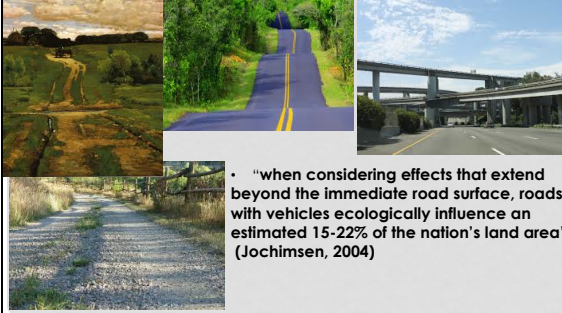


ROADS: THE CAUSE OF AMPHIBIAN DECLINE


BY: SAM BINGHAM

WHAT IS A ROAD?

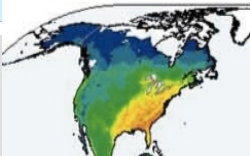


- "when considering effects that extend beyond the immediate road surface, roads with vehicles ecologically influence an estimated 15-22% of the nation's land area" (Jochimsen, 2004)

AMPHIBIAN DECLINE



- Population declines 3.7% every Year in the US (Puckett, 2013)
- Coast to Coast
- Total coverage: 4,077,216 Miles



(AmphibiaWeb, 2014)

ROAD KILLERS

- Habitat Destruction
- Fragmentation
- Runoff
- Squish Factor

HABITAT DESTRUCTION

- Stream Redirection or disturbance
- Breeding grounds cutoff or disturbed
- Construction season
- Tennessee Transportation Budget 2013-14:
\$1,817,891,200



FRAGMENTATION

- The Matrix
- Breeding and Non-breeding sites
- Noise disruption during breeding
- "Most pool-breeding amphibians have complex life cycles requiring multiple habitats, including an aquatic breeding site, adjacent upland and wetland non-breeding habitat, and a permeable migration matrix to connect and buffer these elements" (Baldwin, 2009)



RUNOFF

- Chemical Runoff
- Wetlands next to road
- "In the Adirondack Mountains of the United States salt reduced embryonic and larval survival of spotted salamanders (*Ambystoma maculatum*) in ponds close to treated roads, predisposing severe (20–40%) declines of populations within 50–100 m" (BeeBee, 2013)



SQUISH FACTOR

- Frogs killed during rain fall
- Salamanders move slower
- Traffic levels
- "In studies on 4 continents the percentage of vertebrate kills that were amphibians were about 57%" (BeeBee, 2013)
- "By being more permeable to amphibian passage, country roads represent a greater source of mortality than highways, which act as barriers" (Matos, 2012)



WHAT CAN WE DO

- Wildlife corridors
- Not use as much foreign products on roads
- Seasonal construction
- "Combining multiple restoration actions seems to be the best strategy for mitigating road and would benefit not only amphibians but also the rest of wild fauna inhabiting rural spaces" (Garcia-Gonzalez, 2011)

RECAP

- Roads are everywhere
- They kill in many different ways
- It's going to be hard to fix

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QUESTIONS?