What is the most important cause of amphibian decline?

WRONG!!!!!!!!!!!!!!!!!!!!!
What are Insecticides?

- A type of pesticide that is used to specifically target and kill insects.

How insecticide are transmitted to amphibian habitats

Population Decline

- 200 million pounds of pesticides are applied each year in California alone.
- Two billion pounds throughout the USA annually.
- Populations of the critically endangered mountain yellow-legged frog (*Rana muscosa*) disappeared at a significantly higher rate than other populations. Verge of extinction.
Carbaryl Study

• (Kerby and Shi, 2014)
• Higher concentrations of carbaryl caused Pacific tree frog (Pseudacris regilla) and foothill yellow legged frog (Rana boylii) to decrees activity.

Pseudacris regilla

Survival

• No significant change in survival rate when only carbaryl or predators were introduced.
• When both carbaryl and predators are introduced survival rates decrease.

Relyea and Mills, 2001
• Experimented with gray treefrog tadpoles (Hyla versicolor)
• The presence of Carbaryl caused survival rate to drop to 40% within 8 days with low concentrations and no predators.
• With the presence of Carbaryl and predators survival rate dropped to 8% within 8 days.
Direct Exposure

- Bruhl, Schmidt, Pieper, and Alsher, 2013
- Study of 7 different pesticides sprayed over juvenile European common frogs (*Rana temporaria*). (four fungicides, two herbicides and one insecticide)
- 3 different application rates.
  - Maximum label rate
  - 10 x label rate
  - 100 x label rate
References

- Kerby, J. L., and A. Sih. 2014. Effects of carbaryl on species interactions of the foothill yellow legged frog (Rana boylii) and the Pacific treefrog (Pseudacris regilla). Hydrobiologia 746: 255-269

Questions