

# EKOLOGI

## TEMA 8

# RELUNG (NICHE)



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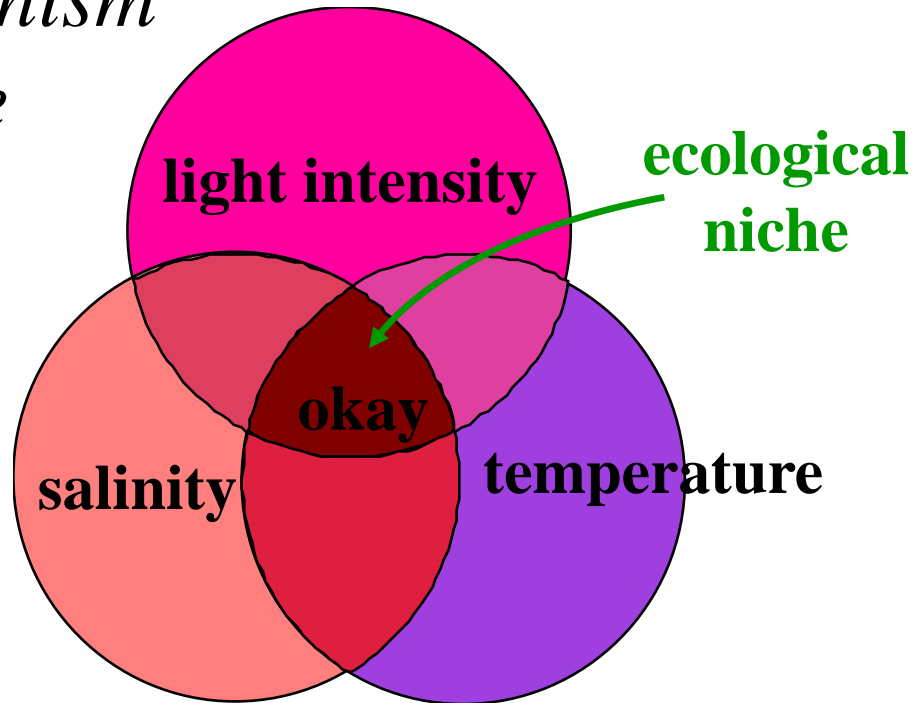
# What is the niche?

## **set of conditions**

*within which an organism  
can maintain a viable  
population*

## **multi-dimensional**

*with as many  
dimensions as their  
are limiting conditions*



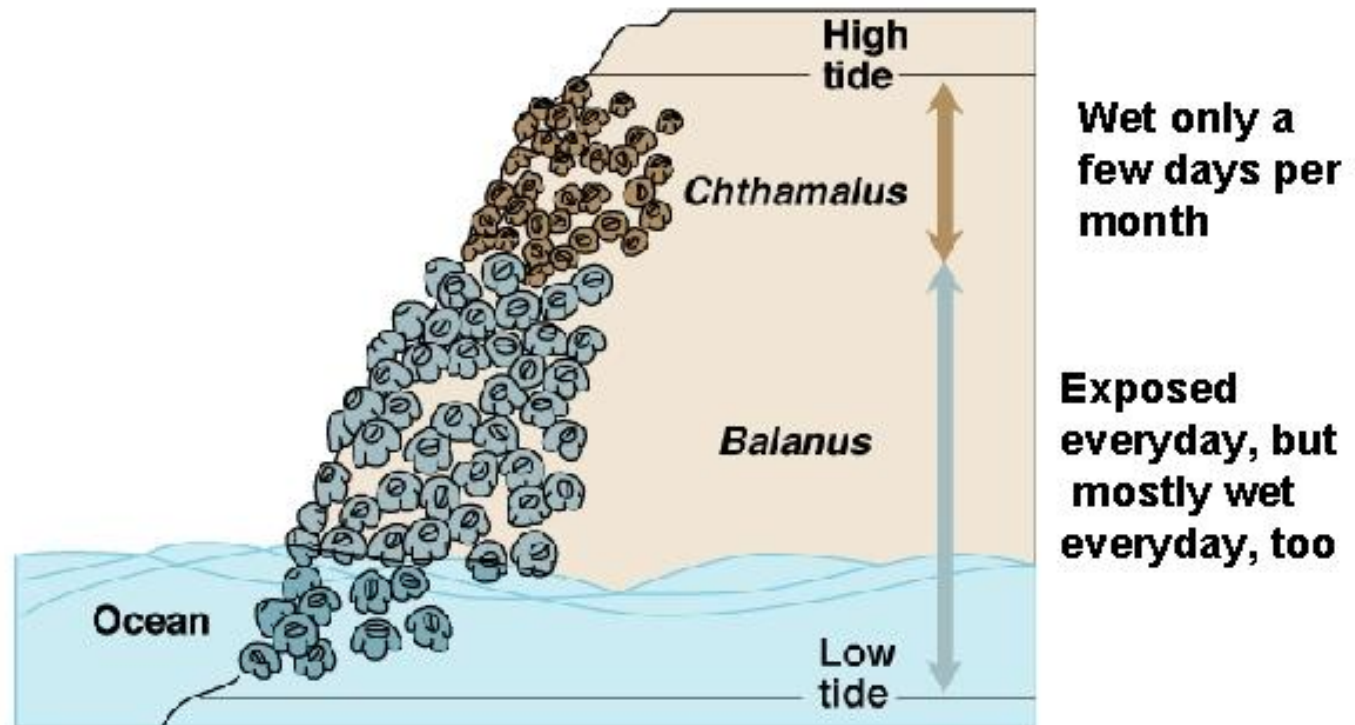
- Species’/population’s role in its community
  - Dimensions of a niche:
    - Habitat & microhabitat (Space occupied)
    - Food “spectrum,” essential nutrients
    - Reproductive requirements
      - Nutrition, nest/den sites
    - Seasonality: When are resources required, used.

**Fundamental niche** depends on physical (abiotic) conditions.

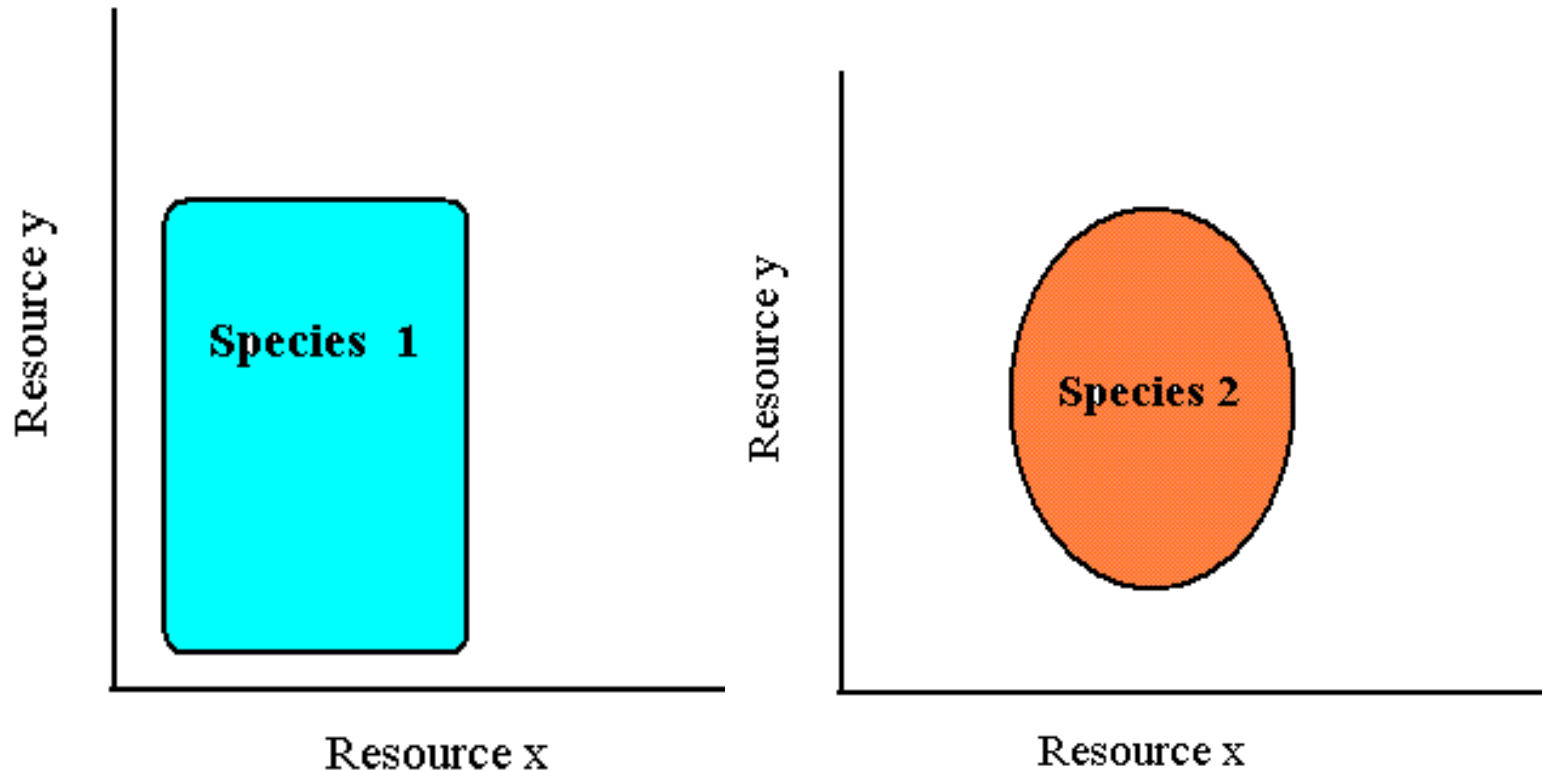
**Realized niche** depends on biotic as well as abiotic conditions.

What is the *realized niche* of each barnacle?

What is the *fundamental niche* of each?

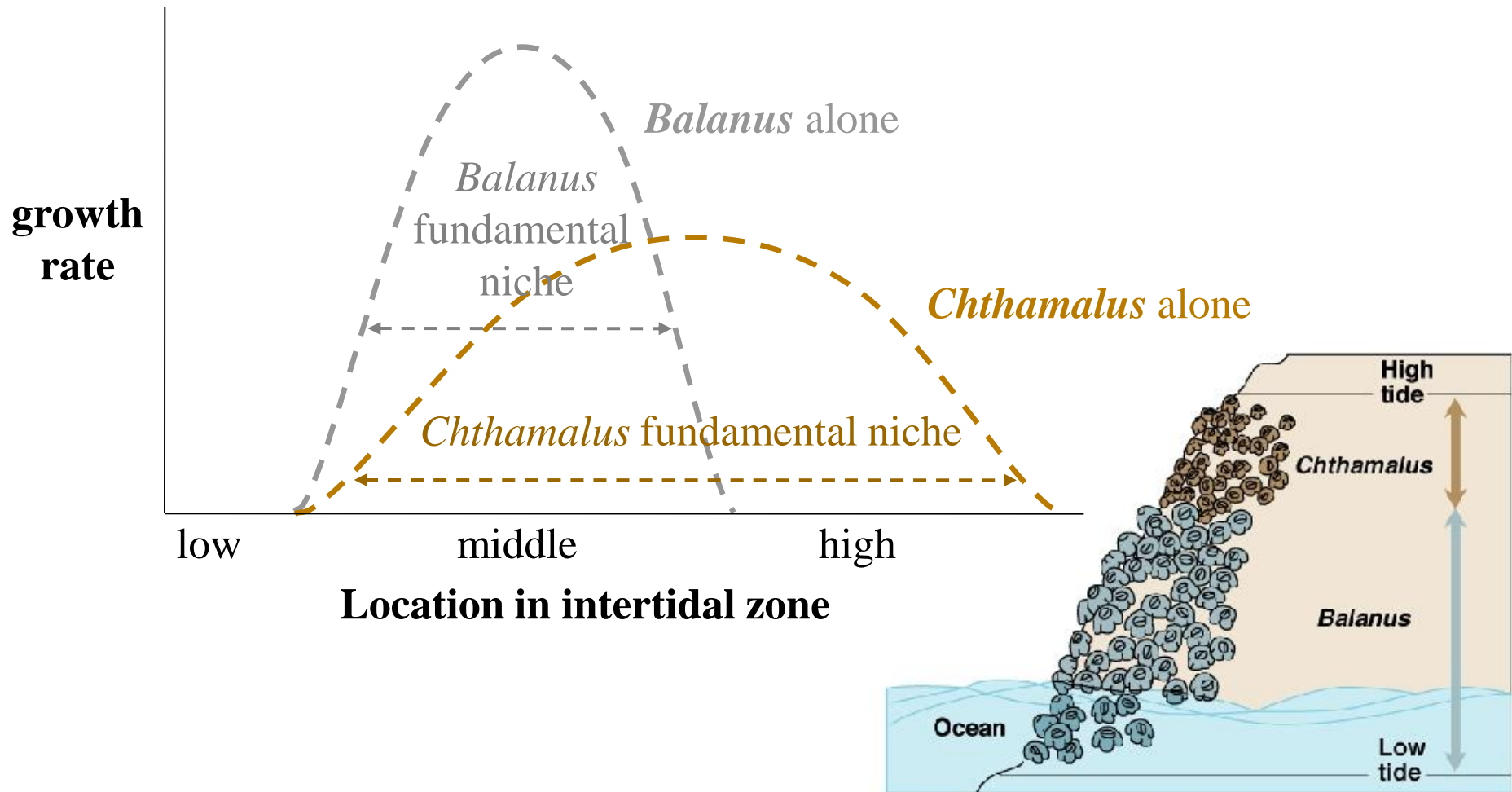


- Fundamental niche
  - All resources that could be used in absence of competition.



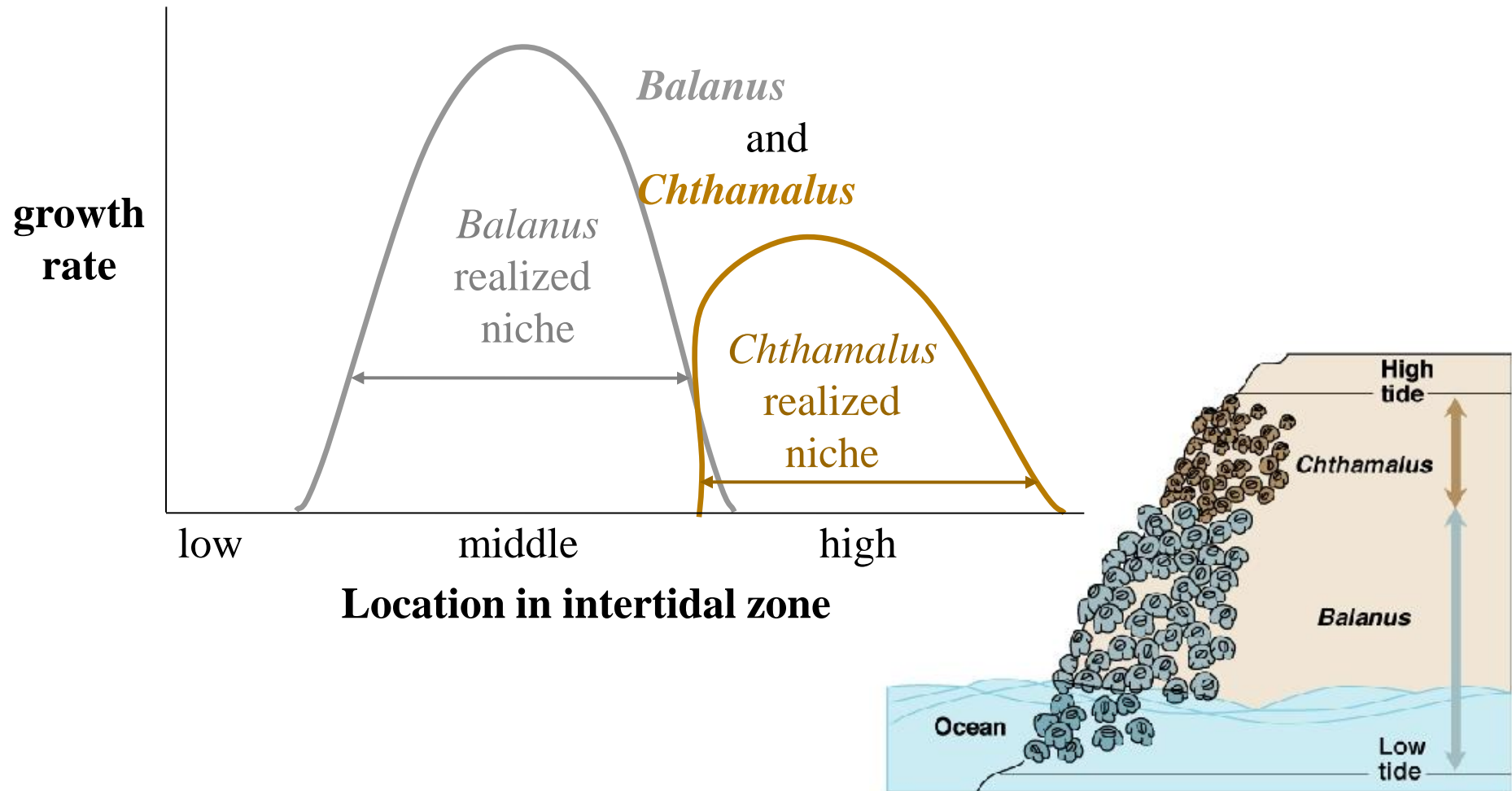
# How can we determine the fundamental niche of each barnacle?

Removal experiments – remove each species and see where the other grows

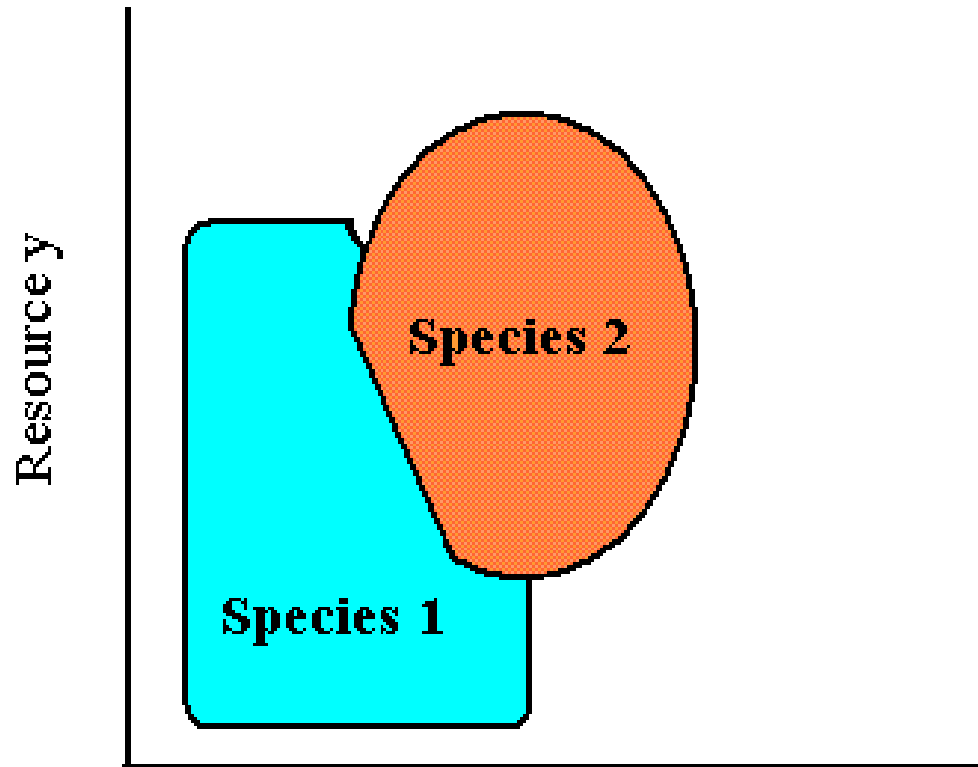


How can we determine the realized niche of each barnacle?

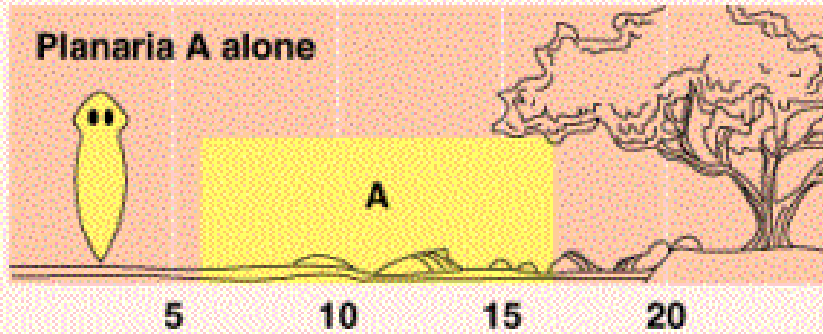
Where do they grow when allowed to compete?



- Realized niche
  - Resources actually used in presence of competitor.

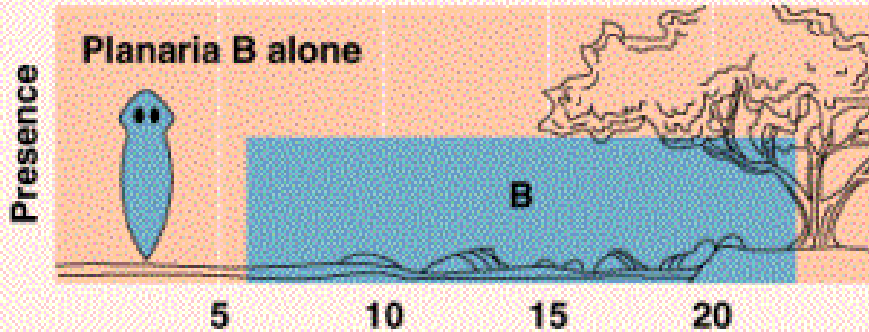






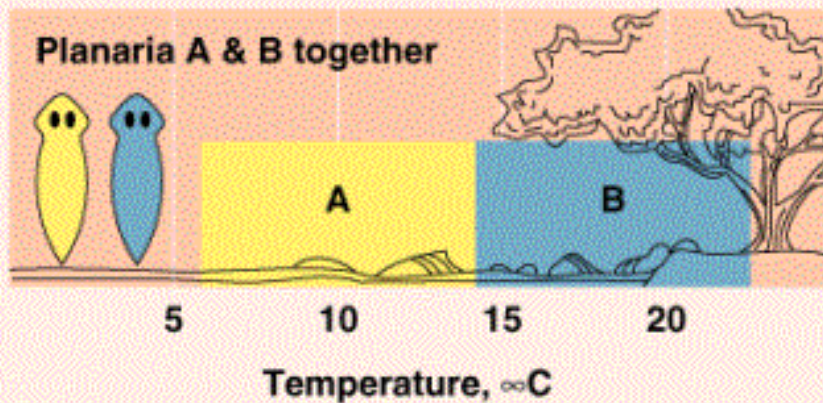
(a)

Streams with only  
*Planaria* species A



(b)

Streams with only  
*Planaria* species B

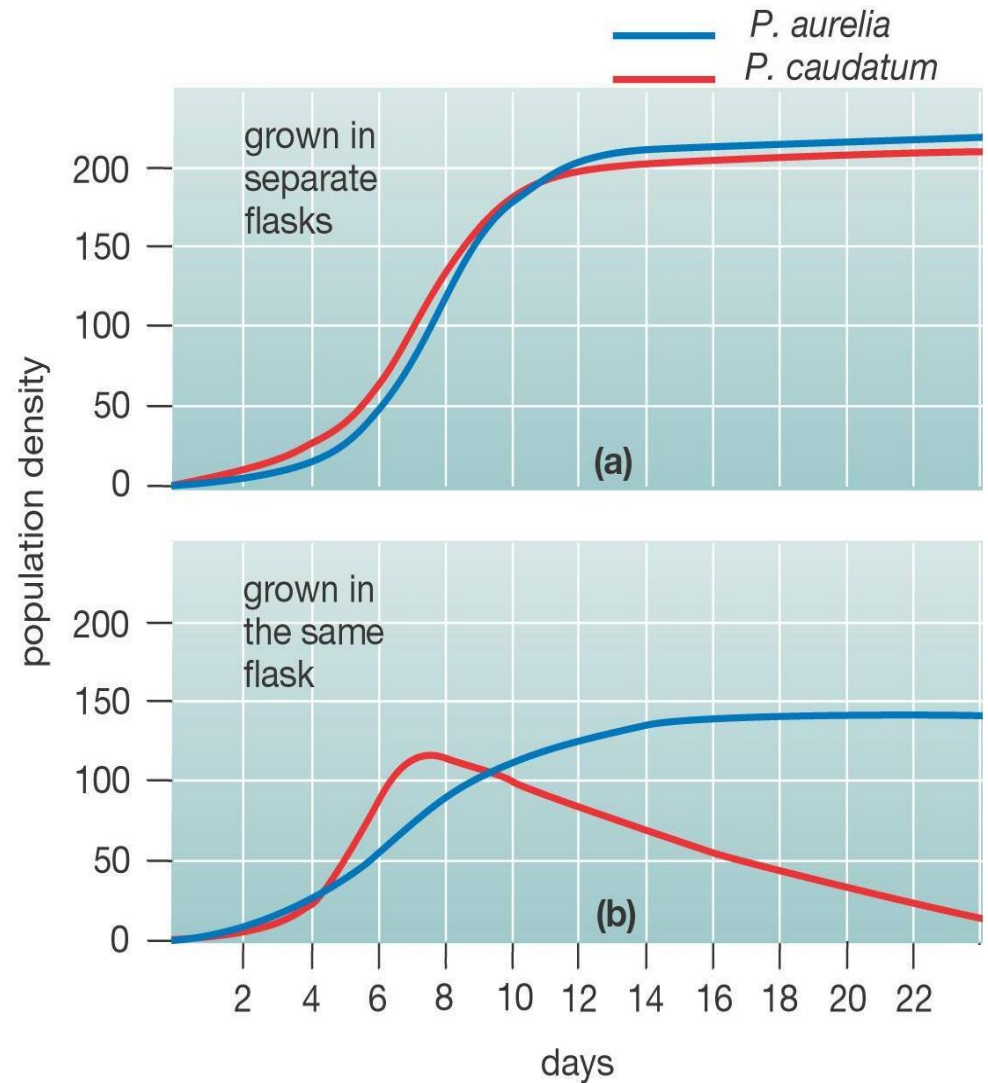


(c)

Streams with both  
*Planaria* species

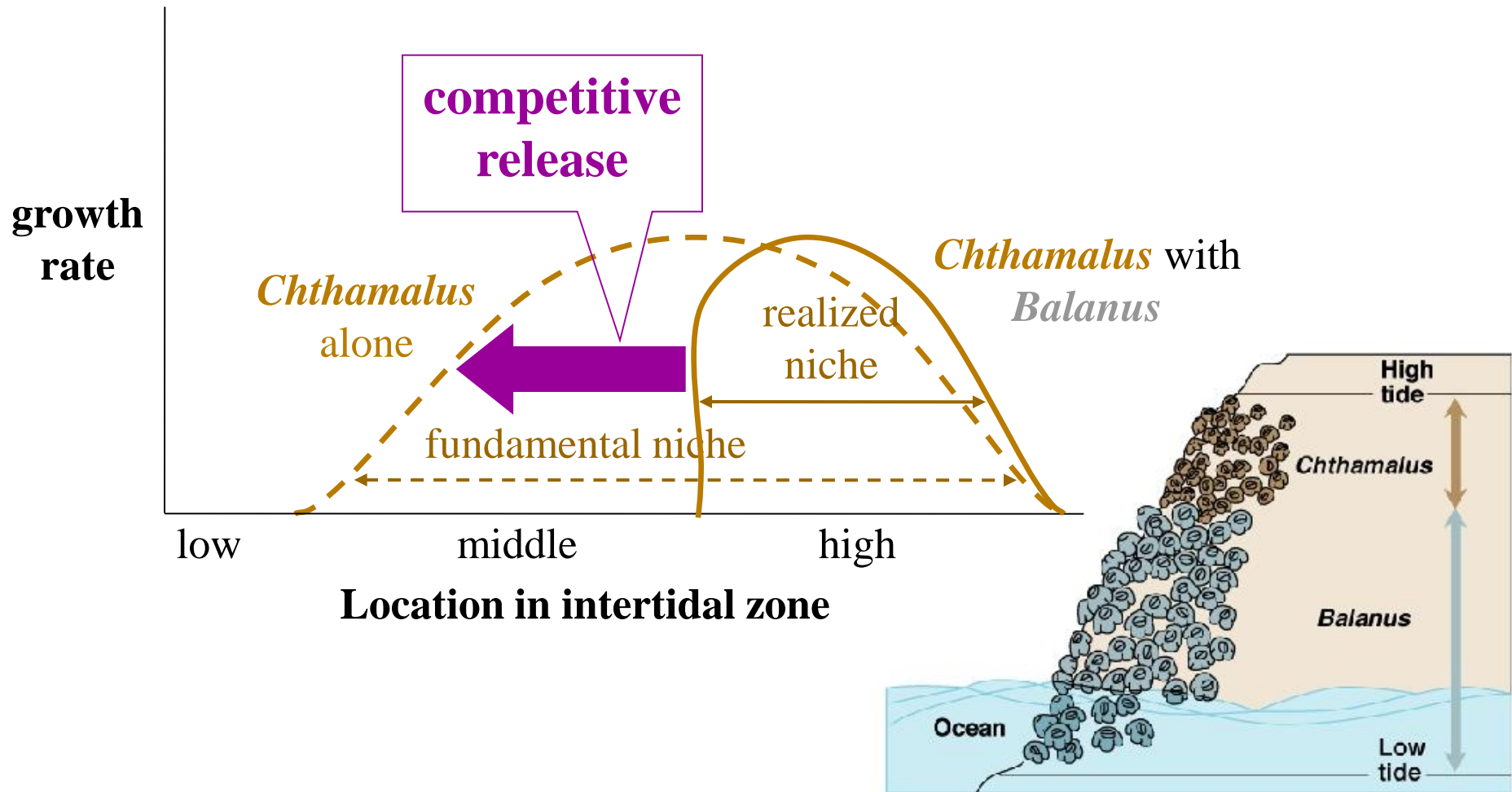
What are the fundamental  
and realized niches for  
each species?

- Competitive exclusion
  - When forced to compete, one species eliminates other(s)

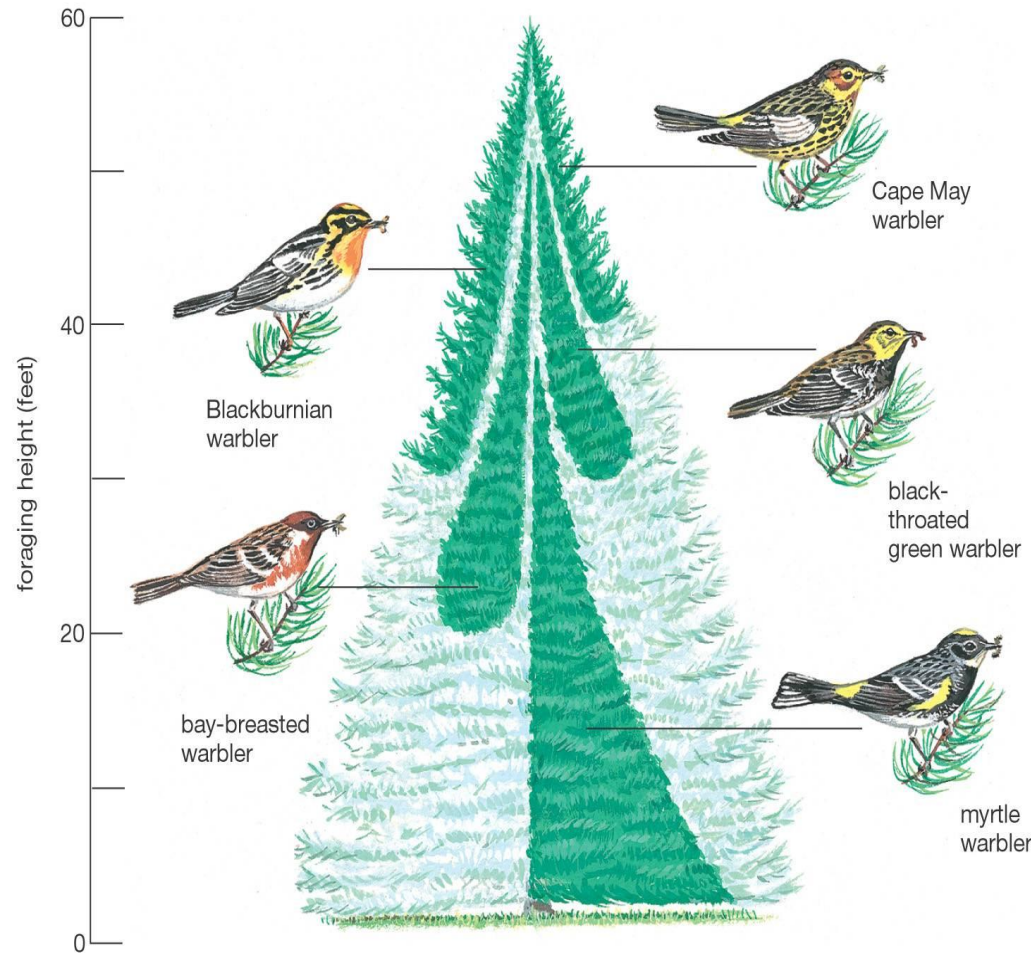


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**competitive release** – niche of the competitively-inferior species *expands* in the absence of the competitively-superior species



- Resource partitioning avoids competition;
- Realized niches divide resources among several species.



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- Invasive species competitively exclude native species
  - Imported fire ant
  - Kudzu
  - Purple loosestrife
  - Zebra mussel

