

Effects of seasonal changes in food availability on the
diet of *Anolis cristatellus* and *A. krugi* at two karst
forests at northern Puerto Rico

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Anolis Genera

- One of the largest genera of vertebrates of the world, nearly half of the species occurring on Caribbean islands (Roughgarden 1995; Losos 2009).
- On Caribbean islands, anoles lizards exist at high density and are a major component of diurnal communities (Williams 1969; Losos 2009).





The natural history of *Anolis* lizards is well studied; however, information regarding their feeding habits and trophic ecology remains incomplete and consequently the knowledge about their role in ecosystem function and dynamics (Losos 2009).

Historically, the genus *Anolis* has been considered as insectivorous; however, this assumption is changing as evidence from dietary studies favors an omnivory-feeding mode.

J. Zool., Lond. (2002) **257**, 487–517 © 2002 The Zoological Society of London Printed in the United Kingdom DOI 10.1017/S0952836902001085

Distribution, extent, and evolution of plant consumption by lizards

A. Herrel · B. Vanhooydonck · R. Joachim ·
D. J. Irschick

Frugivory in polychrotid lizards: effects of body size

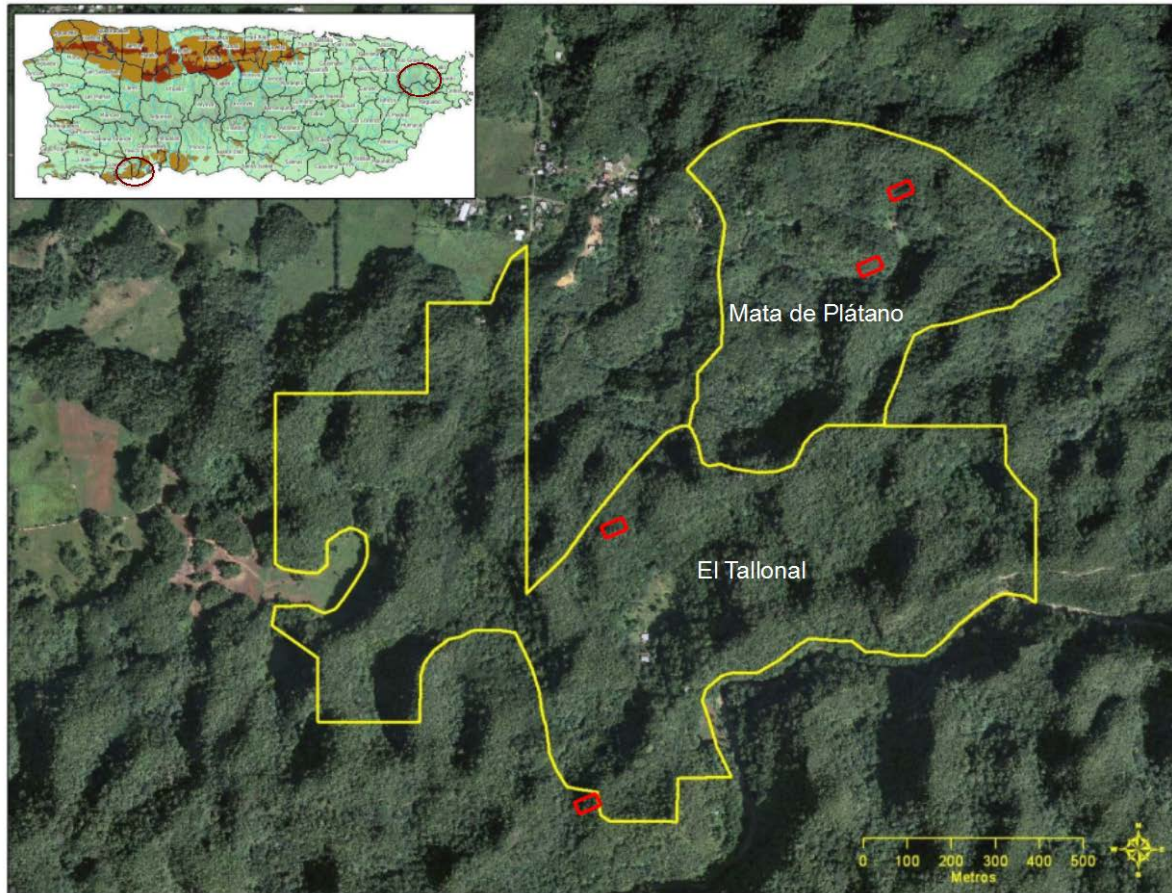
ANOLIS SPECIES. FRUGIVORY. Frugivory has been reported for more than 200 species of lizards (Valido and Olesen 2007. In A. J. Dennis, E. W. Schupp, R. A. Green, and D. A. Westcott [eds.], *Seed Dispersal: Theory and its Application in a Changing World*. CAB



Colón Archilla

Objective: To determine the annual dynamics of omnivory in *Anolis cristatellus* and *Anolis krugi* at two secondary karst forest on northern Puerto Rico, utilizing stable isotopes (^{13}C and ^{15}N) techniques.

Mata de Plátano and *El Tallonal*: two private natural reserves located in the municipality of Arecibo, characterized by forests at different successional stages: *El Tallonal*, *Mata de Plátano*

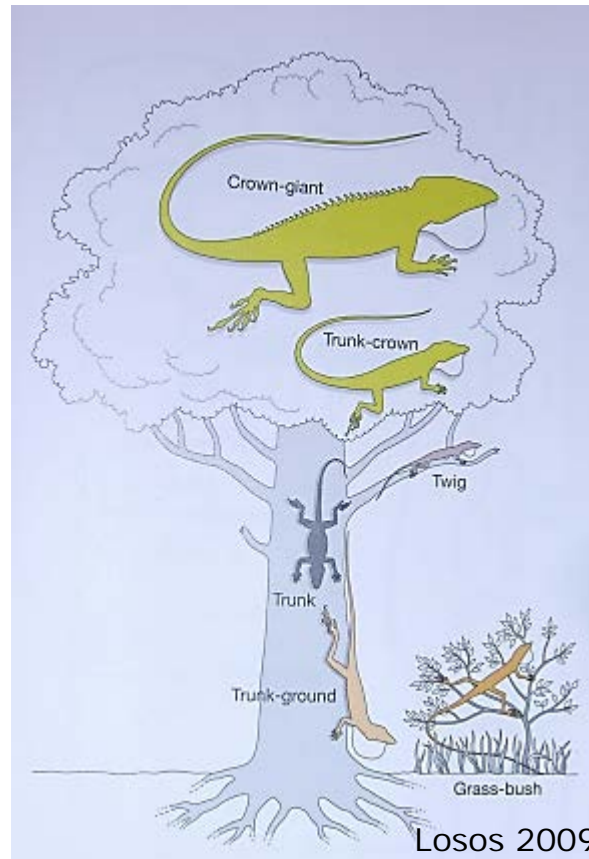


Focal species

Anolis cristatellus



Trunk-ground ecomorph



Anolis krugi



Grass-bush ecomorph

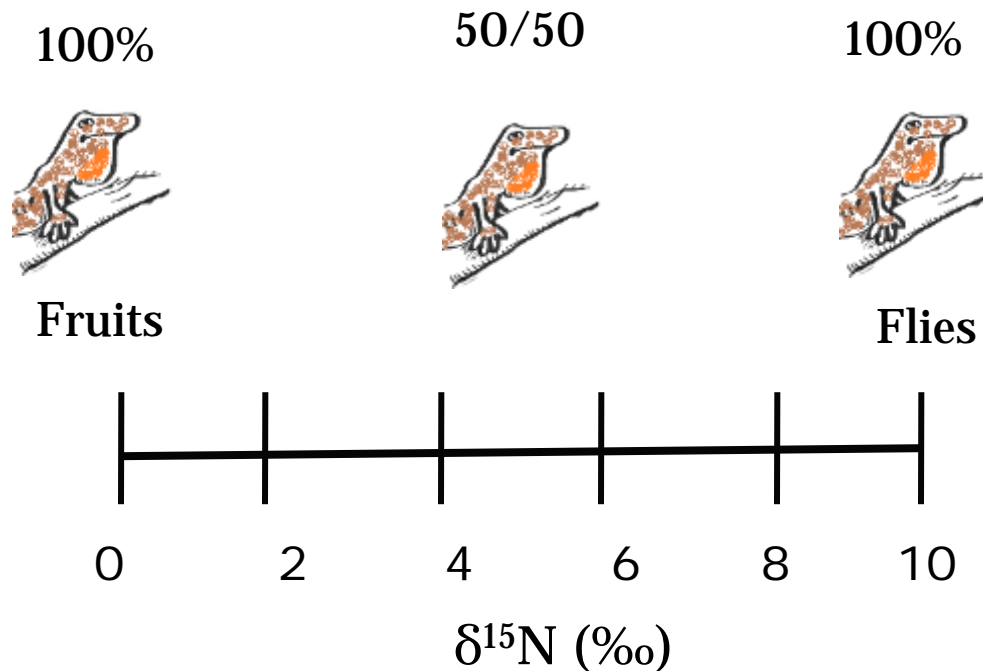
Stable Isotope Analysis (SIA)

Analytical tool that allows track elemental cycling and energy flow from primary producers to consumers.



- More *light* isotopes are used in chemical reactions within the body and therefore excreted as waste.
- More *heavy* isotopes become incorporated into muscle tissues, thus the isotope ratio of tissues becomes *heavier* than the food items.

Stable isotope analysis is based in the relationship between stable isotope ratios of organism and those of their diets, representing assimilation rather than ingested food.



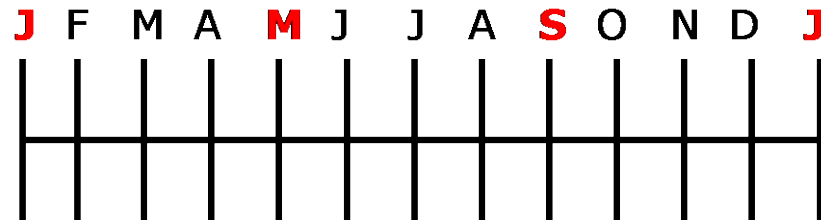
“You are what you eat...”

Egger and Jones 2000

Methods

In reptiles, the isotopic signature of muscle tissue reflects the diet of the last 4 to 7 months (Seminoff et al. 2007).

- Lizards were captured every four months



SIA: collection and processing of lizard tissue, fleshy fruits and potential preys



$\delta^{15}\text{N}$



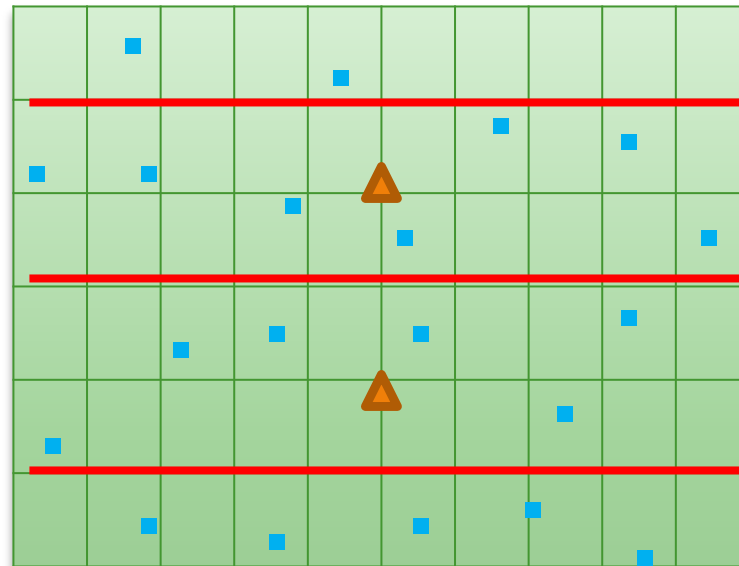
$\delta^{13}\text{C}$

University of Miami
Dr. Leonel Sternberg Lab.

Monthly estimates of prey abundance-grouped based on anole muscle sampling period.

Three different trapping methods:

- Malaise traps
- Leaf litter collection
- Sweep-net



Monthly phenology of plants producers of fleshy fruits

Plant species

MP

Anthurium crenatum
Casearia guianensis
Casearia sylvestris
Clusia rosea
Cordia laevigata
Eugenia ligustrina
Eugenia pseudopsidium
Faramea occidentalis
Ficus sp.
Spondias mombins

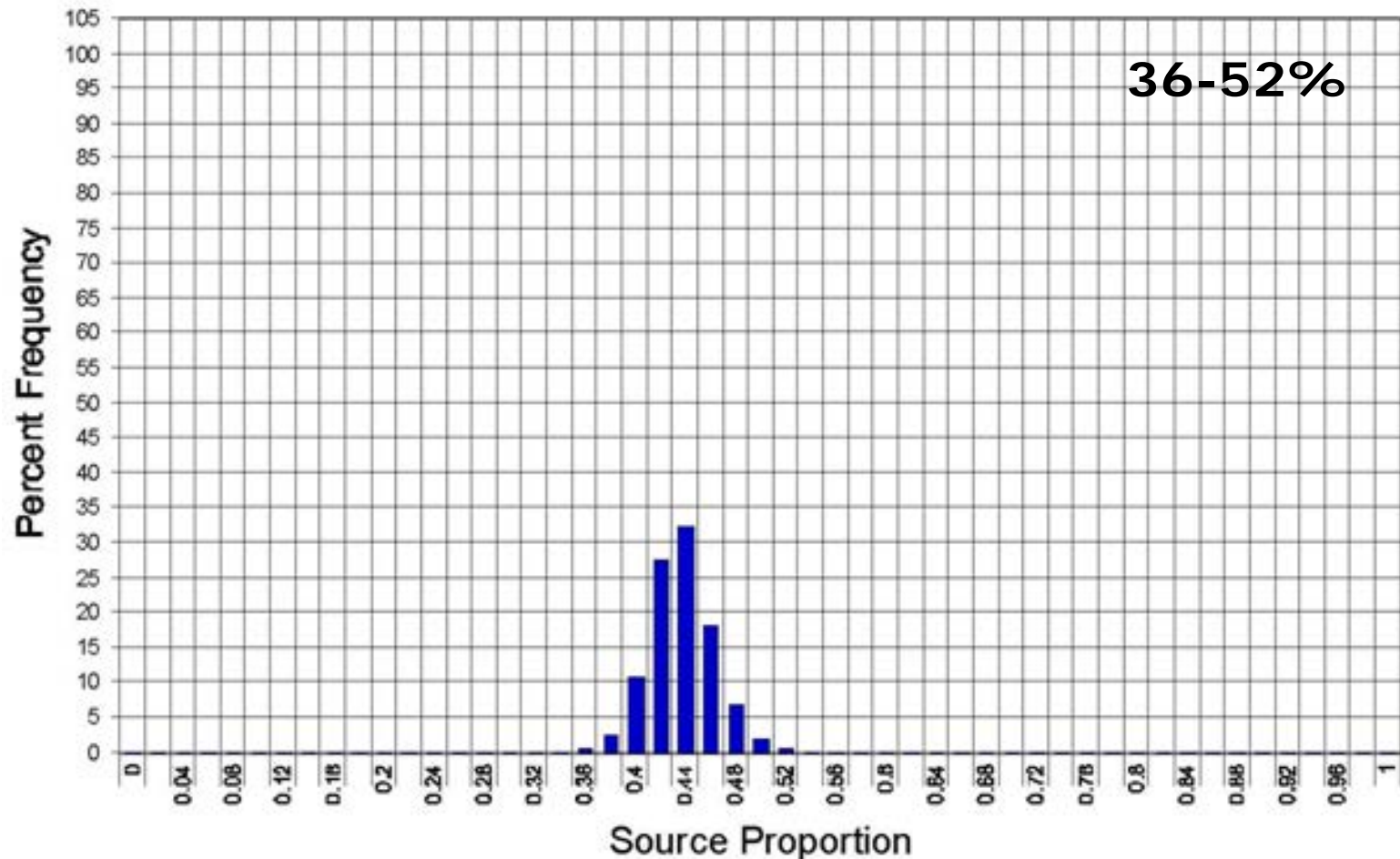


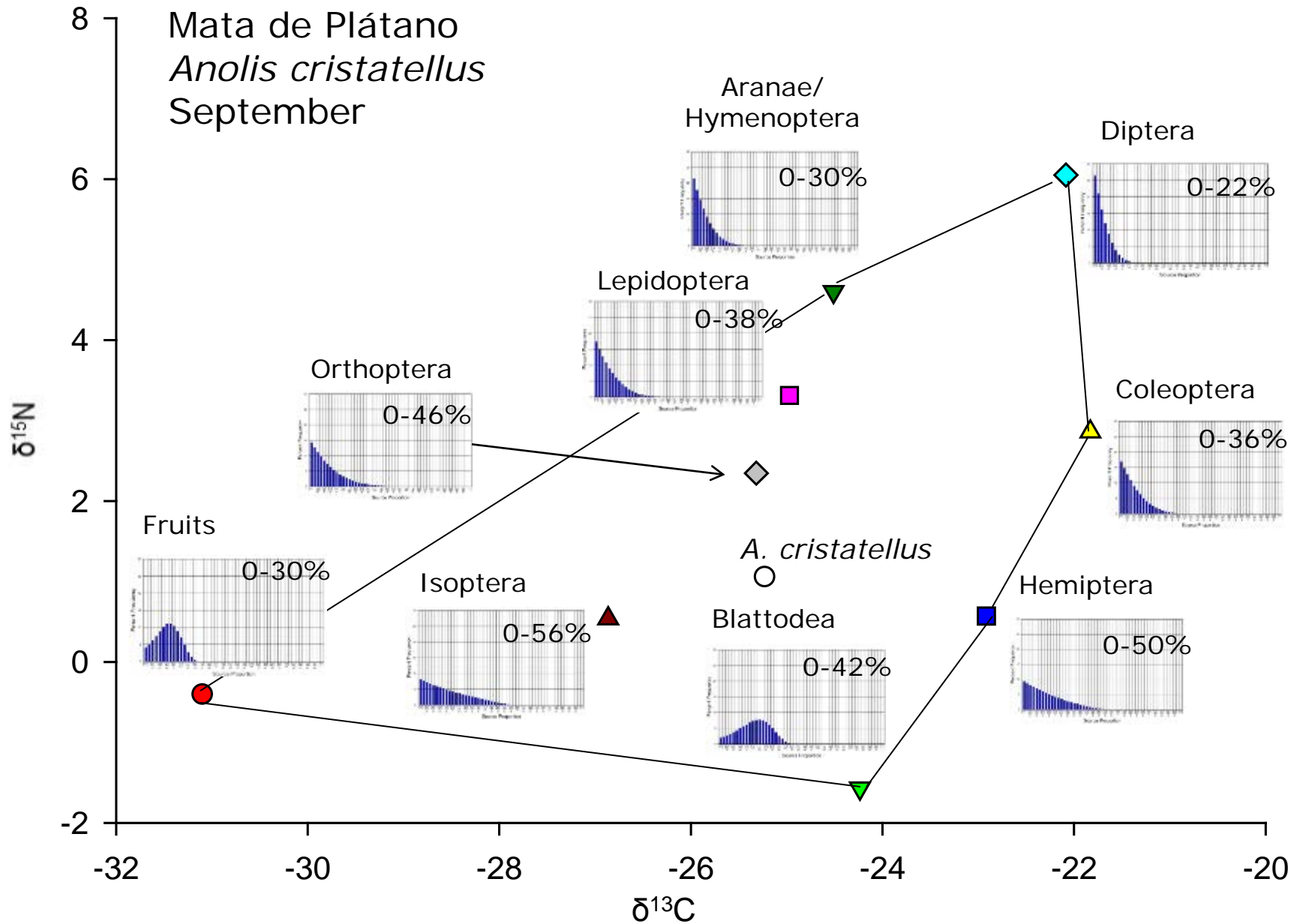
ET

Casearia guianensis
Casearia sylvestris
Castilla elástica
Clusia rosea
Coccoloba pyrifolia
Eugenia ligustrina
Eugenia pseudopsidium
Gyminda latifolia
Roystonea borinquena
Spondias mombins



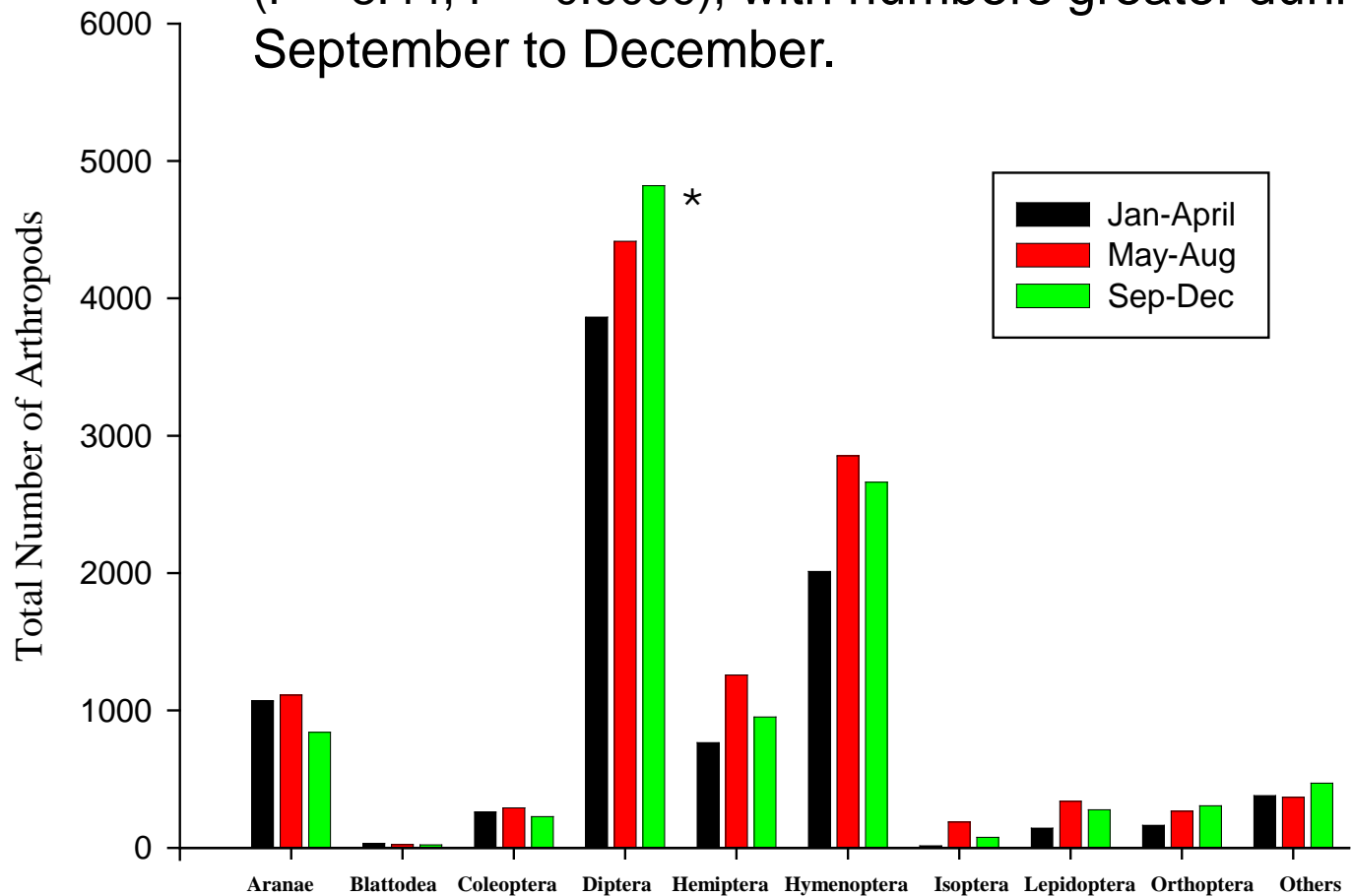
- *IsoSource* as source-partitioning model (Phillips and Gregg 2003) to evaluate the fractional contribution of sources to the diet of anoles.



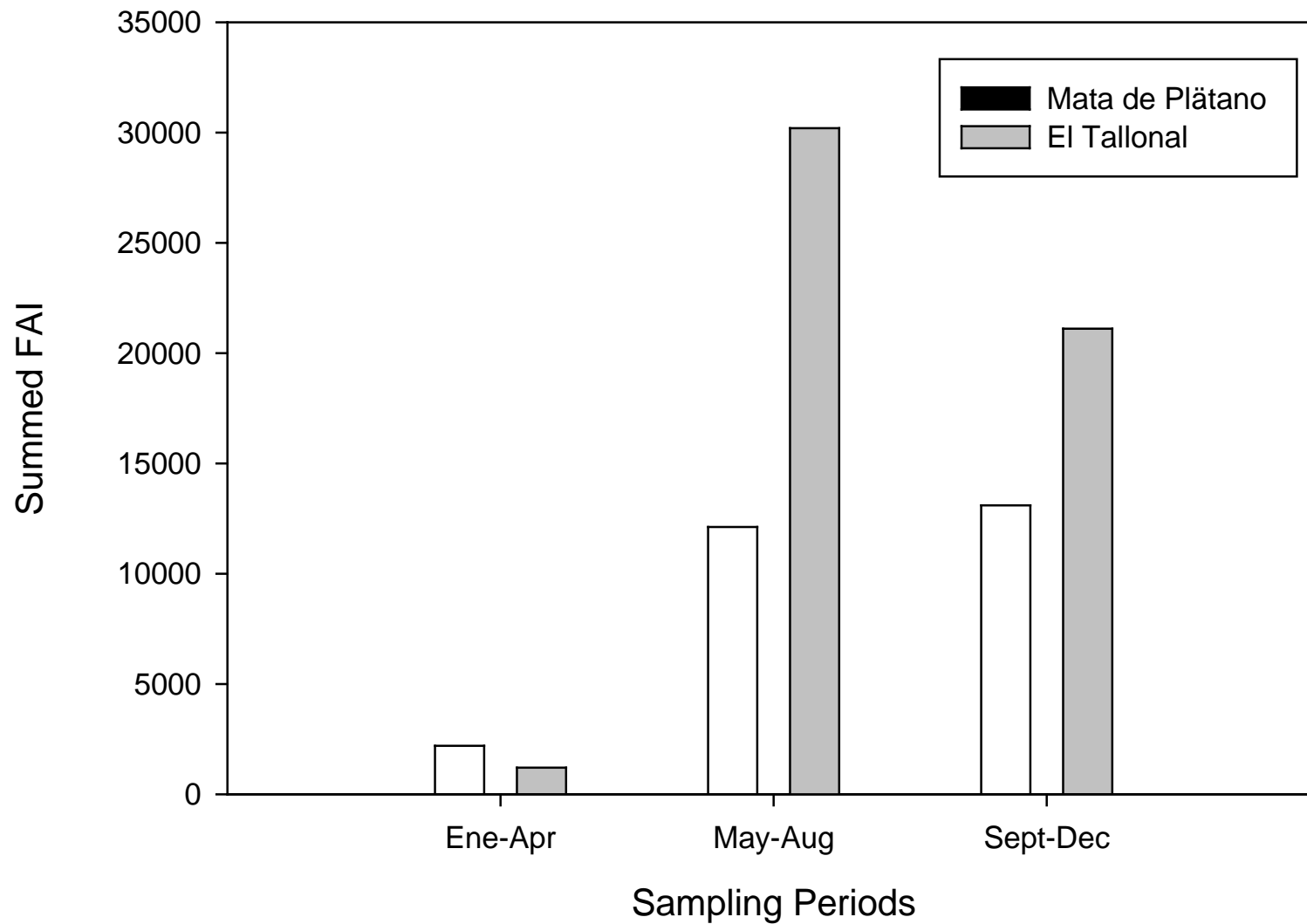


Results

Seasonal significant difference on prey abundance ($F = 8.44$, $P = 0.0009$), with numbers greater during September to December.

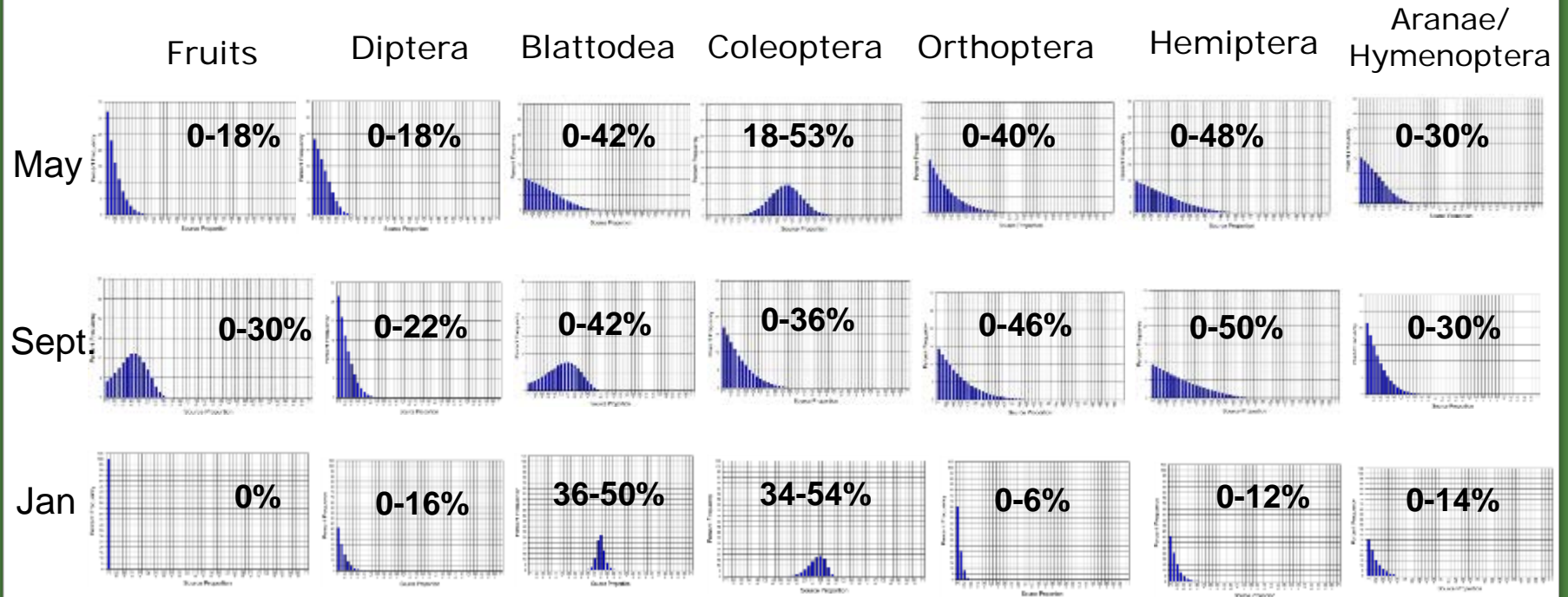


Phenology of fleshy fruits plants



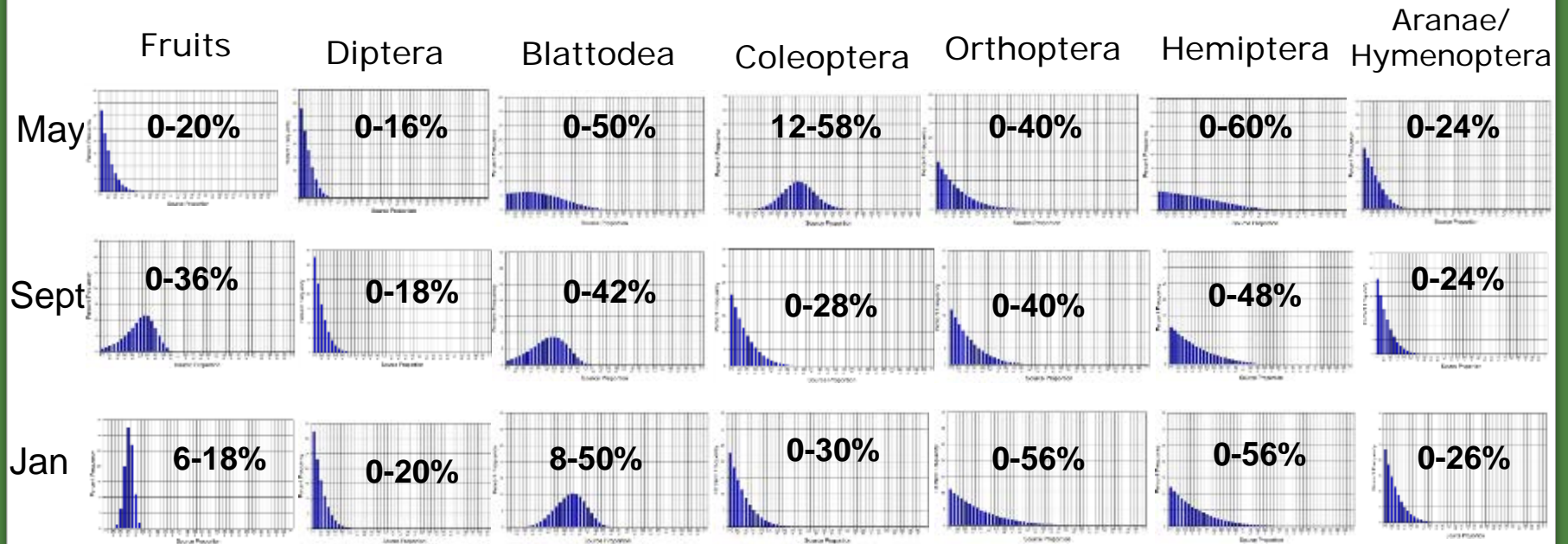
Mata de Plátano

Anolis cristatellus



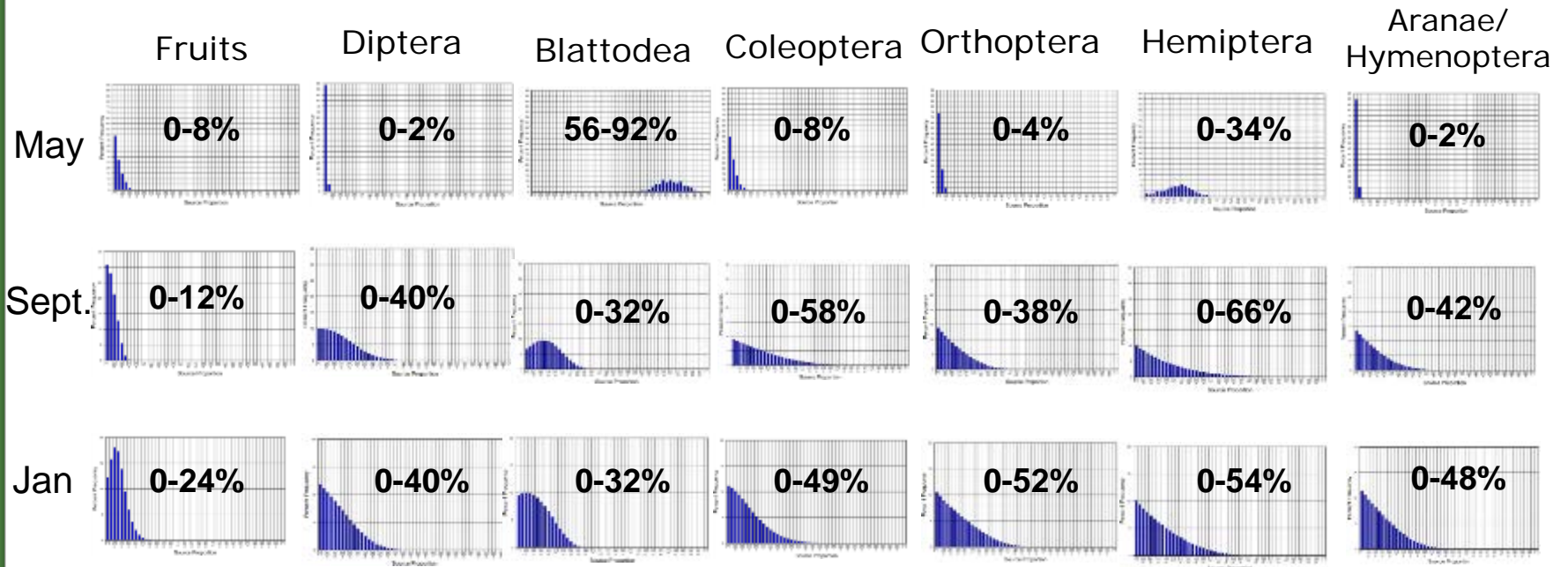
Mata de Plátano

Anolis krugi

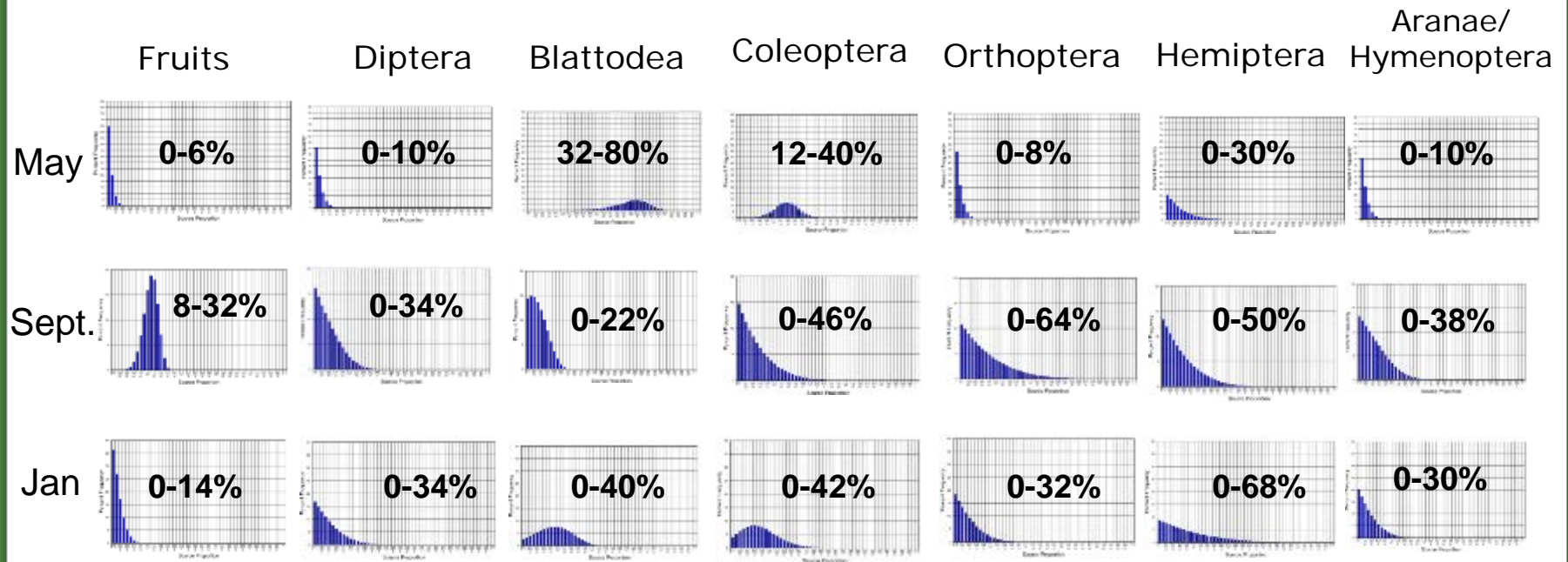


El Tallonal

Anolis cristatellus



El Tallonal *Anolis krugi*



In conclusion:

- Isotopic models suggest a broad diet with predominance of certain preys in different periods.
- *A. cristatellus* and *A. krugi* incorporate to the diet a great variety of preys, in some case, apparently, independently of its abundance.
- Fruits seem to be particularly important for *A. krugi*, species that showed the lowest trophic position (2.34).
- Detailed studies are needed to better understand the importance of fleshy fruits as an alimentary resource for this anole species.

¡Gracias!



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