DISTRIBUTIONS OF AMPHIBIANS IN THE ST. CROIX NATIONAL SCENIC RIVERWAY

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Introduction

Under the Amphibian Research and Monitoring Initiative (ARMI), scientists from the U.S. Geological Survey (USGS) are working to determine the statuses of populations of amphibians on lands managed by the Department of the Interior. The goals of the National Park Service's Inventory and Monitoring program (IMP) are to inventory species that live on NPS-managed lands and to monitor key indicators of ecosystem health. With support from ARMI and IMP, we began to study the distributions and relative abundances of amphibians in the St. Croix National Scenic Riverway (SCNSR) during 2002.

Methods

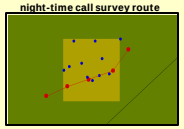
For logistical purposes, we divided the SCNSR into 12 segments of roughly 15 miles each and then selected 25-ha blocks of habitat randomly within each segment to survey. We surveyed these 25-ha blocks for amphibians and their breeding sites according to standardized methods once during each of three separate two-week periods (early breeding season, mid-breeding season, and late breeding season). We measured presence and relative abundance (visually and audibly), frequencies of malformations, water chemistry, habitat characteristics, GPS coordinates, and weather conditions at each breeding site.

Species of amphibians by management unit

Common Name	Genus species	Published[1]	ARMI SCNSR[2]	ARMI UMNFWR[3]	ARMI VNP[4]
mudpuppy	*Necturus maculosus*	X			
central newt	*Notophthalmus viridescens*	X			X
redback salamander	*Plethodon cinereus*	X	X		
four-toed salamander	*Hemidactylium scutatum*	X			
blue-spotted salamander	*Ambystoma laterale*	X	X		X
spotted salamander	*Ambystoma maculatum*	X			
eastern tiger salamander	*Ambystoma tigrinum*	X			
American toad	*Bufo americanus*	X	X	X	X
Cope's gray treefrog	*Hyla chrysoscelis*	X	X	X	
eastern gray treefrog	*Hyla versicolor*	X	X	X	X
northern spring peeper	*Pseudacris crucifer*	X	X	X	X
western chorus frog	*Pseudacris triseriata*	X	X	X	X
bullfrog	*Rana catesbeiana*	X	X	X	X
greenfrog	*Rana clamitans*	X	X	X	X
pickerel frog	*Rana palustris*	X			
northern leopard frog	*Rana pipiens*	X	X	X	X
mink frog	*Rana septentrionalis*	X	X		X
wood frog	*Rana sylvatica*	X	X		X
Blanchard's cricket frog	*Acris crepitans blanchardi*			X	

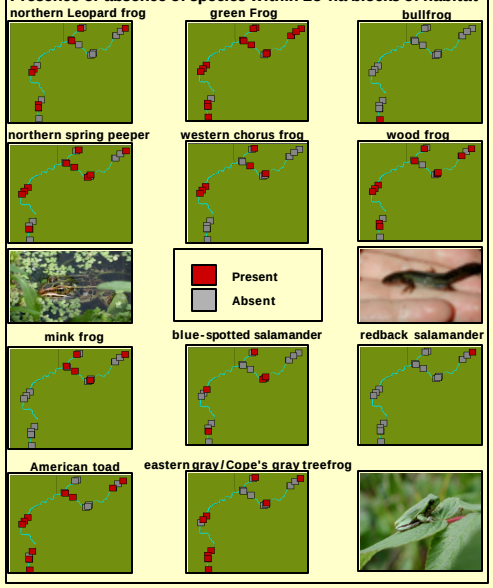
[1] Published records and anecdotal reports – St. Croix National Scenic Riverway
[2] ARMI – St. Croix National Scenic Riverway – 2002
[3] ARMI – Upper Mississippi NWFR – 2002
[4] ARMI – Voyageurs National Park – 2002

Example of 25-ha block, breeding sites within block and associated night-time call survey route



25-ha block
Breeding sites
Night-time call surveys

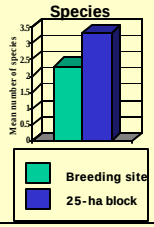
Presence or absence of species within 25-ha blocks of habitat



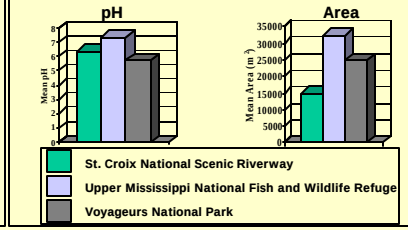
Results/Conclusions

We surveyed 23 25-ha blocks of habitat in the SCNSR according to these methods. These 23 blocks contained a total of 70 breeding sites. Preliminary analysis of our data shows that we located 11 of the 12 species we observed at breeding sites. The mean number of species present per breeding site was 2.31 (range of 0 – 6) and 3.30 (range of 0 – 7) per block. Approximate sizes and pHs of breeding sites ranged from 15 to 250,000 m^2 and 4.03 to 8.86, respectively. Published records and anecdotal evidence suggest that 18 species of amphibians have been found in the SCNSR in the past. We expect to locate more species in future surveys. Although the Riverway is different geographically, physically, and chemically than the Upper Mississippi River National Wildlife and Fish Refuge and Voyageurs National Park, we found many of the same species in all three areas.

Mean number of species per breeding site and block in SCNSR



Mean pH and area of breeding sites in SCNSR, UPMNFWR, and VNP



Acknowledgments

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- Inventory and Monitoring Program (NPS)