ECOL 4000/6000 – Population and Community Ecology

Exam 3 – Eligible Topics

Niche Theory

- Potential distribution
- Fundamental niche
- Realized niche
- Environmental space vs geographical space

Biodiversity

- Species area curves (incl. log transformed representation)
- Reasons for high z values (slopes of log[richness] vs log[area])
- Island biogeography theory (colonization-extinction balance, effects of area and distance)

Succession

- Primary vs secondary succession
- Changes in species abundance distributions during succession
- Resource ratio hypothesis
- Climax communities and competitive dominants
- Intermediate disturbance hypothesis

Latitudinal diversity gradients

- Mid-domain effect
- Effects of biome age (refugia, time since glaciation)
- Effects of environmental predictability
- Effects of interspecific interaction strengths
- Effect of disturbance
- Effect of habitat complexity
- Role of niche conservatism in maintaining gradients

Diversity and stability

- Species playing important roles in regulating biodiversity/stability (keystone species, ecosystem engineers, apex predators controlling trophic cascades)
- Case study of fisheries collapses (articulate key points from this example)
- Resource utilization functions (effects of d and w on competition strength)
- Cedar Creek case study (direction of relationship between species richness and stability at the community and species levels)
- Dynamic food webs (relationship between structure and stability, alternative explanation for short food chains - cf inefficient energy transfer)
- Connectance (definition and relation to stability - esp. as in Dunne and Williams 2009 slide)
- Diversity and invasibility
- Niche complementarity
- Effect of fertilization (not reduction in richness, rather reduction in stability)