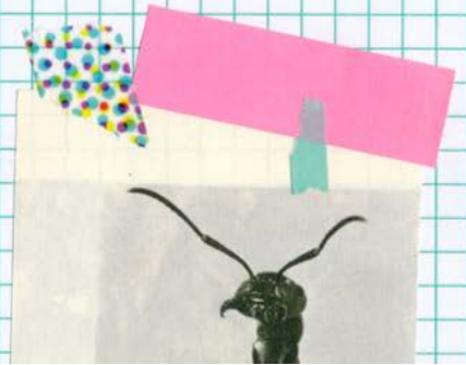
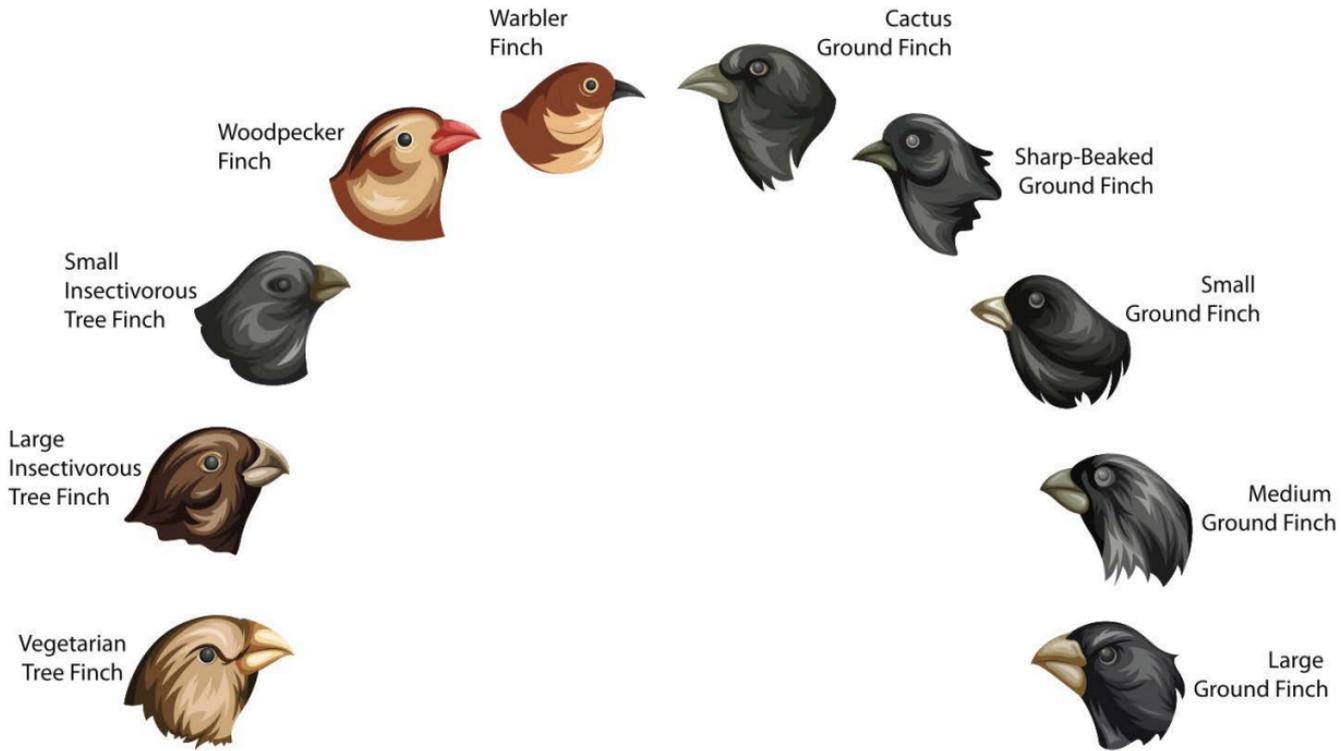


Evolution in Action

Resource
Competition Game



How Darwin's Finches got their beaks?

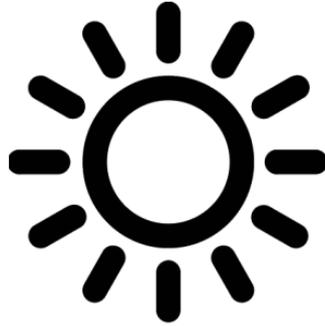


COMPETITION IS ...

...an interaction between two organisms in which both of them are harmed.

It can happen, for example, due to a limited supply of a resource.

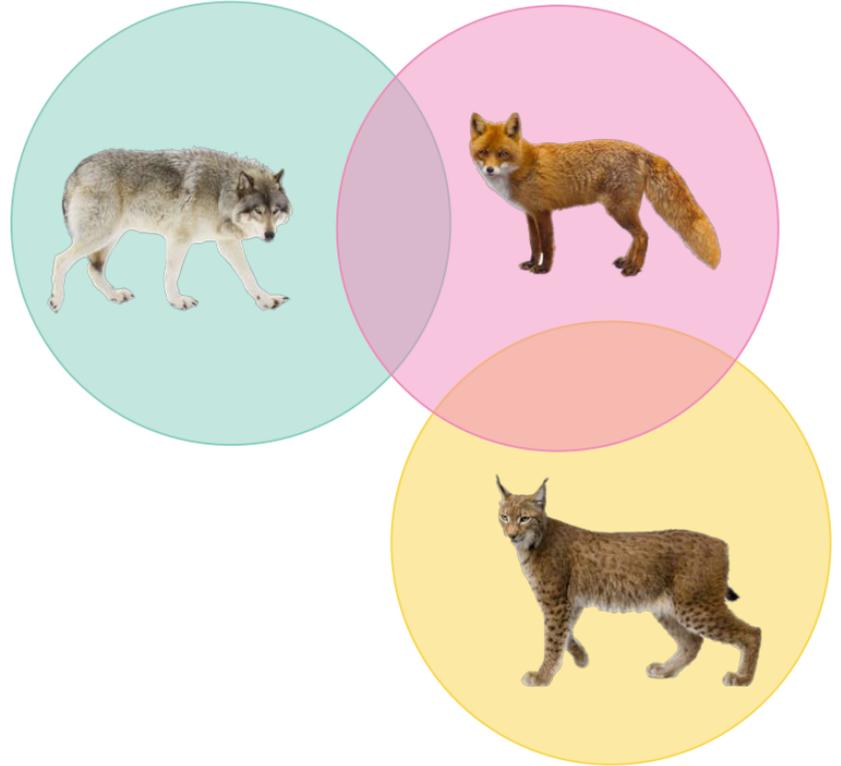
ORGANISMS CAN COMPETE FOR:



INTRAspecific competition



INTERspecific competition



THE ECOLOGICAL NICHE OF THE RED FOX (*Vulpes vulpes*)

Habitat:

forest, grasslands, mountains, deserts, suburban areas

Activity:

active during all seasons, at night and twilight,
occasionally during daylight

Diet:

omnivorous: small mammals (mice, rats, voles, ground squirrels, woodchucks, gerbils, gophers), small birds, reptiles, rabbits, porcupines, plants (grasses, fruits, roots), fish, frogs, worms, garbage and pet food.

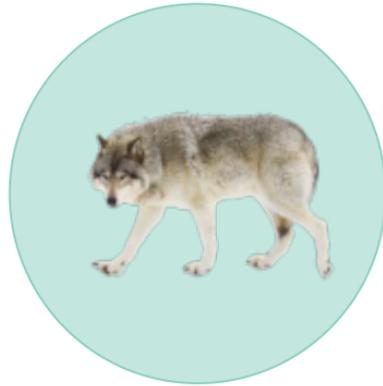
Interspecies interactions:

predator, prey, competitor, host for parasites, disperse seeds

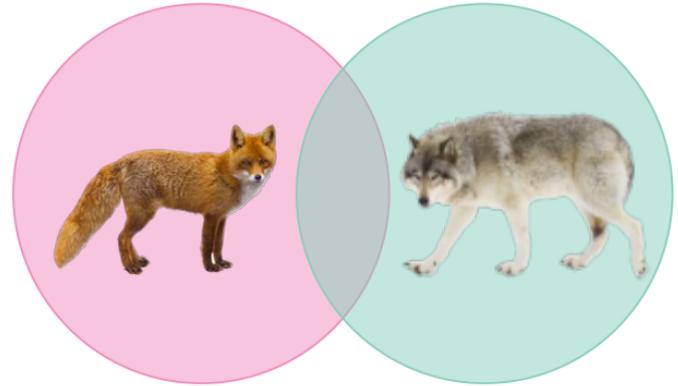


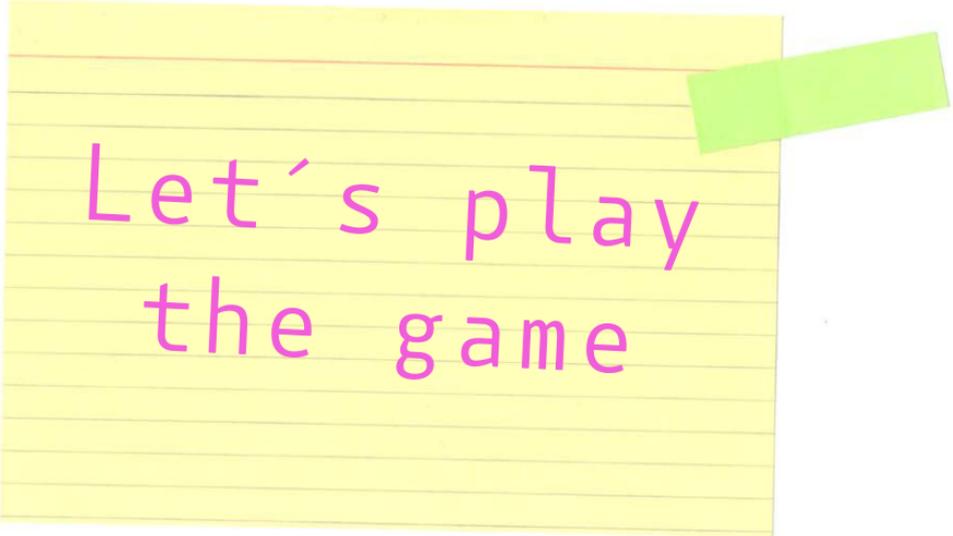
Overlapping ecological niches lead to **competition**

NO competition



Competition



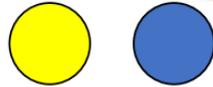
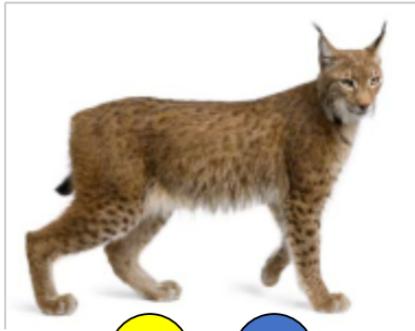


Let's play
the game

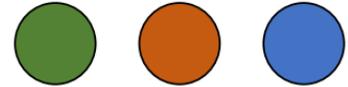
GREY WOLF
(*Canis lupus*)



EURASIAN LYNX
(*Lynx lynx*)

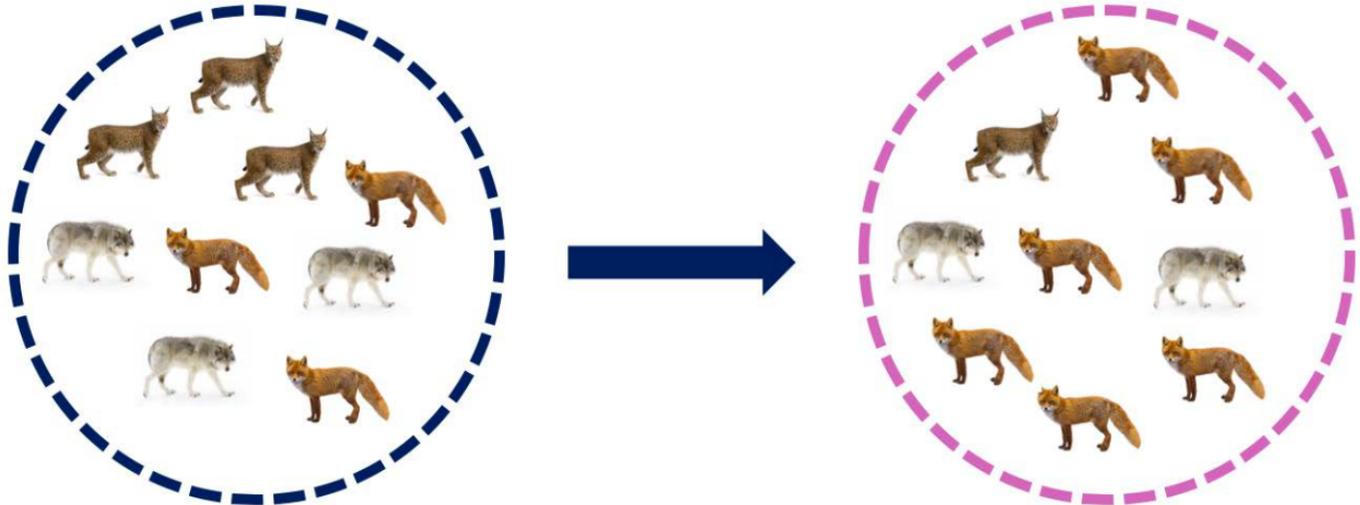


RED FOX
(*Vulpes vulpes*)



What did you learn?

In natural conditions, the available resources (food, space) are often limited. This can lead to a reduction in growth, survival and reproduction for one or the other species, which can affect animal community structures.



Gause's law

...or a competitive exclusion principle.

Two species that compete for the same resources cannot stably coexist. If one species has a slight advantage over the other species, it can lead to:

- 1) Extinction of the weaker competitor
- 2) evolutionary or behavioral shift towards a different ecological niche

Example: facing extinction?

European Mink
(*Mustela lutreola*)



American Mink
(*Neovison vison*)



During the last decade, the expansion of American mink is the main threat to the conservation of the European mink.

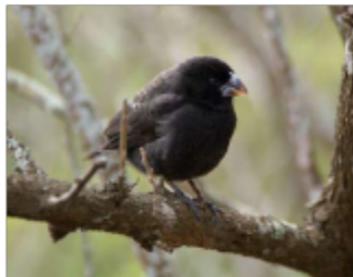
However, it is not the sole reason for the decline in the European mink population.

Example: evolutionary shifts

(From Peter ja Rosemary B. Grant)

Resource competition between two species (*Geospiza fortis* and *Geospiza magnirostris*) had caused the beak size to shrink in *G. fortis*.

Geospiza fortis

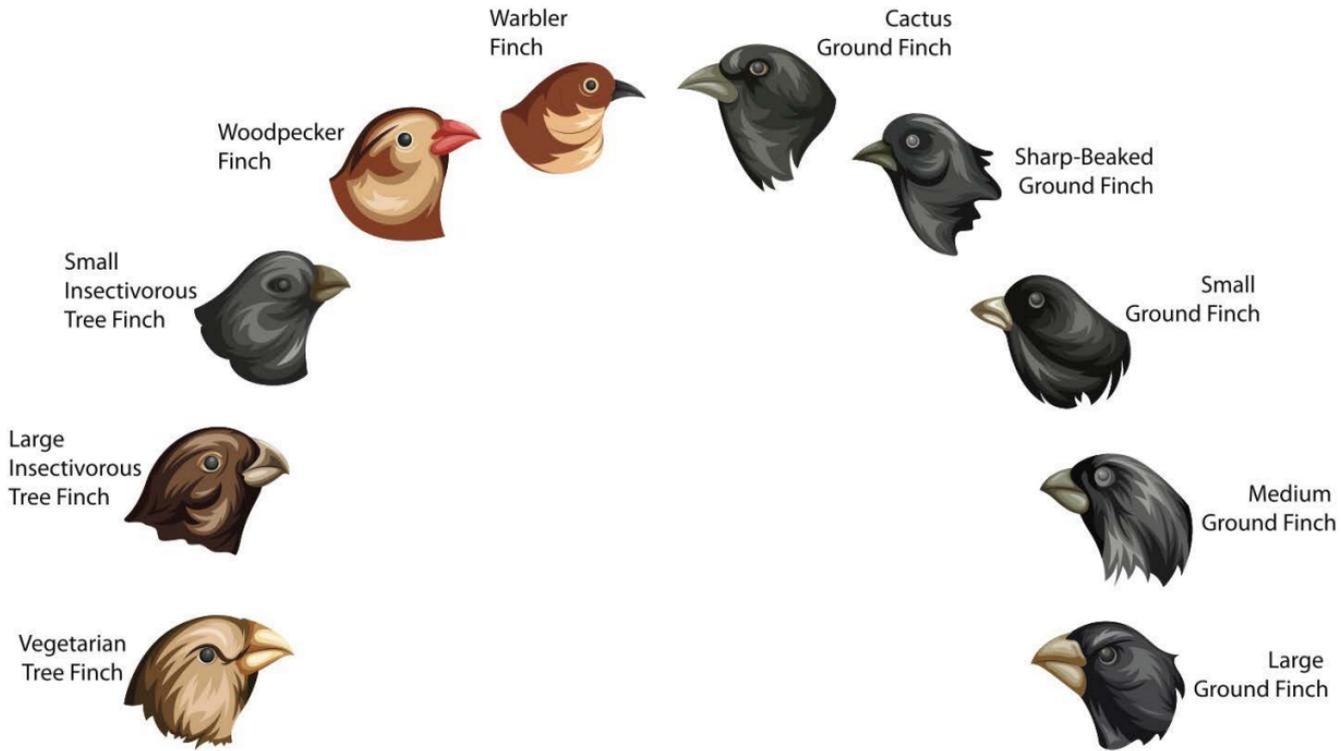


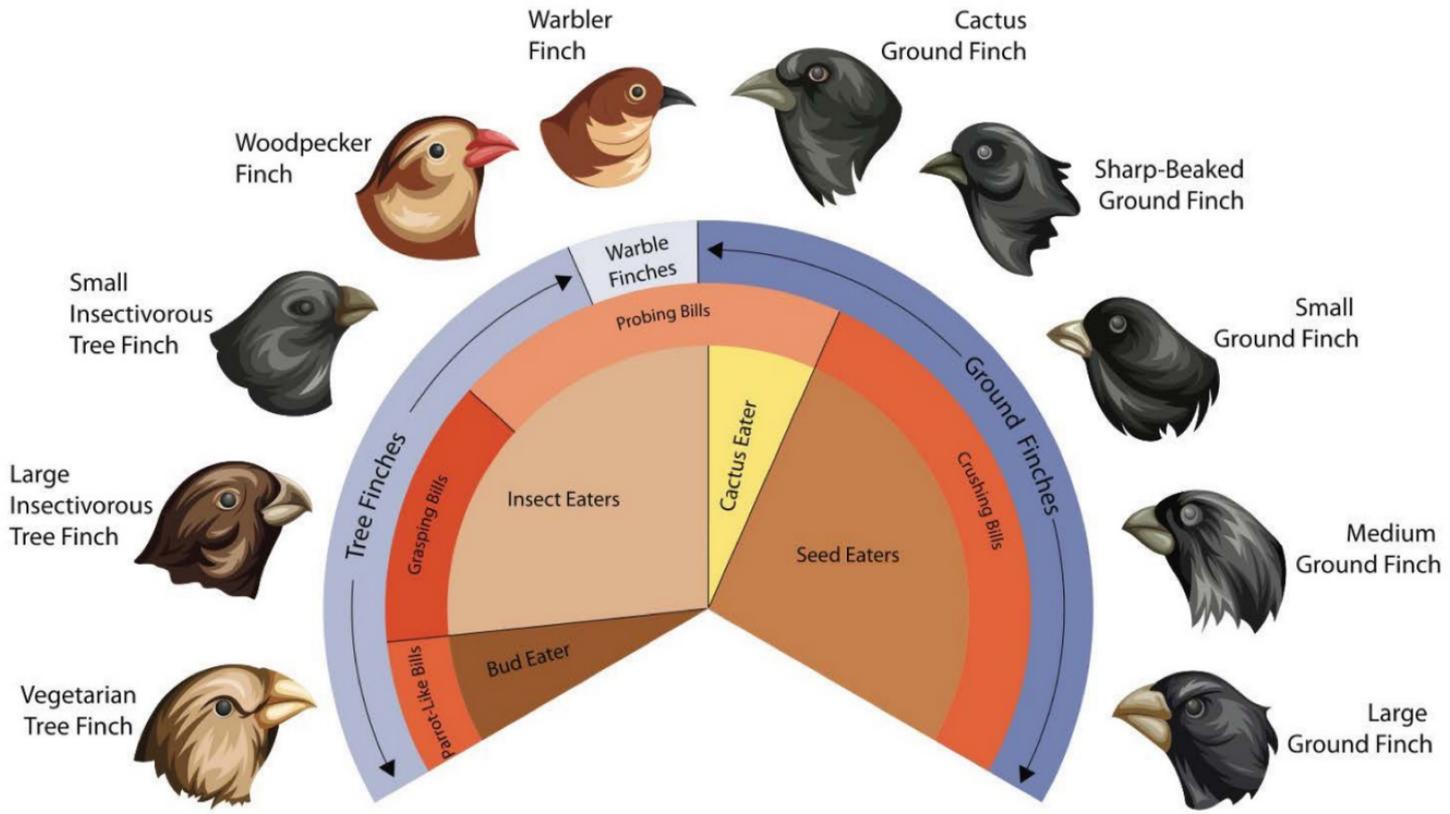
Geospiza magnirostris



Read more: Grant PR & Grant BR 2002.
Evolution of character displacement in
Darwin's finches. *Science* 313: 224-226.

How Darwin's Finches got their beaks?





Evoluutiopajat

Bio- ja Ympäristötieteiden laitokselta
Jyväskylän yliopistolta

evoluutiopajat@gmail.com

[instagram:evolution_in_action](https://www.instagram.com/evolution_in_action)

[twitter:@EvoWorkshops](https://twitter.com/EvoWorkshops)

www.evolutioninaction.fi

Photos from Wikipedia:

Geospiza fortis, by putneymark,

https://en.wikipedia.org/wiki/Medium_ground_finch#/media/File:Geospiza_fortis.jpg

(reviewed 27.5.2019)

Geospiza magnirostris, by Peter Wilton,

[https://en.wikipedia.org/wiki/Large_ground_finch#/media/File:Large_ground_finch_\(4229035966\).jpg](https://en.wikipedia.org/wiki/Large_ground_finch#/media/File:Large_ground_finch_(4229035966).jpg)

(reviewed 27.5.2019).