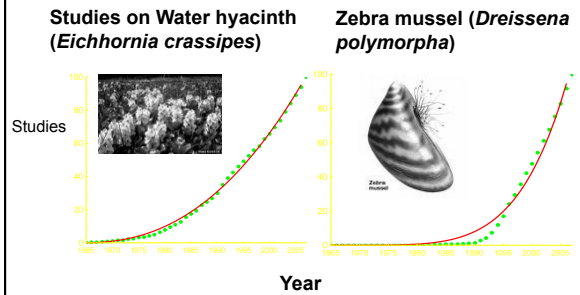


What is an alien species?

- Species introduced to regions outside of their historic (post-glacial) native range;
- Species are being transported to new locations at up to 10,000 times greater rate than by natural dispersal
- Aliens are also called:
 - exotic species, non-indigenous species, non-native species, introduced species, colonizing species.

Studies on invaders have increased dramatically since the 1980s for most species



Maclsaac et al. (2011) in Fifty Years of Invasion Ecology

Charles Elton's (1958) Invasion Concepts



1. Species-poor habitats are more vulnerable to invasion than species-rich habitats due to lack of biotic resistance (e.g. competition, predation, parasitism);
2. Islands sustain higher invasion rates and greater impacts than do continents
 - based on idea that islands are biologically impoverished, and thus less stable and more vulnerable to invasions
 - same idea became dominant in ecology (i.e. diversity begets stability) in 1960s-1970s
3. Habitats disturbed by man are more vulnerable than less disturbed ones



cover of Elton's book, reprinted in 2000.

What influences invasion success?

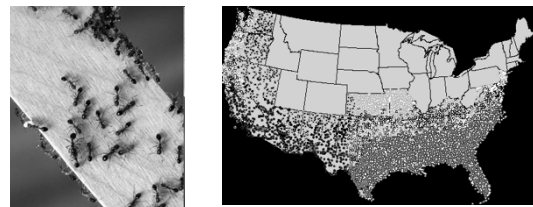
1) Species Characteristics

- high fecundity (baby making machines)
- small body size (sneaky)
- vegetative or asexual reproduction
- high genetic diversity (withstand disease)
- broad native range (can handle a lot)
- physiological tolerance (can handle a lot)
- habitat generalist
- human commensal (get along with people)
- loss of natural enemies

2) Generalizations Regarding Habitat Invasibility

- climatically matched
- disturbed
- low diversity
- absence of predators
- presence of vacant niches
- low connectance of food web
- nutrient rich (plants)

Fire Ants



- Introduced to Mobile, Alabama last century from South America and have spread across southern USA since
- Spread in USA seems to correlate with super colony function (normally colonies aggress one another)
- Spread to Caribbean, Australia, New Zealand, Taiwan and China, including Hong Kong and Macau from USA