



Introduced Species

Decline in Amphibian Population



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Overview

- What is an introduced species
- How amphibians are affected by introduced species
  - Direct predator
  - Direct competitors
- What introduced species due to amphibian population

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What is an introduced species

- A species that humans have placed into an ecosystem or community (either accidentally or intentionally) in which it does not naturally occur
- Can find introduced species in every country on the earth
- Ex. Cane toad (*Rhinella marina*)
  - native to Central and South America
  - Introduced into Australia
  - Major decline in amphibians, mammals, reptiles, birds



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### How amphibians are affected

- Direct predators
  - Fish (trout, bluegill, bass)
  - Bullfrogs
  - Fire ants
- Direct competitors
  - Other amphibians (bullfrog, other frog, newts)
  - Mosquito fish
  - Crawfish



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### Major Impact: Direct Predator example: Spotted Tree Frog and trout (brown and rainbow)

- Found in south-eastern Australia
- Introduction of the brown trout have suffered severe population declines
- Listed critically endangered
- Gillespie (2001) field and laboratory experiment found introduced trout reduce the survivorship of the larvae significantly



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### Major Impact: Direct Competitor example: American bullfrog

- Found throughout the eastern US
- Introduced into Western US, Europe, Asia, South America
- Due to large size, eating habits, huge reproduction capabilities, been successful invader and threat to biodiversity



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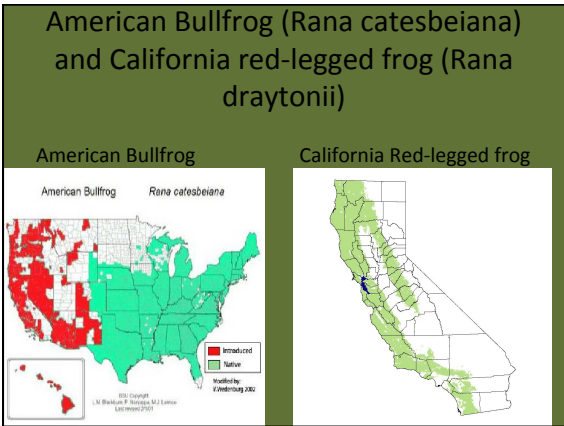
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### Affect American Bullfrog has on the California red-legged frog

Lawyer (1999)

- Presence of bullfrogs tadpoles survivorship reduced to 5% from 34% in tadpoles
- Field: bullfrog tadpoles affected growth, development, and survivorship tadpoles red-legged frog
- Adults bullfrogs decreased metamorphs survival by 33%.

Arcata Fish and Wildlife

- 70 percent reduction in its geographic range
- southern California: essentially disappeared from the Los Angeles area south to the Mexican border

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### What introduced species due to amphibians population

- cause major decline in the population of amphibians
- With introduction of species to new areas bring in other major threats (other students talk about) that may kill the animal directly: diseases and pathogens

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