Jim Andrews' Notes for House Fish, Wildlife, & Natural Resources
Friday, January 22, 2021

Jim Andrews' Background

- Graduate Student, Research Herpetologist, and Research Scholar Middlebury College 1990-2008
- Herpetology lecturer at Rubenstein School of Environment and Natural Resources University of Vermont 2001-2019
- Chair of the Reptile and Amphibian Scientific Advisory Group of the Vermont State Endangered Species Committee 1994-present
- Coordinator of the Vermont Reptile and Amphibian Atlas Project 1994-present

Endangered Species Committee (ESC) and Scientific Advisory Groups (SAGs)

- SAGs advise the Endangered Species Committee, ESC advises the Secretary
- SAGs meet 2-3 times a year
- SAGs also serve as a resource for Vermont Fish & Wildlife Department (F&W)
- Independent scientific advice from outside government is critical
- SAGs choose their own chairs and solicit and recommend their own members
- SAG advice is nearly always supported and forwarded by the ESC
- ESC advice to the Secretary is followed the great majority of the time, but sometimes politics and policy intervene and override
- Advice to the Secretary from her staff is sometimes screened by F&W admin/political appointees

Funding & Staffing of F&W

- Heavily skewed toward game species in funding and personnel, though improvements have been made
- Limited ability/expertise to conserve the non-game species (the vast majority of species)
- Funding and personnel have not kept up with their expanded role (e.g., had limited expertise on reptiles and amphibians until last year, and have one person responsible for all invertebrates (the largest taxonomic group)
- May not replace Nongame Coordinator when he retires this coming year
- Need a dedicated threatened & endangered species staff person, a non-game coordinator, additional staff for Act 250 review, additional expertise/staff in invertebrates and plants
- Need to develop a wider funding base and expand their constituent base to include all Vermont residents and tourists

Reptile and Amphibian Conservation (turtles, snakes, lizards, salamanders, frogs)

- Roughly 40 species: Turtles-7, Snakes-11, Lizards-1, Salamanders-10, Frogs-11

- Unique traits (entirely local populations that don't migrate out of state, multiple habitat use that requires connectivity between habitats, permeable skin of amphibians that takes in most substances dissolved in water, slow speed moving across roads), makes them excellent environmental indicators

- Largest threats: habitat loss (development & agriculture, loss of wetlands), habitat fragmentation (roads and development breaking up connections between breeding/foraging and overwintering habitats), habitat degradation (climate change, introduced diseases, chemicals), collection and persecution

- Nineteen (48%) species are considered medium or high priority species of conservation need (SGCN). Eight (20%) species are listed as threatened or endangered in Vermont:

  Boreal Chorus Frog, not found in Vermont since 1999, assumed extirpated (reasons unknown)
  North American Racer, not found in Vermont since 2014, assumed here in limited numbers, one at-risk population (habitat loss, fragmentation, and persecution)
  Fowler's Toad, not found in Vermont since 2007, assumed here in limited numbers, one at-risk population (habitat loss)
  Spotted Turtle, current records, one apparently healthy population, two at-risk populations (habitat loss & fragmentation, genetic isolation, collection also a risk)
  Spiny Softshell, current records, two populations (habitat loss and degradation, increased predation)
  Common Five-lined Skink, current records, one apparently healthy population, three others appear limited and isolated (habitat loss, fragmentation, & degradation)
  Timber Rattlesnake, current records, two populations, both probably secure but habitat loss, fragmentation, disease, genetic isolation, and road mortality are issues
  Eastern Ratsnake, current records, roughly seven populations, one very isolated genetically, habitat loss, fragmentation, disease, road and ag mortality, & human persecution are risks at most sites

- Only three recovery plans are in place: Spiny Softshell, Spotted Turtle, Timber Rattlesnake. Plans take considerable time and funding that F&W don't have, often they are contracted out.

Long-term Prospects for Wildlife (Sustainability)

- Continued habitat loss, fragmentation, and degradation (including climate change) will continue to bring about the loss of wildlife populations, even of common species, and may cause the local extirpation of those species that have more specific habitat needs (sand plains, old field, low pH pools) or those that are already genetically isolated. Climate change (habitat degradation) may push out northern species such as Mink Frog.

- The environmental damage of many economic activities is not reflected in their cost, so our current economic system is not self-regulating and encourages habitat loss, fragmentation, and degradation. These (externalities) need to be inserted into the economic system.

- Ecological economists are needed for their input on how to adjust our current economic system so that it is sustainable and will allow maintenance of wildlife populations (and us), and healthy ecosystems in the future.

- In order to end continued habitat loss, fragmentation, and degradation, we must stabilize our human population size (through education and family planning resources), end consumption, fragmentation, and degradation of habitat, and maintain or lower our resource use per capita (see below).

- Conservationists developed the I=PAT equation to show human impact on our environment. I is the negative impact on the environment of our activities, P is the size of our human population, A is affluence or resource use per capita and T is technology. We have focused on technology to minimize our environmental impact and support human and wildlife populations; however, we have not focused enough on the major drivers of environmental harm: human population and affluence (resource use per capita). They need to be addressed if we hope to maintain wildlife and human populations over the long term.