

# Evolution of Island *Anolis* Lizards

---

BY: BRITNEY NAKHAMMOUANE

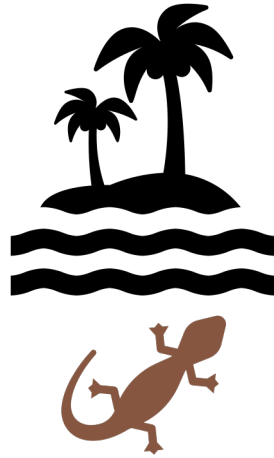


# What are *Anolis* Lizards?



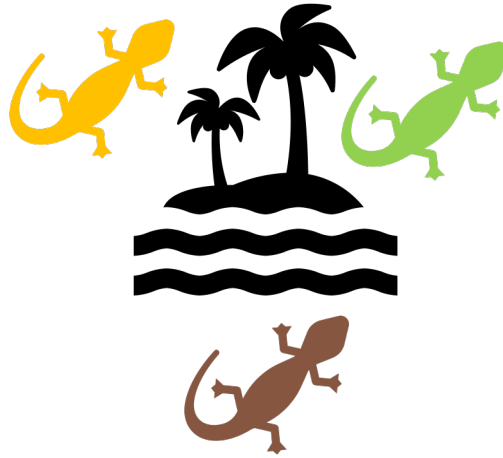
# Evolution

---



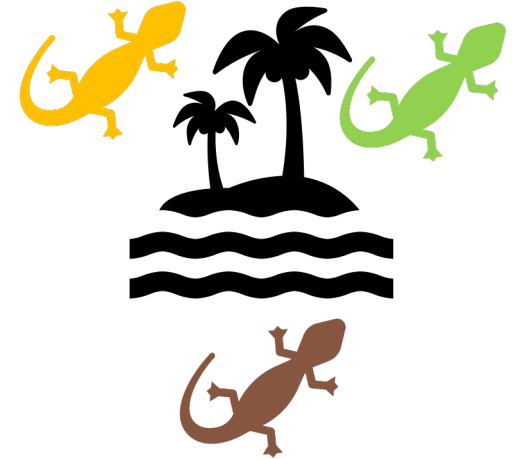
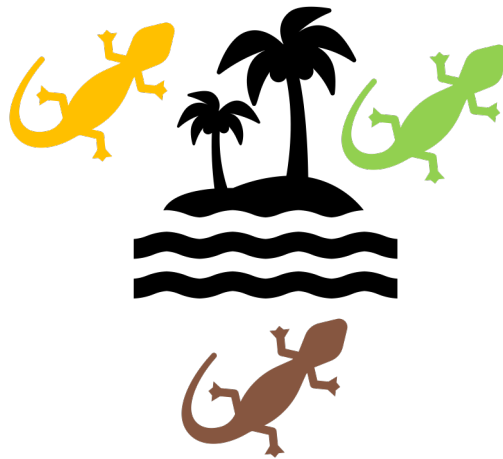
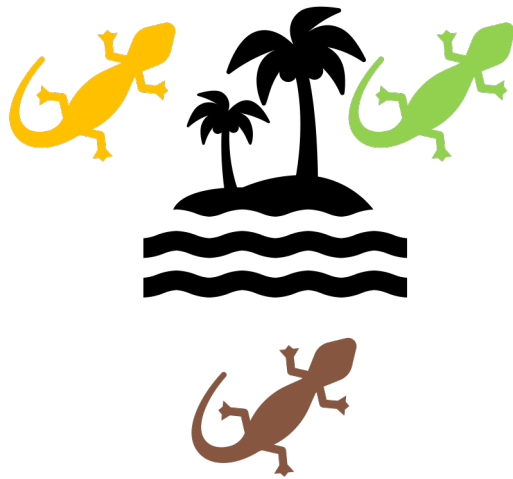
# Evolution

---



# Evolution

---



# Adaptive Radiation

When an ancestral species diversifies and produces offsprings that are adapted to a wide variety of different ecological niches

# The Process of Adaptive Radiation

---

1. Competition among species
2. Shift in habitat
3. Each species adapt to their new habitat



# Competition Among Similar Anoles

---



*Anolis gingivinus*



*Anolis wattsi pogus*



# Competition Among Similar Anoles

---



*Anolis bimaculatus*



*Anolis wattsi schwartzi*

# Shift in Habitat from Resource Partitioning

---



# Adapting for Better Performance

---



Dense, clustered of perches  
with small diameters



Intermediate conditions



Wide, separated surfaces

# Convergent Evolution

When species unrelated  
genetically have evolved  
similar morphological  
characteristics  
independently

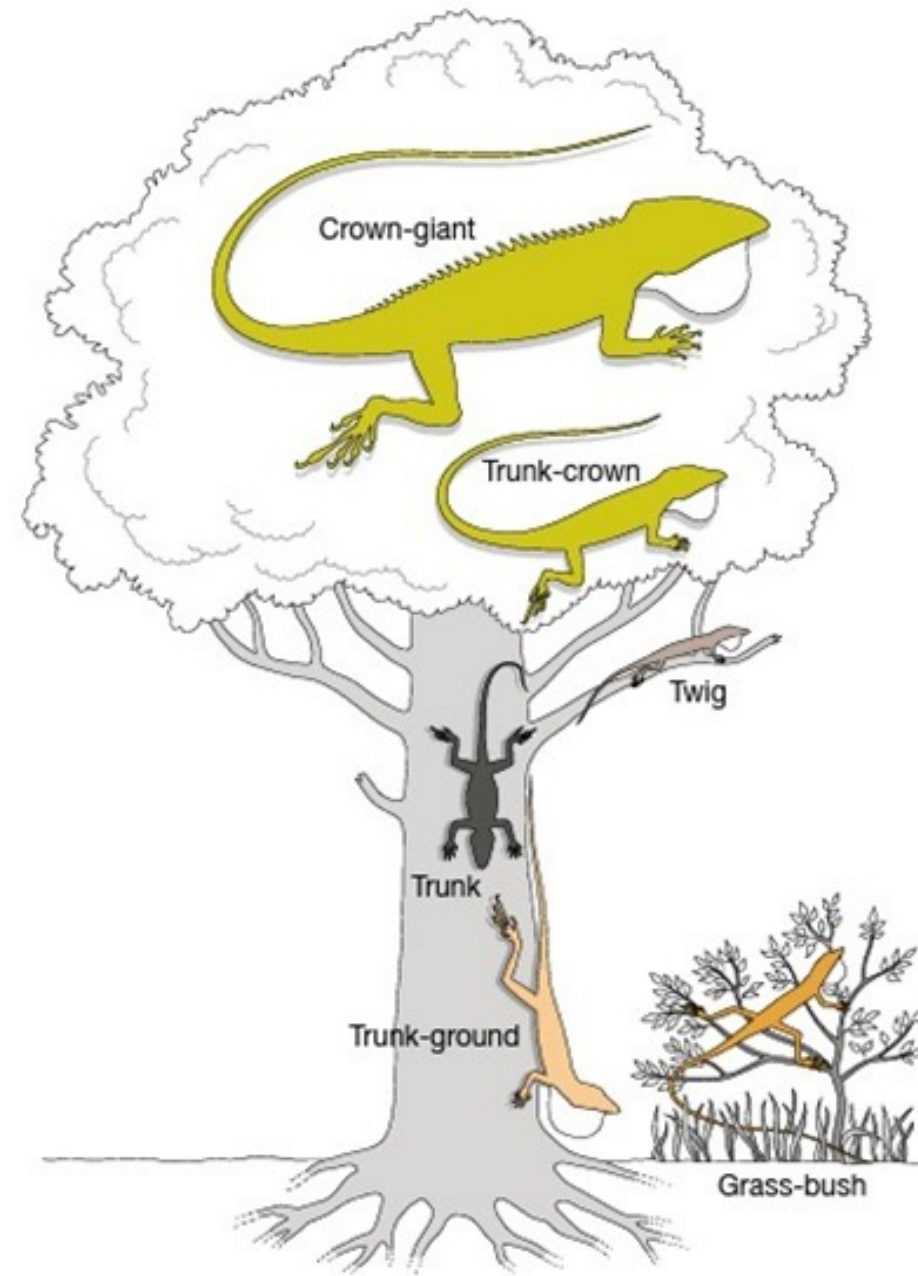
# Ecomorph

---

“Species with the same structural habitat/niche, similar in morphology and behavior, but not necessarily close phyletically.”

--Edward Williams (1972)

# Ecomorph Classes



# Factors of Convergent Evolution

---

- Adaptive radiation on each island
- Similarities in available niches





# In Summary

---

# Work Cited

---

Calsbeek, R. & Cox, R. M. Experimentally assessing the relative importance of predation and competition as agents of selection. *Nature* **465**, 613-616 (2010).

Losos, J. B. Ecomorphology, Performance Capability, and Scaling of West Indian Anolis Lizards: An Evolutionary Analysis. *Ecological Monographs* **60**, 369-388 (1990).

Losos, J. B., Jackman, T. R., Largon, A., de Queiroz, K. & Rodriguez-Schettino, L. Contingency and Determinism in Replicated Adaptive Radiations of Island Lizards. *Science* **279**, 2115-2118 (1998).

Losos, J. B., Marks, J. C. & Schoener, T. W. Habitat Use and Ecological Interactions of an Introduced and a Native Species of Anolis Lizard on Grand Cayman, with a Review of the Outcomes of Anole Introductions. *Oecologia* **95**, 545-532 (1993).

Moermond, T. Habitat Constraints on the Behavior, Morphology, and Community Structure of *Anolis* Lizards. *Ecology* **60**, 152-164 (1979).

Palcala, S. W. & Roughgarden, J. Population Experiments with the Anolis Lizards of St. Maarten and St. Eustatius. *Ecology* **66**, 129-141 (1985).

Williams, E. The Origin of Faunas, Evolution of Lizard Congeners in a Complex Island Fauna: A Trial Analysis. *Evolutionary Biology* **6**, 47-89 (1972)

— Ecomorphs, Faunas, Island Size, and Diverse End Points in Island Radiations of *Anolis*. In *Lizard Ecology* (eds Huey, R., Pianka, E. & Schoener, T.) 326-370 (Harvard University Press, 1983).

# Pictures Cited

---

Losos, J. B. (2009). [five ecomorphs of Anolis lizards]. [illustration]. <https://cals.ncsu.edu/applied-ecology/news/lizards-convergent-evolution-and-life-after-humans-an-interview-with-jonathan-losos/>

[Anolis wattsii on a tree]. (n.d.). [photograph]. [http://reptile-database.reptarium.cz/species?genus=Anolis&species=wattsii&search\\_param=%28%28taxon%3D%27Dactyloidae%27%2Cexact%29%29](http://reptile-database.reptarium.cz/species?genus=Anolis&species=wattsii&search_param=%28%28taxon%3D%27Dactyloidae%27%2Cexact%29%29)

[Anolis gingivinus on a tree]. (n.d.). [photograph]. [http://reptile-database.reptarium.cz/species?genus=Anolis&species=gingivinus&search\\_param=%28%28taxon%3D%27Dactyloidae%27%2Cexact%29%29](http://reptile-database.reptarium.cz/species?genus=Anolis&species=gingivinus&search_param=%28%28taxon%3D%27Dactyloidae%27%2Cexact%29%29)

[Anolis cuvieri on a tree]. (n.d.). [photograph]. [http://reptile-database.reptarium.cz/species?genus=Anolis&species=cuvieri&search\\_param=%28%28taxon%3D%27Dactyloidae%27%2Cexact%29%29](http://reptile-database.reptarium.cz/species?genus=Anolis&species=cuvieri&search_param=%28%28taxon%3D%27Dactyloidae%27%2Cexact%29%29)

Sullivan, J. (2014). [Anolis gingivinus on a tree trunk]. [photograph]. <https://www.inaturalist.org/photos/922795>

Questel, K. (2019). [Anolis pogus on a rock]. [photograph]. <https://www.inaturalist.org/photos/175578258>

Mlodinow, S. (2018). [Anolis schwartzi on a leaf]. [photograph]. <https://www.inaturalist.org/photos/14156973>

Questel, K. (2012). [Anolis bimaculatus on a rock]. [photograph]. <https://www.inaturalist.org/photos/172116022>

Thank You!