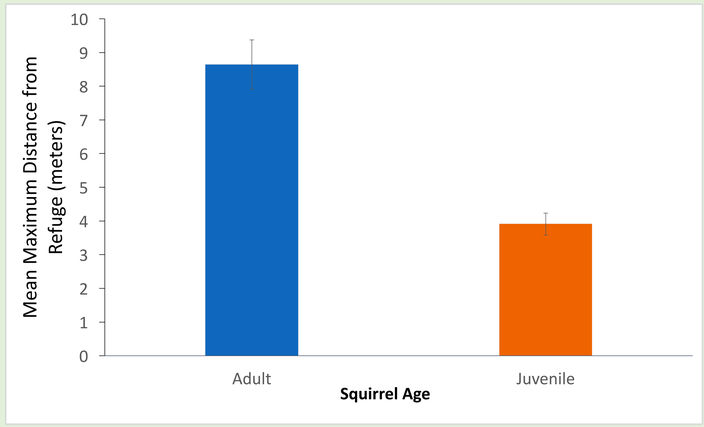
We hypothesized that juvenile squirrels might reduce predation risk by staying closer to refuges (trees or shrubs).

Methods: We recorded adult and juvenile squirrel distances from refuges (trees) for 2:00 minute focal samples. We logged their initial, minimum, and maximum distances from the refuge. Here is what we found:

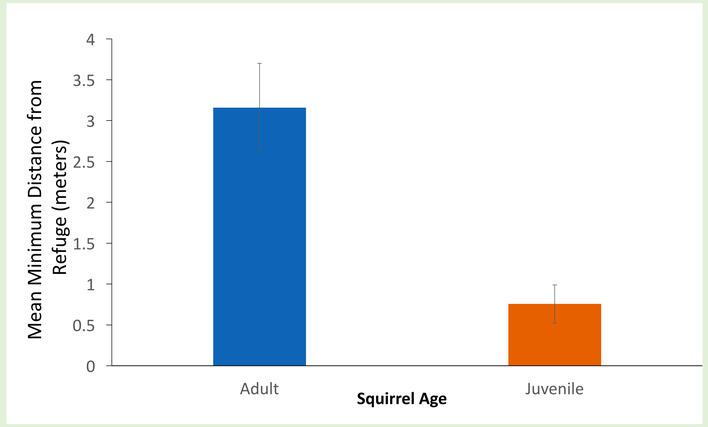
When first sighted, juveniles were closer to a refuge than were adults. On average, adults were 5.6 (± 0.6) m from a tree, but juveniles were 2.9 (± 0.6) m from the nearest tree.



Juveniles also ventured less far from a refuge over the two-minute sample. On average, adults went a maximum of 8.6 (± 0.7) meters from the nearest tree, but juveniles went only 3.9 (± 0.32) meters.



Finally, juveniles approached a refuge more closely during the two-minute sample. On average, at their closest approach adults were 3.2 (± .5) meters from the nearest tree, but juveniles were only 0.8 (±.2) meters from a tree.



Conclusions:

- Juveniles and adult squirrels did not differ in their flight initiation distance, which is the opposite of most species' behavior.
- Juveniles may compensate for their vulnerability to predators by foraging close to their refuge instead of having a greater FID, as is common in many species.
- The distance animals venture from their refuges may be a good metric for assessing individuals' perceived predation risk, and this new variable should be investigated in other vertebrate species.