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Translocation and Repatriation as
Conservation Strategies for
Massasaugas and Other Snakes

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Save the Snake

- Moving an animal-
 - From out of in front of a bulldozer
 - Off of the road
 - Away from a scared father with a shovel
 - certainly makes sense.
 - certainly feels good.
- But what are the ultimate consequences for the animal? For the recipient population?
 - Was more harm done than good?

This Controversy is Not New

- Moving animals has a long history
- Herps have certainly been moved for decades
- Dodd and Seigel (1991) and responses by Burke and Reinert were a high point (for me)
- Controversy remains
 - I come here with as many questions as suggestions

Agenda

- Review some background, like defining terms
- Consider what sorts of factors might go into deciding whether to proceed with relocating snakes, and how to do it well
- Subjectively comment on relocating massasaugas
 - Kind of an opinionated review
- I am not going to review or summarize previous efforts
 - I see my task as more to get the discussion going

Defining Terms

- Relocation
 - Moving an animal from one place to another
- Repatriation (=Reintroduction)
 - Releasing individuals into a landscape from which they have been extirpated
- Translocation
 - Putting them somewhere they haven't been (that we knew about)
- Augmentation (=Enhancement)

= "RTA"

Moving Snakes for Conservation

- A rationale for moving individual snakes is often couched in conservation terms
 - Save a snake
 - Save the genetic contribution of the individual
- Substantive conservation efforts likely involve numerous snakes
- To be successful, such efforts likely to work require a sustained, well thought out effort

Relocating Individual Snakes

- Why move snakes?
 - Seems like a good thing to do
 - Bulldozer or fen...hmmm
 - Looks good
 - Beats the bulldozer PR
 - It feels good
 - Save the snake
 - It might work!!
 - There are success stories

Relocating Individual Snakes

- Although I speak of moving individual snakes, I did not actually intend to focus on that here.
- But...the question of what to do with that single troublesome snake is an important issue.
- My answer: move it as little as possible.

Snakes Have Spatial Knowledge

- Move them and they try to figure out where they are
 - In unfamiliar territory they make straight line moves, likely looking for something familiar
 - This can be unhealthy
- Relocated snakes are naïve
 - An adult relocated snake will act like an adult with the knowledge base of a neonate
 - It won't know about hazards and critical habitat such as hibernacula

So what is "As little as possible"?

- To the nearest "wild" part of the yard
 - The initial observer will probably never see it again
- As close as possible without lying to the land owner
 - Could be a litigious situation
- Avoid crossing a barrier
 - Stay at the same wetland
 - Stay in the same complex
- Put it in the next complex if necessary
 - But don't get in the habit of moving snakes

Repatriation and Augmentation

- The snakes are gone, or nearly so
- It's not so much that you want to save the snake as that you want to save/restore a population
- How do you decide if RTA is the right thing to do?

Addressing Original Threats

- Why was the population imperiled or extirpated in the first place?
 - If this issue, or suite of issues, is not addressed, why would RTA succeed?
- Is there enough habitat?
 - Don't forget gestation and hibernation sites
 - Be there or know you're going to be
- Was the problem the habitat?
 - Is disease the issue?
 - Is there a sufficient prey base?

Reality Check

- If threats have not been neutralized
 - Is it worth it?
 - Are you committed to forever?
- Could the resources be better spent elsewhere?

Are the Snakes Really Gone?

If you knew you were doing an augmentation rather than a repatriation, would you still do it?

Source Populations

lots of questions

- Where are the "volunteers" from?
 - Are you imperiling that population?
- Are they healthy?
- Are they genetically appropriate?
 - What is "genetically appropriate"??
 - Likely they will come from as close by as possible
- Can you get enough snakes?

Do the Neighbors Mind?

Do you work for the UN, have a black helicopter, and plan to drop massasaugas in by air in little baskets?

Defining Success

- How do you know when RTA worked?
 - Overwintering survival?
 - Reproductive success?
 - Growing population?
- Is there any monitoring planned?
 - Serious efforts will have monitoring built in

The likely usual goal is population viability with little or no ongoing intensive manipulation

Success May Include "Failure"

- If the goal is jumpstarting or invigorating a population, losses will occur
 - Mortality should at least equal that normally expected based on age/size class
 - Why should we expect anything else??
 - It could be worse
 - Success will require a commitment to overcome this likelihood
 - Can 10s or 100s of snakes be inserted?

So What Do I think?

An opinionated review

- RTA with massasaugas may very well be appropriate
 - Saugers don't have specialized diets
 - They are relatively flexible with respect to habitat
 - However, it is not a front line tool
- Source populations should be from as close as possible
 - Regional (at a *minimum*) differences in behavior
 - Differences in use of uplands
 - Differences in use of habitats
 - Take should not threaten the source

Repatriation>Augmentation> Translocation

- Why put things where they never were?
- What are the risks to the remnant population if snakes carrying disease or inappropriate genetic content are introduced?
- The only legitimate reason (as far as I can tell at the moment) for augmentation is reversing inbreeding depression

Threats Must Be Addressed



- ALL threats must be addressed
- A suitable landscape must await imports
 - Hibernacula and gestation sites, not just foraging habitat, must be available

Who Should "Volunteer"?



- Releases of juvenile snakes may be most appropriate
 - They are more "disposable"
 - Adults may be more difficult to entrain to new location
 - Headstarted juveniles might have better success per individual than neonates

Expect Losses

- I anticipate significant but potentially sustainable losses of relocated animals
 - Transplants should be numerous

Timing

- Releases should occur in the spring or early summer to allow snakes to explore habitat and find hibernacula
- Option of forced use of hibernacula might be explored

Research Questions

- Are there possible means of "soft" release?
 - Release into hibernacula
 - Release into enclosures
- How do naïve massasaugas behave compared to resident snakes?
- Are all massasaugas created equal?
 - What kinds of breeding programs are most appropriate?

REQUEST: leads on snake headstarting/RTA programs- let us know what's up so we can report on it.

Thanks!



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