Animal Plant Interactions Concerning Invasive Species

Annotated Bibliography

Renny Talianchich Fall 2002

Blossey, B., L. C. Skinner and J. Taylor. 2001. Impact and management of purple loosestrife (*Lythrum salicaria*) in North America. Biodiversity and Conservation. 10: 1787-1807.

Provides evidence that Purple Loosestrife invasions lead to reductions in wetland plant diversity, reducing habitat suitability for specialized wetland bird species. The latest success of biocontrol measures is mixed. Sometimes it has worked, and sometimes not.

Bossard, C. C. 1991. The role of habitat disturbance, seed predation and ant dispersal on establishment of the exotic shrub *Cytisus scoparius* in California. The American Midland Naturalist. 126: 1-13.

Interesting paper in that it found that the effect of disturbance on seedling establishment was negligible, when balanced by biotic factors (aka. quail) in the study area. This leads to the notion that invasions will not always occur more readily in disturbed vs. undisturbed areas.

Cohen, A. N. and J. T. Carlton. 1995. Nonindigenous species in a United States estuary: A case history of the ecological and economic effects of biological invasions in the San Francisco and Delta region. Report for the United States Fish and Wildlife Service, Washington DC and the National Sea Grant College Program, Connecticut Sea Grant. 1-218.

Very long, but amazingly well written and interesting for such a thorough look at the entire ecosystem of the bay. There's something for everyone here.

Daehler, C. C. and D. R. Strong. 1996. Status, prediction and prevention of introduced cordgrass, *Spartina spp.*invasions in pacific estuaries, USA. Biological Conservation. 78: 51-58.

Using physical characteristics of 31 sites in California and the known physical constraints of four *Spartina* spp. the researchers try to predict areas which will be susceptible to invasion by *Spartina*. They find that *Spartina alterniflora* could be an invader in all 31 sites. Interesting prediction techniques could be used elsewhere.

Lehtonen, J. T., O. Mustonen, H. Ramiarinjanahary, J. Niemela and H. Rita. 2001. Habitat use by endemic and introduced rodents along a gradient of forest disturbance in Madagascar. Biodiversity and Conservation. 10: 1185-1202.

Abundance of *R. rattus* increased with habitat disturbance and was most common in heavily logged secondary forest. It was never observed farther than 500m away from human habitation or campsites, which implies to me that the introduced species is depending heavily on human products or human something, so it may not be competing with the native rodents for resources.

Lonsdale, W. M. 1993. Rates of spread of an invading species: *Mimosa pigra* in Northern Australia. Journal of Ecology. 81: 513-521.

Water buffalo aided spread of introduced *M. pigra.* Extermination of the Water buffalo stops the quick spread of *M. pigra*, but does not eliminate the species. They

found that long distance dispersal of mimosa is due to buffalo or human means, while short distance dispersal done by wind.

Milne, M. and G. H. Walter. 2000. Feeding and breeding across host plants within a locality by the widespread thrips *Frankliniella schultzei* and the invasive potential of polyphagous herbivores. Diversity and Distributions. 6: 243-257.

A lot of work went into this, large number of samples across years, thrips raised by hand, and then mated with each other. In the end, about all they can be relatively certain of, is that the polyphagou thrip *F. schultzei* prefers *Malvaviscus arboreus* where mean adult lifespan and fecundity were significantly higher than two other species.

Moyle, P. B. 1999. Effects of invading species on freshwater and estuarine ecosystems. Invasive Species and Biodiversity Management. O. T. Sandlund et al. (eds.). Kluwer Academic Publishers. 177-191.

General overview of invasion in the above systems. Details human facilitation of invasions.

Olesen, J. M., L. I. Eskildsen and S. Venkatasamy. 2002. Invasion of pollination networks on ocean islands: importance of invader complexes and endemic super generalists. Diversity and Distributions. 8: 181-192.

Refers to his own papers a lot. Data analysis does not support idea that invading plants and pollinators can aide each other by interacting heavily with each other. Found that the invaders interacted with each other less than might be expected randomly.

Renne, I. J., W. C. Barrow, Jr, L. A. Johnson Randall and W. C. Bridges, Jr. 2002. Generalized avian dispersal syndrome contributes to Chinese tallow tree (*Sapium sebiferum,* Euphorbiaceae) invasiveness. Diversity and Distributions. 8: 285-295.

Seed dispersal usually done by wintering avifauna, though it's a few species in each habitat which are responsible for seed dispersal over large areas. Spatially limited dispersal does not greatly affect regional invasion rate, but may promote high densities of tallow in some areas. This may affect local bird populations as it's a high quality food resource which is abundant.

Richardson, D. M., N. Allsopp, C. M. D'Antonio, S. J. Milton and M. Rejmanek. 2000. Plant invasions – the role of mutualisms. Biological Reviews. 75: 65-93.

Many kinds of mutualisms, and they're all playing a role in invasions. Great review paper, very thorough. Hits on: animal mediated pollination, seed dispersal by animals, mycorrhizal fungi, and symbioses between plants and N fixing bacteria.

Richardson, D. M., P. Pysek, M. Rejmanek, M. G. Barbour, F. D. Panetta and C. J. West. 2000. Naturalization and invasion of alien plants: concepts and definitions. Diversity and Distributions. 6: 93-107.

Oh what a debate this sparked, it was great. While these researchers try to pin down a definition for the concepts of invasions, the class found many holes in their ideas. Definitely a good starting point.

Shapiro, A. M. 2002. The California urban butterfly fauna is dependent on alien plants. Diversity and Distributions. 8: 31-40.

Use of general observations is nice, it's not a definitive study, and should be followed up with actual experiments. Though good to take a different perspective to invasions – invasions aren't all bad for native species.

Simberloff, D. and B. V. Holle. 1999. Positive interactions of nonindigenous species: invasional meltdown? Biological Invasions. 1: 21-32.

Nonindigenous species aiding invasions of other nonindigenous species, brings up the newer idea of mutualism being an important factor in invasion ecology, rather than overcoming competition from native plants being the only factor. Nice review paper.

Weinstein, M. and J. Balletto. 1999. Does the common reed, *Phragmites Australis*, affect essential fish habitat? Estuaries. 22: 793-802.

They think it does, by sectioning off portions of the existing marsh habitat, raising dikes and the terrain.

Weis, J. and P. Weis. 2000. Behavioral responses and interactions of estuarine animals with an invasive marsh plant: a laboratory analysis. Biological Invasions. 2: 305-314.

Food supply showed no difference in choice of *Spartina* or *Phragmites* and the fish showed no decipherable preference. They believe it may have more to do with slope of marsh, stem density and arrangement that affects choice.

http://www.invasivespecies.gov/impacts.shtml 2002. Developed and maintained by the National Agricultural Library for the National Invasive Species Council. Last Updated: Wednesday, 13-Nov-2002 09:07:03 EST.

Source of data on impact on US of invasive species, not just plants, but all invasions.