


Silviculture
The Main Cause of Amphibian Decline

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What is Silviculture

- The art and science of controlling the establishment, growth, composition, health and quality of forests and woodlands to meet the diverse needs and values of landowners and society on a sustainable basis.
- Knowledge of trees, species interactions, site characteristics, climate
- Practices: selection cuts, thinning, shelter-wood, clear-cutting (TSI)



<http://www.fs.fed.us/forestmanagement/silviculture/>

Evidence of Decline

- Effects of Timber Harvesting on terrestrial pond-breeding amphibians
- Study conducted nationwide
 - Increased mortality post clear-cut
 - Juvenile survival decreased post thinning
 - IF buffer is used around water bodies survival chances increase

Todd, Brian D., Sean M. Blomquist, Elizabeth B. Harper, and Michael S. Osbourn. "Effects of Timber Harvesting on Terrestrial Survival of Pond-breeding Amphibians." *Forest Ecology and Management* 313 (2014): 123-31. Web.

Evidence of Decline

- Effects of repeated stand entry on terrestrial salamanders and their habitat
- Southwest Virginia
 - Capture was lower on shelter-wood and clear-cut sites compared to control
 - Overstory removal harvest (13 yrs after shelter-wood cut) site had lower capture rates



Eastern Red-Backed Salamander (*Plethodon cinereus*)

Homyack, Jessica A., and Carola A. Haas. "Effects of Repeated-Stand Entries on Terrestrial Salamanders and Their Habitat." *Southeastern Naturalist* 12.2 (2013): 353-66. Web.

Evidence of Decline Worldwide

- Conservation of Amphibians in Borneo, Malaysia
- Rain Forests being converted to Oil Palm plantations
 - Reduce survival rate
 - Low species richness
 - Low abundance
- Species present are habitat generalists
- Plantations retained NO endemic species



Gillespie, Graeme R., Eddie Ahmad, Berjaya Elahan, Alice Evans, Marc Ancrenaz, Benoit Goossens, and Michael P Scroggie. "Conservation of Amphibians in Borneo: Relative Value of Secondary Tropical Forest and Non-forest Habitats." *Biological Conservation* 152 (2012): 136-44. Web.

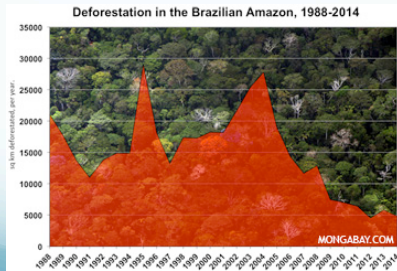
Why Silviculture is the main reason for decline

- Silvicultural practices open up the door for many adverse effects
 - Direct mortality
 - Siltation/water pollution
 - Disease spread
 - Climate change (local and Global)
 - Habitat destruction
 - Lack of BMPs
 - No buffer, SMZs, crossing streams
 - Edge effect and borders
 - Noise pollution



Why Continued

- Poor silvicultural practices and deforestation



http://rainforests.mongabay.com/defor_index.htm

Why Continued

- Loss of Forest and associated water bodies
- Conversion to agricultural lands
 - Cattle
 - Goats
 - Polluting water
 - Destroying riparian zones



<http://www.greenpeace.org/new-zealand/en/news/brazilian-slaughterhouses-fail/>

Questions?



References

- Gillespie, Graeme R., Eddie Ahmad, Berjaya Elahan, Alice Evans, Marc Ancrenaz, Benoit Goossens, and Michael P. Scroggie. "Conservation of Amphibians in Borneo: Relative Value of Secondary Tropical Forest and Non-forest Habitats." *Biological Conservation* 152 (2012): 136-44. Web.
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- <http://www.fs.fed.us/forestmanagement/silviculture/>
- http://www.woodlotinfoshop.ca/index.php?r=SBChildink/page_39
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- http://rainforests.mongabay.com/defor_index.htm
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- Todd, Brian D., Sean M. Blomquist, Elizabeth B. Harper, and Michael S. Osbourn. "Effects of Timber Harvesting on Terrestrial Survival of Pond-breeding Amphibians." *Forest Ecology and Management* 313 (2014): 123-31. Web.
