

**ILLINOIS LIST OF ENDANGERED AND THREATENED SPECIES
5-YEAR REVIEW AND REVISION ENDING IN 2014**

Public Hearing Documents: Hearing record of the public hearing and written comment period for the ESPB 2014 proposed revision of the Illinois List of Endangered and Threatened Species.

**Hearing record of the public hearing and written comment period for the ESPB
2014 proposed revision of the Illinois List of Endangered and Threatened
Species.**

From the public hearing, noon – 4:00 PM, June 26, 2014				Begins page (use red page number in upper right)
Hearing transcript				1
Comment number	Nature of comment	Commenter name	Commenter affiliation	
	No comments received.			
From the written comment period, noon June 26, 2014 – midnight July 11, 2014				
Comment number	Nature of comment	Commenter name	Commenter affiliation	
1	Recommends against changing listing status from threatened to endangered for Black Cohosh (<i>Cimicifuga rubifolia</i>).	Chris Evans	Illinois Department of Natural Resources	13
2	Recommends adding Bison (<i>Bison bison</i>) to the IL List of Endangered and Threatened Species.	Kenny Bielski	None	17
3	Recommends against adding Copperbelly Water Snake (<i>Nerodia erythrogaster neglecta</i>) to the IL List of Endangered and Threatened Species.	Dr. Mike Dreslik	Illinois Natural History Survey	18
4	Recommends against adding Copperbelly Water Snake (<i>Nerodia erythrogaster neglecta</i>) to the IL List of Endangered and Threatened Species as Illinois threatened.	Ann Holtrop	Illinois Department of Natural Resources	45
5	Recommends adding Illinois Cave Beetle (<i>Pseudanophthalmus illinoisensis</i>) to the IL List of Endangered and Threatened Species as Illinois endangered.	Seth Fielding Turner	Claims no affiliation – sent from Southern Illinois University email	46



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STATE OF ILLINOIS
ENDANGERED SPECIES PROTECTION BOARD

IN THE MATTER OF:

PROPOSED REVISION OF THE
ILLINOIS LIST OF THREATENED
AND ENDANGERED SPECIES

Public Hearing held, on June 26, 2014, at
the Illinois Audubon Society, Adams Wildlife
Sanctuary, 2315 East Clear Lake Avenue,
Springfield, Illinois 62703, scheduled for the
hours of 12:00 P.M. to 4:00 P.M.

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A P P E A R A N C E S

MS. SHELLY L. KNUPPEL
Hearing Officer
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702-1271
217.782.1809
Shelly.L.Knuppel@illinois.gov

MS. ANNE MANKOWSKI
Director
Illinois Endangered Species
Protection Board
One Natural Resources Way
Springfield, Illinois 62702-1271
217.785.8687
anne.mankowski@illinois.gov

MS. JEANNIE BARNES
Manager
Natural Heritage Database
One Natural Resources Way
Springfield, Illinois 62702-1271
217.782.2954
jeannie.barnes@illinois.gov

Court Reporter:
Robin A. Enstrom, RPR, CSR
Illinois CSR #084-002046
Midwest Litigation Services
15 S. Old State Capitol Plaza
Springfield, Illinois 62701
217.522.2211
800.280.3376

PUBLIC HEARING 6/26/2014

1 (Hearing began at 12:04 P.M.)

2 MS. KNUPPEL: All right. It is now
3 12:04, on June 26, 2014, and this is the public
4 hearing from the Illinois Endangered Species
5 Protection Act, regarding proposed revision of
6 the Illinois List of Threatened and Endangered
7 Species.

8 At this point we will call the
9 meeting to order. My name is Shelly Knuppel. I
10 will be acting as the hearing officer today. I
11 am employed by the Illinois Department of Natural
12 Resources, Office of Legal Counsel.

13 MS. MANKOWSKI: I am Anne Mankowski,
14 the executive director of the Illinois Endangered
15 Species Protection Board.

16 And if our court reporter would
17 introduce herself.

18 COURT REPORTER: Robin Enstrom,
19 Midwest Litigation.

20 MS. BARNES: Jeannie Barnes with the
21 Natural Heritage Database.

22 MS. KNUPPEL: And as a matter of
23 housekeeping, restroom facilities are located
24 outside the room and to the right. Other than

1 that -- other than those areas, if you are a
2 visitor, you are not permitted to go elsewhere in
3 this building without an escort.

4 The purpose of this meeting today:
5 The subject of this public hearing concerns the
6 Illinois Endangered Species Protection Board's
7 preliminary decisions for proposed revision of
8 the Illinois List of Endangered and Threatened
9 Species. Our purpose today is to receive
10 comments and evidence from the public regarding
11 the preliminary decisions for proposed revision.

12 What this meeting is not: This
13 meeting is not a forum to discuss other issues.
14 It is not a forum for general complaints,
15 concerns, compliments, et cetera, in relation to
16 any other subject matter. All comments will be
17 asked to be limited to the proposed changes to
18 the Threatened and Endangered Species List.

19 The Illinois Endangered Species
20 Protection Act requires that the Endangered
21 Species Protection Board review and revise the
22 Illinois List of Endangered and Threatened
23 Species as warranted but in no case less
24 frequently than every five years. The Act also

1 requires that the Board make its listing
2 decisions based on scientific evidence.

3 The Board has recently undergone a
4 comprehensive review both of species currently on
5 the Illinois list and of others that are not
6 currently listed as either threatened or
7 endangered in Illinois. The species now proposed
8 for listing, delisting, change or no change in
9 listing status are those for which there are
10 sufficient scientific evidence to support that
11 action.

12 The list of changes that are being
13 proposed by the Endangered Species Protection
14 Board is available today, as well as a brief
15 narrative for each species for which listing
16 status change is proposed, summarizing its status
17 in Illinois. Copies of that information is
18 located on that table.

19 Notice of this public hearing has
20 been properly published in the official state
21 newspaper as required by the Act.

22 Following this hearing and comment
23 period, the Board will review any additional
24 evidence received or comments made regarding list

1 additions, deletions, or changes in listing
 2 status. At a subsequent Board meeting open to
 3 the public, the Board plans to adopt those
 4 changes that are supported by sufficient
 5 evidence. Any changes made do not become law
 6 until the Administrative Code is amended to
 7 reflect those changes, a process which usually
 8 takes six to nine months.

9 With that, we will go to item 4 on
 10 the agenda where we will begin to take public
 11 comments and evidence.

12 (Discussion off the record.)

13 MS. KNUPPEL: The following are
 14 instructions for the public hearing: There are
 15 registration forms that are available at the
 16 hearing over here by Jeannie. Everyone should
 17 fill out one and return the form to the front of
 18 the room before the hearing starts and indicate
 19 if you would wish to comment orally on the list.

20 Anyone who wishes to give oral
 21 comments should abide by the following rules: We
 22 will call on you using your registration form in
 23 the order they were received. We would ask that
 24 you come to the front of the room over here at

PUBLIC HEARING 6/26/2014

Page 8

1 this table to speak, give your name and
2 affiliation, if any. We are asking that you
3 limit your comments to five minutes each. That
4 gives everyone else equal opportunity to be
5 heard. I will interrupt you and stop you at the
6 end of five minutes even if you are in the middle
7 of a comment or sentence.

8 We will accept comments and evidence
9 on the Board's preliminary decisions for the
10 revision of the Illinois List of Endangered and
11 Threatened Species only. We are here to gain
12 comments and evidence from the public, not to
13 engage in discussion or debate regarding any of
14 those comments.

15 All comments received during the
16 public hearing and written comment period --
17 including the name, affiliation, and address or
18 e-mail address of the sender -- will be included
19 in the hearing record, and following the close of
20 the comment period, the hearing record will be
21 posted to the Board's website.

22 The back of your agenda sheet gives
23 information on submission of written comments.
24 If you decide to give oral testimony, this does

1 not preclude you from also submitting a written
2 comment. Likewise, if you provide a written
3 comment, you can also supplement that with an
4 oral comment today.

5 And we will wait for our first
6 commenters.

7 MS. MANKOWSKI: Great. Thank you,
8 Shelly.

9 (Off the record.)

10 MS. KNUPPEL: Now it's 4:00 o'clock.

11 Our meeting was published to be held
12 from noon to 4:00 P.M. today. Time has elapsed.
13 We see no one waiting to give comments; so I will
14 declare this meeting to be closed.

15 Hearing closed.

16 (Hearing closed at 4:00 P.M.)

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CERTIFICATE OF REPORTER

STATE OF ILLINOIS)
) ss.
COUNTY OF SANGAMON)

I, ROBIN A. ENSTROM, a Registered Professional Reporter and Certified Shorthand Reporter within and for the State of Illinois, do hereby certify that the foregoing proceedings were taken by me to the best of my ability and thereafter reduced to typewriting under my direction; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and further that I am not a relative or employee of any attorney or counsel employed by the parties thereto, nor financially or otherwise interested in the outcome of the action.

ROBIN A. ENSTROM
Illinois CSR No. 084-002046

<p style="text-align: center;">A</p> <p>abide 7:21 ability 10:9 accept 8:8 Act 4:5 5:20,24 6:21 acting 4:10 action 6:11 10:13 10:17 Adams 1:15 additional 6:23 additions 7:1 address 8:17,18 Administrative 7:6 adopt 7:3 affiliation 8:2,17 agenda 7:10 8:22 amended 7:6 Anne 3:6 4:13 anne.mankows... 3:10 areas 5:1 asked 5:17 asking 8:2 attorney 10:15 Audubon 1:15 available 6:14 7:15 Avenue 1:16</p> <hr/> <p style="text-align: center;">B</p> <p>back 8:22 Barnes 3:11 4:20 4:20 based 6:2 began 4:1 best 10:9 Board 1:2 3:8 4:15 5:21 6:1,3 6:14,23 7:2,3 Board's 5:6 8:9 8:21 brief 6:14 building 5:3</p> <hr/> <p style="text-align: center;">C</p>	<p>C 3:1 call 2:3 4:8 7:22 Capitol 3:21 case 5:23 CERTIFICATE 10:1 Certified 10:6 certify 10:8 cetera 5:15 change 6:8,8,16 changes 5:17 6:12 7:1,4,5,7 Clear 1:16 close 8:19 closed 9:14,15,16 Code 7:6 come 7:24 comment 6:22 7:19 8:7,16,20 9:2,3,4 commenters 9:6 comments 5:10 5:16 6:24 7:11 7:21 8:3,8,12 8:14,15,23 9:13 complaints 5:14 compliments 5:15 comprehensive 6:4 concerns 5:5,15 Copies 6:17 counsel 4:12 10:11,15 COUNTY 10:4 court 3:19 4:16 4:18 CSR 3:19,20 10:21 currently 6:4,6</p> <hr/> <p style="text-align: center;">D</p> <p>D 2:1 Database 3:12 4:21 debate 8:13 decide 8:24</p>	<p>decisions 5:7,11 6:2 8:9 declare 9:14 deletions 7:1 delisting 6:8 Department 3:3 4:11 direction 10:11 director 3:7 4:14 discuss 5:13 discussion 7:12 8:13</p> <hr/> <p style="text-align: center;">E</p> <p>E 2:1 3:1,1 East 1:16 either 6:6 elapsed 9:12 employed 4:11 10:12,15 employee 10:14 endangered 1:2,6 3:7 4:4,6,14 5:6 5:8,18,19,20,22 6:7,13 8:10 engage 8:13 Enstrom 3:19 4:18 10:5,21 equal 8:4 escort 5:3 et 5:15 evidence 5:10 6:2 6:10,24 7:5,11 8:8,12 executive 4:14 e-mail 8:18</p> <hr/> <p style="text-align: center;">F</p> <p>facilities 4:23 fill 7:17 financially 10:16 first 9:5 five 5:24 8:3,6 following 6:22 7:13,21 8:19 foregoing 10:8 form 7:17,22</p>	<p>forms 7:15 forum 5:13,14 frequently 5:24 front 7:17,24 further 10:14</p> <hr/> <p style="text-align: center;">G</p> <p>gain 8:11 general 5:14 give 7:20 8:1,24 9:13 gives 8:4,22 go 5:2 7:9 Great 9:7</p> <hr/> <p style="text-align: center;">H</p> <p>heard 8:5 hearing 1:14 3:2 4:1,4,10 5:5 6:19,22 7:14,16 7:18 8:16,19,20 9:15,16 held 1:14 9:11 Heritage 3:12 4:21 hours 1:18 housekeeping 4:23</p> <hr/> <p style="text-align: center;">I</p> <p>Illinois 1:1,6,15 1:17 3:3,4,7,9 3:13,20,22 4:4 4:6,11,14 5:6,8 5:19,22 6:5,7 6:17 8:10 10:3 10:7,21 included 8:18 including 8:17 indicate 7:18 information 6:17 8:23 instructions 7:14 interested 10:16 interrupt 8:5 introduce 4:17 Introduction 2:3</p>	<p>issues 5:13 item 7:9</p> <hr/> <p style="text-align: center;">J</p> <p>Jeannie 3:11 4:20 7:16 jeannie.barnes... 3:14 June 1:14 4:3</p> <hr/> <p style="text-align: center;">K</p> <p>Knuppel 3:2 4:2 4:9,22 7:13 9:10 Knupple 2:3</p> <hr/> <p style="text-align: center;">L</p> <p>L 3:2 Lake 1:16 law 7:5 Legal 4:12 Likewise 9:2 limit 8:3 limited 5:17 list 1:6 4:6 5:8,18 5:22 6:5,12,24 7:19 8:10 listed 6:6 listing 6:1,8,9,15 7:1 Litigation 3:21 4:19 located 4:23 6:18</p> <hr/> <p style="text-align: center;">M</p> <p>Manager 3:12 Mankowski 3:6 4:13,13 9:7 matter 1:4 4:22 5:16 meeting 4:9 5:4 5:12,13 7:2 9:11,14 middle 8:6 Midwest 3:21 4:19 minutes 8:3,6 months 7:8</p>
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From: [Evans, Chris](#)
To: [DNR.Espb](#)
Subject: 2014 List Review public comment
Date: Tuesday, July 08, 2014 10:35:25 AM
Attachments: [CIMRUB.Iron Furnace."13 EOR binder.pdf](#)

Hello,

Thank you for the opportunity to comment on the list revision.

I disagree with the recommendation to change the status of *Cimicifuga rubifolia* from Threatened to Endangered. Most of the known sites are on protected lands (either state or federal) and many are obscure or difficult to get to (making it less likely for herb collectors). I've visited three sites either last summer or earlier this year and at all three sites *Cimicifuga* was easily located with robust plants either flowering or getting ready to flower. I submitted an EOR for one site last year (see attached) and will be developing EORs for the other two sites soon. Given that many of the sites are protected and the ones recently visited are doing fine, I think there is no need to change the status of this plant at this time.

Chris

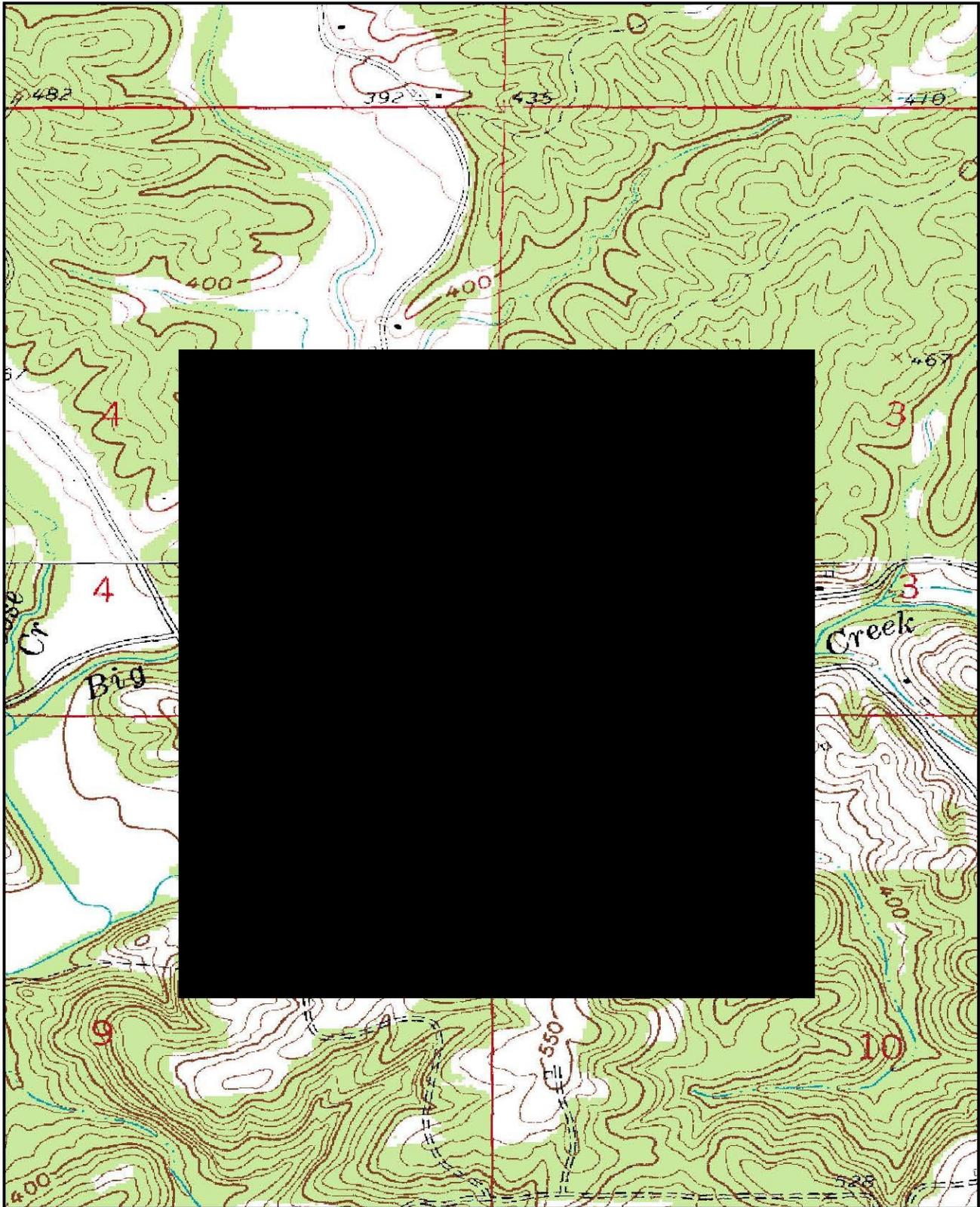
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Christopher Evans
Illinois Wildlife Action Plan
Invasive Species Campaign Coordinator
11731 State Hwy 37
Benton, IL 62812
Office: 618.435.8138 X 131
Cell: 618.364.7261
Chris.Evans@Illinois.gov

<http://www.illinoisinvasives.org>
<http://www.facebook.com/illinoisism>

Illinois Natural Heritage Database Endangered /Threatened Species Occurrence and Sighting Report Form										
Name of Species:		Cimicifuga rubifolia				Date Observed:		06 June '13		
New Sighting		or Update	X	Entire extent of occurrence is:		X	known OR		not known	
Naturally Occurring	X	or	Introduced Location		When?		From Where?			
Location: (For more accurate mapping, please provide a map showing the exact location) Map attached										
County:	Hardin		Latitude	[REDACTED]		Longitude	[REDACTED]			
Direction from Nearest Landmark:			[REDACTED] Shawnee National Forest's Iron Furnace Recreation Area.							
Natural Division and Section:			Shawnee Hills – Lesser Shawnee Hills							
Legal Description: Township		12	Range	8	Section	4	Quad name	Rosiclare		
INAI Site Name:	Not an INAI site				Survey Site Name (alias)		Iron Furnace			
Observations: (evidence of breeding or # of %, && juvenile animals or # fruiting/flowering/seedling plants, etc.): fruiting/flowering/seedling plants										
Several hundred individuals we observed. None were in flower or fruit on the date of this observation but just starting to bolt.										
Description of Area:		North facing talus slope in rich woods. Dense forest cover. Observed with <i>Hepatica nobilis</i> concolor, <i>Trillium flexipese</i> , <i>Lindera benzoin</i> , <i>Staphylea triloba</i> , <i>Asarum canadense</i> , <i>Carex careyana</i> , <i>Polymnia Canadensis</i> , <i>Carex albursina</i> . On Shawnee National Forest land.								
Comments:	Threats: Population is down slope from a large infestation of <i>Vinca minor</i> and a recently establish population of garlic mustard. Autumn olive and Japanese honeysuckle occur within population.									
Specimen/voucher #(s):		No Voucher collected				Where deposited?				
Name of Observer: Jody Shimp & Chris Evans										
Observer's Phone Number		(618)	435	-	8138	Ext 127		
Return to: Illinois Natural Heritage Database Program Manager, Illinois Department of Natural Resources, One Natural Resources Way, Springfield IL 62702-1271										
										Rev 11/07

Cimicifuga rubifolia - June 6, 2013



0 0.125 0.25 0.5 Miles

Site surveyed June 6, 2013
by Jody Shimp, Chris Evans

Population occurs along steep slope above Big Creek

Coordinates of locations



Cimicifuga rubifolia – Hardin County – June 6th, 2013



From: [Miller, Karen M.](#)
To: [Mankowski, Anne](#)
Subject: FW: endangered species list
Date: Thursday, July 10, 2014 8:46:11 AM

For once I get to forward something to you.

From: Kenny Bielski [mailto:mr.pie.kenny@gmail.com]
Sent: Wednesday, July 09, 2014 10:08 PM
To: Miller, Karen M.
Subject: endangered species list

Hi,

I have a suggested species that I think deserves to be added to the list. I think the American Bison should be a protected animal in Illinois and be reintroduced. They once ranged around most of the U.S but now there are very few herds spread throughout the united states today. i think it would be healthier our land to once again have bison roaming it. i have also been watching the updates on protecting black bears in Illinois and think that is great that they can now return to what was once there range of habitat.

Thanks,
Kenny Bielski

From: dreslikmj@gmail.com on behalf of [Mike dreslik](#)
To: [DNR.Espb](#)
Subject: 2014 List Review public comment
Date: Friday, July 11, 2014 1:18:55 PM
Attachments: [ErythrogasterPOSINHS.pdf](#)

Hello,

Please find attached our white paper comment on the proposed listing of *Nerodia erythrogaster*. In the document we provide evidence that the species meets neither the criteria for listing under Sections 2 and 7 of the IESPA, especially considering the recent taxonomic changes that have been accepted by the herpetological community. Given that, our stance is the species should not be listed in Illinois. I thank you for your time and consideration.

Sincerely,

Michael J. Dreslik, Ph.D.
Illinois Natural History Survey
Prairie Research Institute
University of Illinois Urbana-Champaign
1816 South Oak Street
Champaign, Illinois 61820
Office - (217)300-0970

Position Statement on the Listing of the Plain-bellied Watersnake (*Nerodia erythrogaster*) as State Threatened

Michael J. Dreslik and Christopher A. Phillips

¹Illinois Natural History Survey
Prairie Research Institute
University of Illinois Urbana-Champaign
1816 South Oak Street, Champaign, Illinois 61820

SUMMARY

- Legal Interpretation
 - The IESPA cannot legally protect anything other than the distinct population of the Plain-bellied Watersnake segment using §7 of the IESPA.
 - Therefore, listing must then be extended using the definitions of endangered and threatened in §2 of the IESPA.
- Meeting the Definition of Endangered or Threatened
 - An initial pass of museum records produced 311 specimens representing 35 Counties.
 - The total predicted area using the most conservative modelling approach is predicted to be ~18,000 km² or ~7,000 mi².
 - Therefore, the Plain-bellied Watersnake in our expert opinion, does not meet the definition of threatened under the IESPA.
- The Plain-bellied Watersnake does not meet the criteria for listing in Illinois at this time.

PURPOSE

On 21 February 2014, the IESPB passed a motion to consider listing the Plain-bellied Watersnake (*Nerodia erythrogaster*) as at state-threatened species. This motion was entertained and passed based on sentence 1 of §7 in the IESPA which states,

“Any species or subspecies of animal or plant designated as endangered or threatened by the Secretary of the Interior of the United States pursuant to the Endangered Species Act of 1973, P.K. 93-205, as amended, shall automatically be listed as an endangered or threatened species under this Act and thereby placed on the Illinois List by the Board without notice or public hearing.”

The purpose of this document is to illustrate the Plain-bellied Watersnake does not warrant listing in Illinois because it meets neither the criteria for automatic listing nor the definitions of “endangered” or “threatened”.

LIST OF ACRONYMS

Throughout this document we will be using the following abbreviations:

CITES – Convention on International Trade in Endangered Species of Wild Flora and Fauna
 DDNREC – Delaware Department of Natural Resources and Environmental Control
 DPS – Distinct Population Segment
 ESA – Endangered Species Act of 1973
 FNMH – Field Museum of Natural History
 IESPA – Illinois Endangered Species Protection Act (520 ILCS)
 IESPB – Illinois Endangered Species Protection Board
 ILCS – Illinois Compiled Statutes
 ILDNR – Illinois Department of Natural Resources
 INDNR – Indiana Department of Natural Resources
 INHS – Illinois Natural History Survey
 IODNR – Iowa Department of Natural Resources
 IUCN – International Union for the Conservation of Nature
 KDFWR – Kentucky Department of Fish and Wildlife Resources
 MDDNR – Maryland Department of Natural Resources
 MIDNR – Michigan Department of Natural Resources
 ODNR – Ohio Department of Natural Resources
 SIUC – Southern Illinois University, Carbondale
 UINHM – University of Illinois Museum of Natural History
 USFWS – United States Fish and Wildlife Service

SPECIES DESCRIPTION AND STATUS

Description and Natural History.– The Plain-bellied Watersnake is a large dark colored aquatic snake that typically inhabits riverine habitats and associated floodplain wetlands (Phillips *et al.*, 1999; Smith, 1961). It is a live-bearing snake that can attain sizes of up to 140 cm in length (Phillips *et al.*, 1999; Smith, 1961). The snake mates in May – June and birthing follows in late July – August with females having up to 20 offspring (Phillips *et al.*, 1999; Smith, 1961). The snake forages in both aquatic and terrestrial habitats and most often feeds on fish and amphibians (Phillips *et al.*, 1999; Smith, 1961).

Taxonomic Status.– Until recently there were four recognized subspecies of Plain-bellied Watersnakes in the United States (Ernst and Ernst, 2003):

- Red-bellied Watersnake (*N. e. erythrogaster*)
- Copper-bellied Watersnake (*N. e. neglecta*)
- Yellow-bellied Watersnake (*N. e. flavigaster*)
- Blotched Watersnake (*N. e. transversa*)

Using mtDNA sequencing recent genetic evidence suggests that it is a single wide-spread species and subspecific designations are not warranted (Makowsky *et al.*, 2010). Further, the major scientific herpetological organizations (Crother *et al.*, 2012) and NatureServe (2014) have formally accepted this taxonomic change.

Distribution The Plain-bellied Watersnake occurs mainly through the southeastern United States. It follows a coastal distribution from Delaware south to Northern Florida, up the Mississippi River Valley, and west through Texas Oklahoma, and Nebraska (Ernst and Ernst, 2003; Plate 1).

The species also has numerous disjunct populations within that range extending as far north as south central Michigan (Ernst and Ernst, 2003; Plate 1). In Illinois the species primarily ranges through the southern 1/3 of the state with disjunct populations following the Mississippi River northward (Phillips *et al.*, 1999; Smith, 1961). The former ranges of the two subspecies in Illinois were the western $\sim\frac{2}{3}$ of species' range for the Yellow-bellied Watersnakes and the eastern $\sim\frac{1}{3}$ of the range for the Copper-bellied Watersnakes (Smith, 1961).

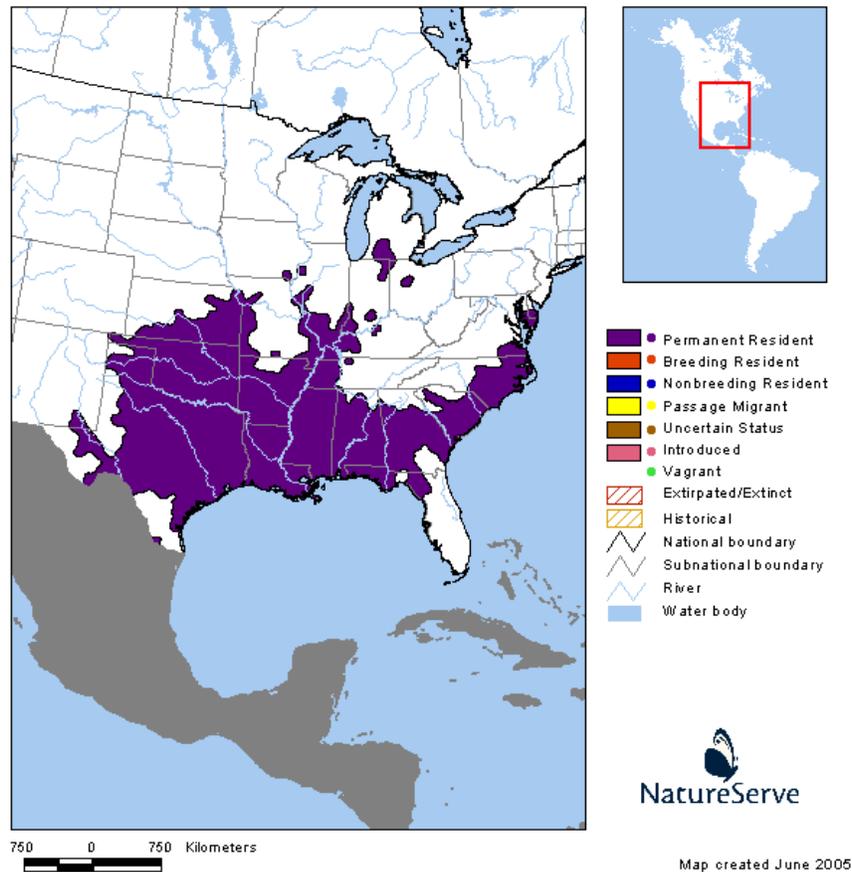


PLATE 1: Distribution map of the Plain-bellied Watersnake (*Nerodia erythrogaster*) in the United States taken from NatureServe (2014).

Conservation Status.—Nationally, the USFWS lists the disjunct populations in south-central Michigan, northeastern Indiana, and northwestern Ohio of the former Copper-bellied Watersnake as threatened (USFWS, 1997). NatureServe Explorer (2013) lists the Plain-bellied Watersnake as G5N5 with it receiving S-ranks of 4-5 for most states in its distribution. Lower ranks are provided for Delaware, (S1), Iowa (S1) and New Mexico (S1S2) with no ranks for Florida, Illinois, Indiana, Michigan, Ohio, and South Carolina (NatureServe Explorer, 2013). The IUCN lists the Plain-bellied Watersnake as least concern with a stable population trend (Hammerson *et al.*, 2013). Finally, CITES (2013) does not recognize the species under any appendices (CITES, 2013). At the state level Indiana, Kentucky, Iowa, Michigan, and Ohio list the formerly recognized Copper-bellied Watersnake as endangered (MIDNR, 2009; INDNR, 2013; IODNR, 2013; ODNR, 2013; KDFWR, 2014). Delaware lists the formerly recognized Red-bellied

Watersnake as Endangered (DDNREC, 2013) whereas Maryland only lists it as rare (MDDNR, 2010). No other states offer legal protection to the species.

BACKGROUND ON THE REGULATORY PROTECTION IN ILLINOIS

The southern distinct population segment (DPS) of the formerly recognized Copper-bellied Watersnake was protected in southeastern Illinois, Kentucky and southern Indiana, through an MOU with the USFWS (Copperbelly Water Snake (*Nerodia erythrogaster neglecta*) Conservation Agreement and Strategy, November 1996) whereby the states would proactively protect the subspecies as if it were state-listed in order to not have it listed federally. The IDNR created Administrative Order 880.70 which protected the subspecies in its range of southeastern Illinois (Illinois Administrative Code, §880.70). The MOU was initially for five years but when it expired in 2001, the IDNR maintained the rule until direction came from the USFWS as to whether the southern DPS would be federally protected. While the MOU was in effect and even afterwards (*ca.* 1993, 1998, 2003, 2008), the Herp ESTAC met during pre-listing meetings and each time decided the subspecies did not warrant state-listing because of its abundance in southeastern Illinois.

MAJOR RESULTS OF A STATUS SURVEY

The USFWS contacted the IDNR in 2010 and stated there was some regional funding available for surveys. Along with some large project Wildlife Preservation Fund funding, a two-year contract was developed and Steve Karsen was hired to do a thorough survey in southeastern Illinois of historical localities and identify new ones. Karsen's documented the continued presence of the snake in all of the 15 historical counties except Hamilton County (Karsen, 2013). Of the 55 historical localities, 49 were searched whereas locality information for six was not descriptive enough to be found on maps (Karsen, 2013). Karsen (2013) found 38 new localities, increasing the known range of the snake in southeastern Illinois to 87 current localities. Three additional localities were called in that could be substantiated, bringing the total to 90 localities. Karsen (2013) recorded seven different age cohorts, comprising young-of-the-year, young-of-the-previous-year, juvenile, large juvenile, subadult, adult, and large adult. This illustrated good recruitment for the species in southeastern Illinois. Karsen (2013) considered the subspecies to be widely distributed and its populations frequently stable, or sometimes locally common to increasing with the exception of an occasional area where the snake is possibly decreasing. Most populations were found on either state or federal land and are permanently protected, with some of those being in nature preserves. Given these findings, the expiration of the USFWS MOU IDNR's opinion was that Administrative Order 880.70 should be repealed.

LISTING USING §7 SENTENCE 1 OF THE ILESPA

Considerations.— If the Plain-bellied Watersnake is to be listed under the ILESPA (Sent. 1, §7), there are a few considerations:

- The ILESPA cannot list subspecies so Copper-bellied Watersnakes cannot be listed, the full species must get recognition.
- Current genetic information does not support subspecific designations.
- Following the logic for this proposed listing, the ILESPB is also compelled to list:

- The Common Gartersnake (*Thamnophis sirtalis*) because the USFWS lists the San Francisco Gartersnake (*Thamnophis sirtalis tetrataenia*) as Endangered (USFWS, 1985).
- The Pond Slider (*Trachemys scripta*) because the USFWS lists the South American Red-lined Turtle (*Trachemys scripta callirostris*) as Endangered (USFWS, 1981).

Interpretations.— After conferring with Dr. E. Freyfogle at the University of Illinois’ College of Law, the current logic fails to include the parallel interpretation needed in the ESA and more specifically, the definition of species in the ESA for listing purposes (Freyfogle *pers. com.*, 2014). In this regard, the IESPA cannot be interpreted alone and must be interpreted with the ESA (Freyfogle *pers. com.*, 2014). In §3(13) of the ESA, species is defined to include full species, subspecies, and distinct population segments. Thus, according to the ESA the northern population is the “species” in question that is carried to the IESPA listing process (Freyfogle *pers. com.*, 2014). This qualification then fits the IESPA’s statement in §7, and although the federally protected “species” does not occur in Illinois, it could be offered protection but that protection only extends to the “species” listed by the USFWS (Freyfogle *pers. com.*, 2014). In essence, Illinois would be offering protection to the populations occurring in central Michigan, northeastern Indiana, and northwestern Ohio (Freyfogle *pers. com.*, 2014).

Conclusions.— From this interpretation we have the following:

- Only the distinct population segment can be listed in Illinois.
- Anything other than the distinct population segment must follow the definitions of Endangered and Threatened in the IESPA.
- Plain-bellied Watersnakes cannot be listed in Illinois using sent. 1, §7 of the IESPA.

LISTING USING THE DEFINITIONS OF THREATENED AND ENDANGERED IN §2 OF THE IESPA

Considerations. – Give the above, the second way to determine if Plain-bellied Watersnakes should be listed in Illinois is following the definitions from §2 of the IESPA,

- **Endangered Species,** “...means any species of plant or animal classified as endangered under the Federal Endangered Species Act of 1973, P.L. 93-205, and amendments thereto, plus such other species which the Board may list as in danger of extinction in the wild in Illinois due to one or more causes including but not limited to, the destruction, diminution or disturbance of habitat, overexploitation, predation, pollution, disease, or other natural or manmade factors affecting its prospects of survival.”
- **Threatened Species,** “...means any species of plant or animal classified as threatened under the Federal Endangered Species Act of 1973, P.L. 93-205, and amendments thereto, plus such other species which the Board may list as likely to become endangered in the wild in Illinois within the foreseeable future.”

Our assessment will then be made using a combined approach of querying museum records followed by prediction of the distribution of the species in Illinois based on those records.

Methodology. – Our first step was to query a collective database of records for Illinois held by over 20 museums including the major collections in the state such as FMNH, INHS, UIMNH, and SIUC. We did not query herpetologists who have worked in the state for locations where only visual observations have been made nor did we do a rigorous literature search for published records with no specimens deposited.

Our second step was to predict the distribution of the Plain-Bellied Watersnake in Illinois using the software package MaxEnt ver 3.3 (Phillips *et al.*, 2004, 2006; Elith *et al.*, 2011). We began the approach by first selecting a set of candidate raster data layers that included an elevation layers and land cover raster from the Illinois Geospatial Data Clearinghouse and three data layers from the WorldClim (www.worldclim.org) bioclim data set. From the bioclim data set we used the rasters of BIO₁ (Mean Annual Temperature), BIO₆ (Min Temperature of the Coldest Month), and BIO₁₈ (precipitation in the driest quarter). We then resampled all surfaces to a resolution of 30m, set the projection to UTM NAD 83 CONUS, and exported surfaces to .asc files using the Export to Circuitscape Tool for ArcGIX 10 (Jenness Enterprises) in ArcGIS 10.2 (ESRI).

Results. – Our query of museum specimens resulted in 311 records geographically distributed throughout approximately the southern 1/3rd of the state with a few farther north along the Mississippi River (Tables 1 & 2; Plate 2). Most records were held at SIUC and the INHS, but there were records from 14 additional institutions (Table 1). Overall, 35 of the 102 counties in Illinois had museum records for the Plain-bellied Watersnake (Table 2; Plate 2). The records spanned from the 1880's from Richland County to the present (Table 2). Most of the records were collected in the 1950's and 1990's and all but 9 of 35 counties have had records since the 1990's (Table 2).

For land cover, it appears the species is more restricted to riverine and stream habitats in the state (Plate 3). When looking at elevation it appears the species occurs south of the Shelbyville Moraine in lower elevation habitats such as riverine bottomlands (Plate 4). In addition, there is a clear break in mean annual temperature with Plain-bellied Watersnakes occupying regions with higher temperatures (Plate 5). Also, there appears to be a minimum temperature gradient where they occupy regions with relatively warmer winters (Plate 6). Finally, there does not appear to be any qualitative association with precipitation in the warmest months (Plate 7).

The Area Under the Curve (AUC) score of 0.946 for our MaxEnt model suggests it has high predictive power (Plate 7). Mean annual temperature and elevation data layers contributed the greatest toward the predicted distribution (58.6%; Table 3), while land cover was the second most important factor (28.6%; Table 3), and precipitation in the warmest quarter and minimum temperature of the coldest month were the least important factors (12.8%; Table 3). When examining the different methods of calculating thresholds, the equal training sensitivity (true positive rate) and specificity (true negative rate) was the most conservative, suggesting the distribution should be ~7,000 mi² or ~18,000 km² (Table 4). Using this conservative threshold and one providing a more liberal assessment of suitable habitat (maximum training sensitivity plus specificity), we predict that the distribution of the Plain-bellied Watersnake occupies between 12 – 15% (~7,000 – 8,970 mi² or ~18,150 – 23,250 km²) of the state (Plates 8 & 9).

Conclusions. – We restricted our records to only those held in museum collections. If we would have queried herpetologists who have worked in the region and IDNR staff, we could have greatly increased the number of records. However for the purposes of the distribution model, 311 records provided a strong model. Given the findings above we have the following conclusions:

- There were numerous recent museum records representing most of the historical counties
- The number of records will greatly increase when including other occurrence data
- The MaxEnt model had good predictive ability, and did not appear to predict suitable habitat beyond known localities or beyond what we believe is feasible, based on our collective experience.
- Based on our most conservative estimates, the predicted distribution covers 12 – 15% of Illinois, the area of the most conservative threshold for the distributional model is ~7,000 mi² or ~18,000 km²
- Therefore, we conclude the Plain-bellied Watersnake does not meet the definition of Threatened in the IESPA

LITERATURE CITED

- Convention on International Trade in Endangered Species. 2013. <http://www.cites.org/eng/app/appendices.php>
- Crother, B. I. 2012. Scientific and standard english names of amphibians and reptiles of North America north of Mexico, with comments regarding confidence in our understanding, 7th edition. Herpetological Circular Number 39.
- Delaware Department of Natural Resources and Environmental Control. 2013. Delaware's endangered species. <http://www.dnrec.delaware.gov/fw/NHESP/information/Pages/Endangered.aspx>
- Elith, J., S. J. Phillips, T. Hastie, M. Dudik, Y. E. Chee, and C. J. Yates. 2011. A statistical explanation of MaxEnt for ecologists. *Diversity and Distributions*. 17:43–57.
- Ernst, C. A. and E. M. Ernst. 2003. Snakes of the United States and Canada. Smithsonian Books. Washington, D.C.
- Hammerson, G.A., Frost, D.R. & Santos-Barrera, G. 2007. *Nerodia erythrogaster*. In: IUCN 2013. IUCN Red List of Threatened Species. Version 2013.2. <www.iucnredlist.org>. Downloaded on 25 March 2014.
- Illinois Administrative Code. 2013. Title 17: Conservation, Chapter 1: Department of Natural Resources, Subchapter b: Fish and Wildlife, Part 880: The taking of reptiles and amphibians under a sport fishing license. <http://www.dnr.illinois.gov/adrules/documents/17-880.pdf>
- Indiana Department of Natural Resources. 2013. Indiana's State Endangered Species. http://www.in.gov/dnr/fishwild/files/fw-Endangered_Species_List.pdf
- Iowa Department of Natural Resources. 2013. 571 IAC Chapter 77.2: List of Animals. <https://www.legis.iowa.gov/docs/ACO/chapter/571.77.pdf>
- Karsen, S. 2013. Resurveying known historical localities and searching for new sites for the Copper-bellied Water Snake in southern Illinois. Final Report to the Illinois Department of Natural Resources.
- Kentucky Department of Fish and Wildlife Resources. 2014. Kentucky's threatened and endangered species. <http://fw.ky.gov/Wildlife/Pages/Kentuckys-Threatened-and-Endangered-Species.aspx>

- Makowsky, R., J. C. Marshall, Jr., J. McVay, P. T. Chippindale, and L. J. Rissler. 2010. Phylogeographic analysis and environmental niche modelling of the plain-bellied watersnake (*Nerodia erythrogaster*) reveals low levels of genetic and ecological differentiation. *Molecular Phylogenetics and Evolution*. 55:985–995.
- Maryland Department of Natural Resources. 2010. Rare, threatened, and endangered animals of Maryland. http://www.dnr.state.md.us/wildlife/Plants_Wildlife/rte/pdfs/rte_Animal_List.pdf
- Michigan Department of Natural Resources. 2009. Department of Natural Resources, wildlife division, endangered and threatened species. https://www.michigan.gov/documents/dnr/2007-007_NR_Threatened_Endangered_Species_nonstrike_9-12_274586_7.pdf
- NatureServe Explorer. 2013. *Nerodia Erythrogaster*. <http://explorer.natureserve.org/servlet/NatureServe?searchSciOrCommonName=nerodia%20erythrogaster>.
- NatureServe. 2014. Natureserve Explorer: An online encyclopedia of life [we application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>. (Accessed: April 2, 2014).
- Ohio Department of Natural Resources. 2013. Wildlife that are considered to be endangered, threatened, species of concern, special interest, extirpated, or extinct in Ohio. <http://ohiodnr.com/Portals/9/pdf/pub356.pdf>
- Phillips, C. A., R. A. Brandon, and E. O. Moll. 1999. Field guide to amphibians and reptiles of Illinois. Illinois Natural History Survey Manual. 8:1–282.
- Phillips, S. J. M. Dudik, and R. E. Schapire. 2004. A maximum entropy approach to species distribution modeling. *In* pp 655–662. Proceedings of the twenty-first international conference on machine learning.
- Phillips, S. J., R. P. Anderson, and R. E. Schapire. 2006. Maximum entropy modelling of species geographic distributions. *Ecological Modelling*. 190:231–259.
- Smith, P. W. 1961. The amphibians and reptiles of Illinois. Illinois Natural History Survey Bulletin. 28:1–298.
- United States Fish and Wildlife Service. 1985. Recovery Plan for the San Francisco garter snake (*Thamnophis sirtalis tetrataenia*). Portland, Oregon. <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=C002>
- United States Fish and Wildlife Service. 1991. Endangered status for six foreign reptiles. Federal Register. 46:49469-49653. <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=C04J#recovery>
- United States Fish and Wildlife Service. 1997. Determination of threatened status for the northern population of the copperbelly water snake. Federal Register. 62:4183–4192. <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=C03X>

GIS DATA LAYERS

- Illinois Geospatial Data Clearing House. Surface Elevation: 30-Meter Digital Elevation Model. <http://crystal.isgs.uiuc.edu/nsdihome/webdocs/st-geolq.html#shaderel1>
- Illinois Geospatial Data Clearing House. Land Cover Data for Illinois, 1999-2000. <http://crystal.isgs.uiuc.edu/nsdihome/webdocs/landcover/landcover99-00.html>
- WorldClim – Global Climate Data. Data for current conditions (~1950–2000). ESRI grids, 30 arc-seconds, Bioclim. <http://www.worldclim.org/current>

TABLE 1: Number of specimens of Plain-bellied Watersnakes (*Nerodia erythrogaster*) derived from the INHS's herpetological database by Museum.

Museum	Number
Southern Illinois University, Carbondale	130
Illinois Natural History Survey	89
Photographic	26
University of Illinois Museum of Natural History	18
Louisiana State University	12
Field Museum of Natural History	6
H.D. Walley – Private Collection	6
National Museum of Natural History	6
American Museum of Natural History	5
University of Wisconsin Stevens Point Museum of Natural History	5
Natural History Museum of London	2
Auburn University Museum	1
Chicago Academy of Sciences	1
Illinois State Museum	1
Southern Illinois University, Edwardsville	1
Texas A&M University, Texas Cooperative Wildlife Collection	1
Universidad Central Marta Abreu de Las Villas	1
Total	311

TABLE 2: Number of Plain-bellied Watersnakes (*Nerodia erythrogaster*) specimens derived from the INHS's herpetological database by county and decade of collection.

County	1880	1890	1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	Unk.	Total
Adams	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	1
Alexander	---	---	4	---	---	---	---	5	---	---	2	17	4	---	---	32
Bond	---	---	---	---	---	---	---	5	---	---	---	---	1	---	---	6
Calhoun	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	1
Clay	---	---	---	---	---	---	---	---	---	---	---	1	3	---	---	4
Clinton	---	---	---	---	---	---	---	---	---	---	---	3	---	---	---	3
Edwards	---	---	---	---	---	---	---	---	---	---	3	1	---	---	---	4
Fayette	---	---	---	---	---	---	2	---	---	1	---	---	---	---	---	3
Franklin	---	---	---	---	---	2	---	---	---	---	1	---	---	---	---	3
Gallatin	---	---	---	---	---	1	---	---	---	---	---	2	---	---	---	3
Greene	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	1
Henderson	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	1
Jackson	---	---	---	---	---	1	1	15	6	1	6	8	---	---	---	38
Jefferson	---	---	---	---	---	---	---	1	4	---	---	---	---	---	---	5
Jersey	---	---	---	---	1	---	---	---	---	---	---	7	---	---	---	8
Johnson	---	---	---	---	---	---	4	2	2	---	5	7	6	---	---	26
Lawrence	---	---	---	---	---	---	---	---	---	---	---	1	3	---	---	4
Madison	---	---	---	1	---	---	---	---	1	---	---	8	---	---	---	10
Massac	---	---	---	---	---	---	---	---	2	---	---	3	---	---	---	5
Monroe	---	---	---	---	---	---	2	1	---	---	---	2	---	---	---	5
Perry	---	---	---	---	---	---	---	---	2	1	---	8	1	---	---	12
Pike	---	---	---	---	---	---	---	---	2	---	---	---	---	---	---	2
Pope	---	---	---	---	---	---	---	---	1	1	2	5	2	---	1	12
Pulaski	---	---	---	---	---	---	---	---	---	---	4	2	1	---	---	7
Randolph	---	1	---	---	---	---	1	3	---	---	---	3	---	---	---	8
Richland	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2
Rock Island	---	---	---	---	---	---	---	3	---	---	---	---	---	1	---	4
Saline	---	---	---	---	---	---	1	---	---	---	2	3	1	---	---	7
St. Clair	---	1	1	---	---	---	---	---	---	---	---	4	1	---	---	7
Union	---	---	---	---	2	11	5	21	14	1	2	7	5	---	1	69
Wabash	---	---	---	---	---	1	---	---	---	---	2	---	---	---	---	3
Washington	---	---	---	---	---	1	---	---	---	1	---	3	1	---	---	5
Wayne	---	---	---	---	---	---	---	---	---	---	---	1	1	---	---	2
White	---	---	---	---	---	---	---	---	---	---	3	1	---	---	---	4
Williamson	---	---	---	---	---	2	1	---	1	---	---	---	---	---	---	4
Total	2	2	5	1	3	19	17	57	36	6	32	97	32	1	2	311

TABLE 3: MaxEnt model results illustrating the percent contribution of the respective datalayer to the model.

Variable	Percent Contribution
Mean Annual Temperature	58.6
Elevation	28.6
Land Cover	8.6
Precipitation in Warmest Quarter	2.5
Minimum Temp of Coldest Month	1.7

TABLE 4: Comparison of different thresholds from MaxEnt models, predicted proportion of the state occupied, omission rates, and total area of the distribution. For reference, Illinois is 57,915 mi² or 149,998 km².

Description	Cumulative Threshold	Logistic Threshold	Predicted Proportion of State	Training Omission Rate	mi ²	km ²
Equal training sensitivity and specificity	16.854	0.220	0.1210	0.121	7007.715	18149.76
10 percentile training presence	14.314	0.198	0.1360	0.096	7876.44	20399.73
Maximum training sensitivity plus specificity	11.740	0.171	0.1550	0.071	8976.825	23249.69
Equate entropy of thresholded and original distributions	10.977	0.162	0.1610	0.071	9324.315	24149.68
Fixed cumulative value 10	10.000	0.152	0.1690	0.067	9787.635	25349.66
Fixed cumulative value 5	5.000	0.085	0.2300	0.029	13320.45	34499.54
Balance training omission, predicted area and threshold value	2.750	0.029	0.2950	0.004	17084.93	44249.41
Fixed cumulative value 1	1.000	0.010	0.4590	0.004	26582.99	68849.08
Minimum training presence	0.154	0.002	0.6940	0.000	40193.01	104098.6

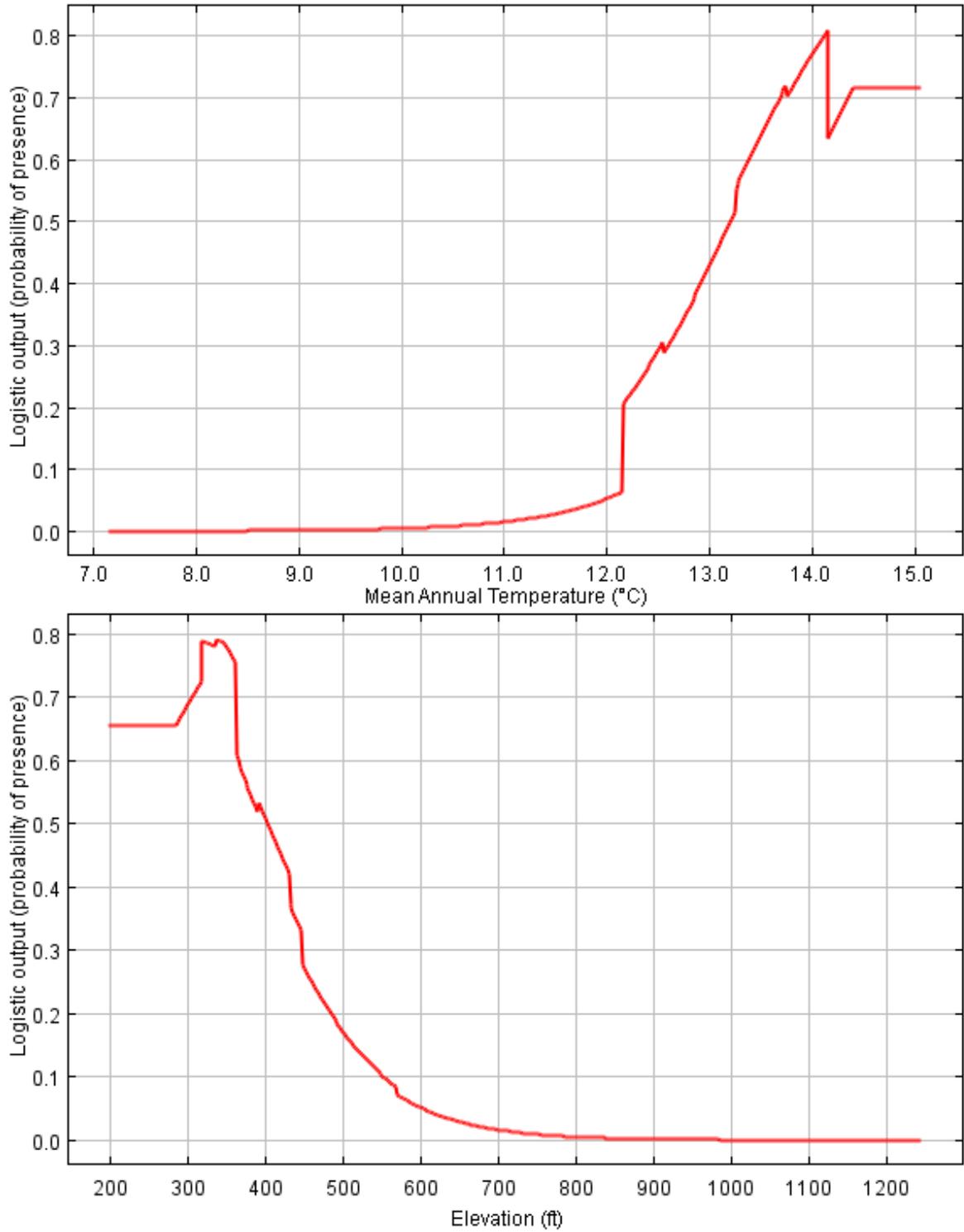


FIGURE 1: MaxEnt predicted response curves for the mean annual temperature and elevation data layers.

Museum Records

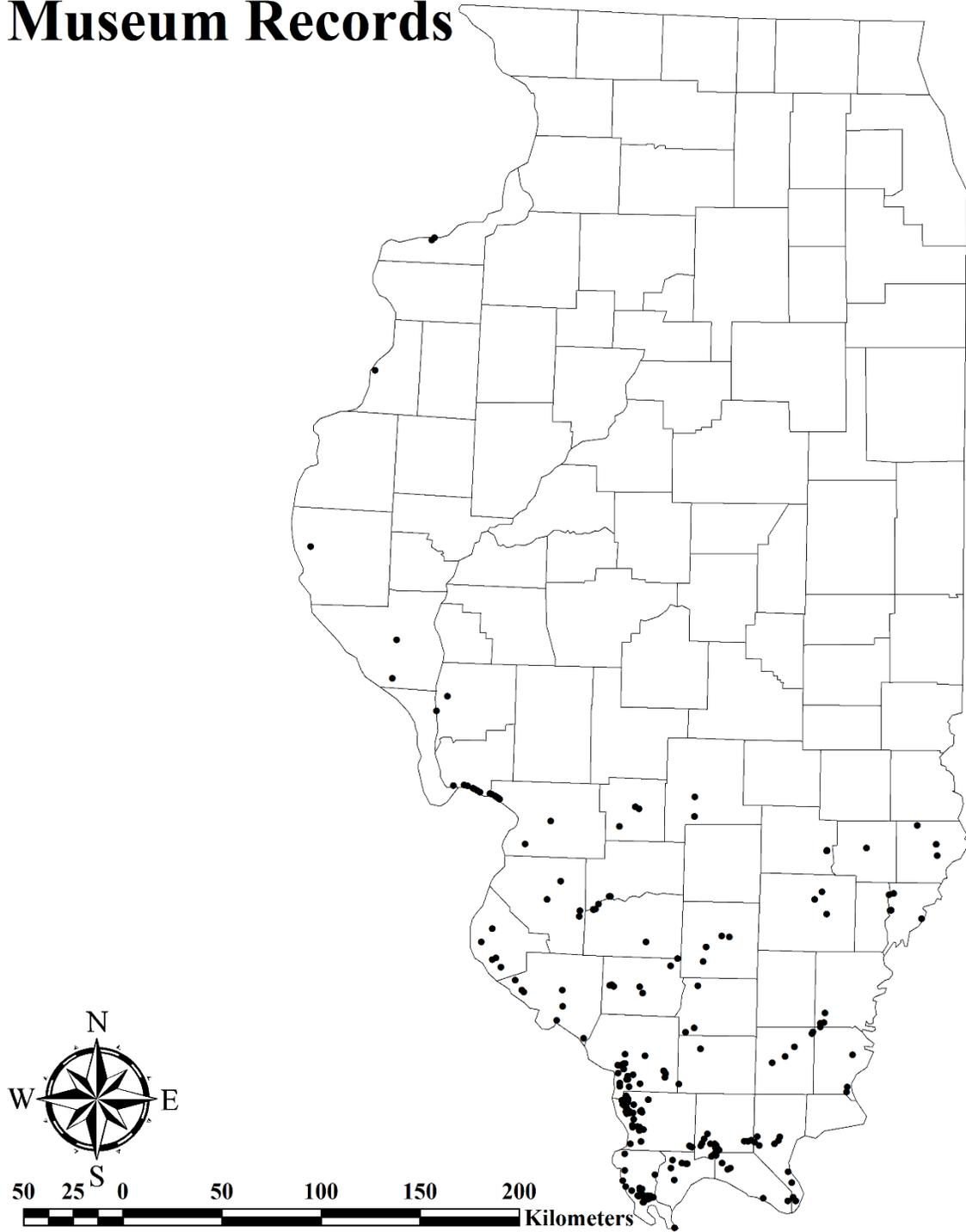


PLATE 2: Dot Map of all Plain-bellied Watersnake (*Nerodia erythrogaster*) museum records.

Land Cover

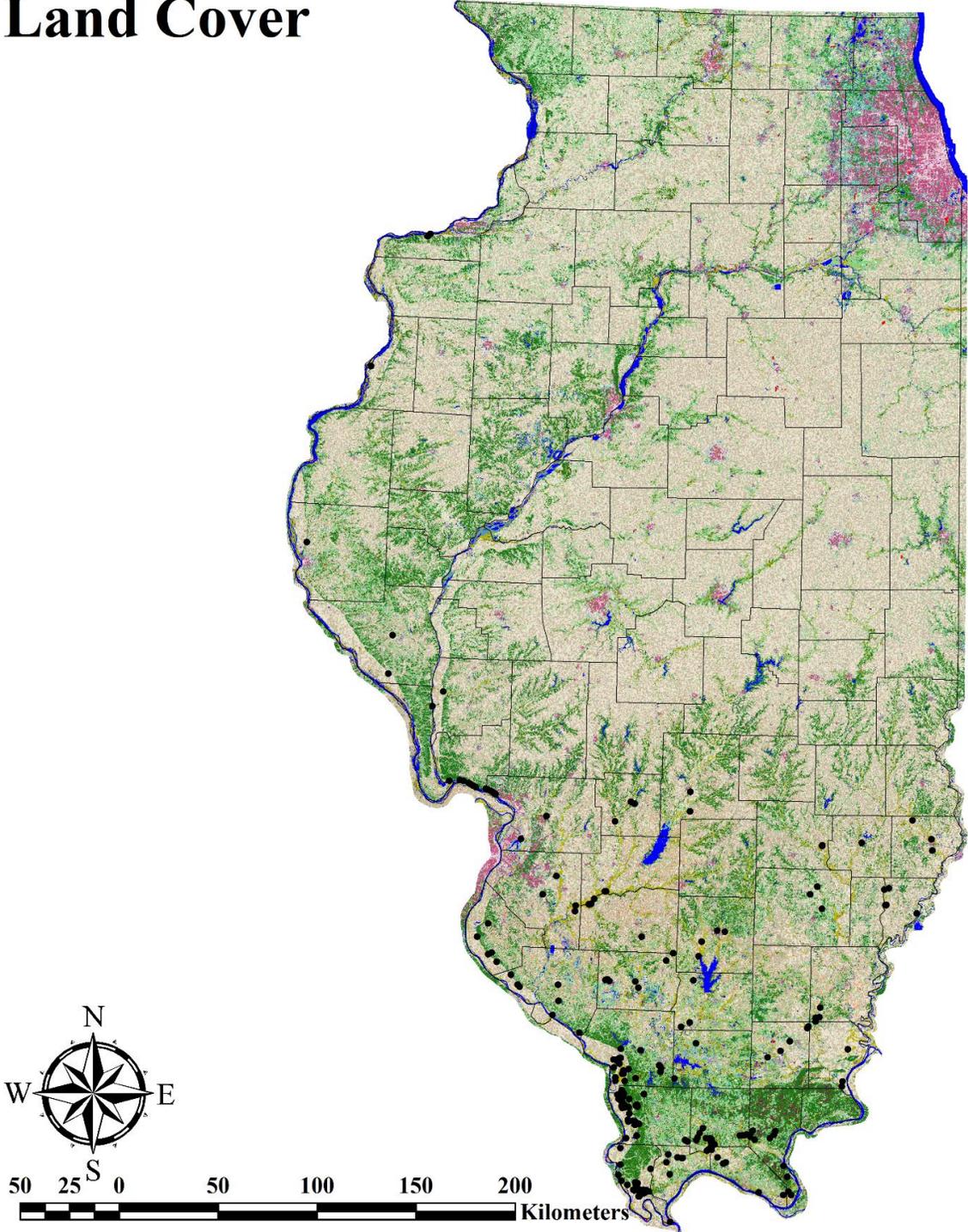


PLATE 3: Dot Map of all Plain-bellied Watersnake (*Nerodia erythrogaster*) museum records on the landcover GIS data layer.

Elevation

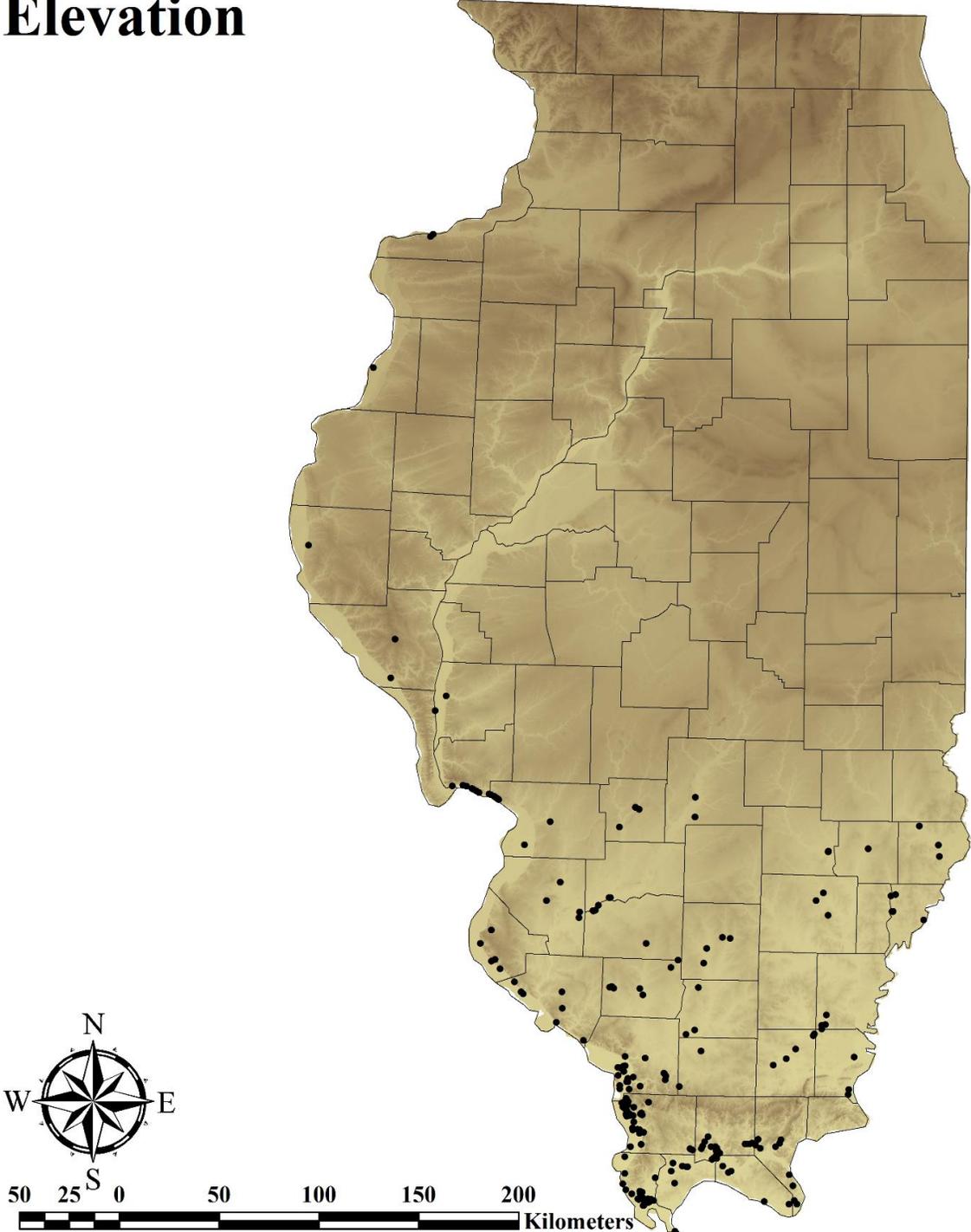


PLATE 4: Dot Map of all Plain-bellied Watersnake (*Nerodia erythrogaster*) museum records on the elevation GIS data layer. The darker the color, the higher the elevation.

Mean Annual Temperature

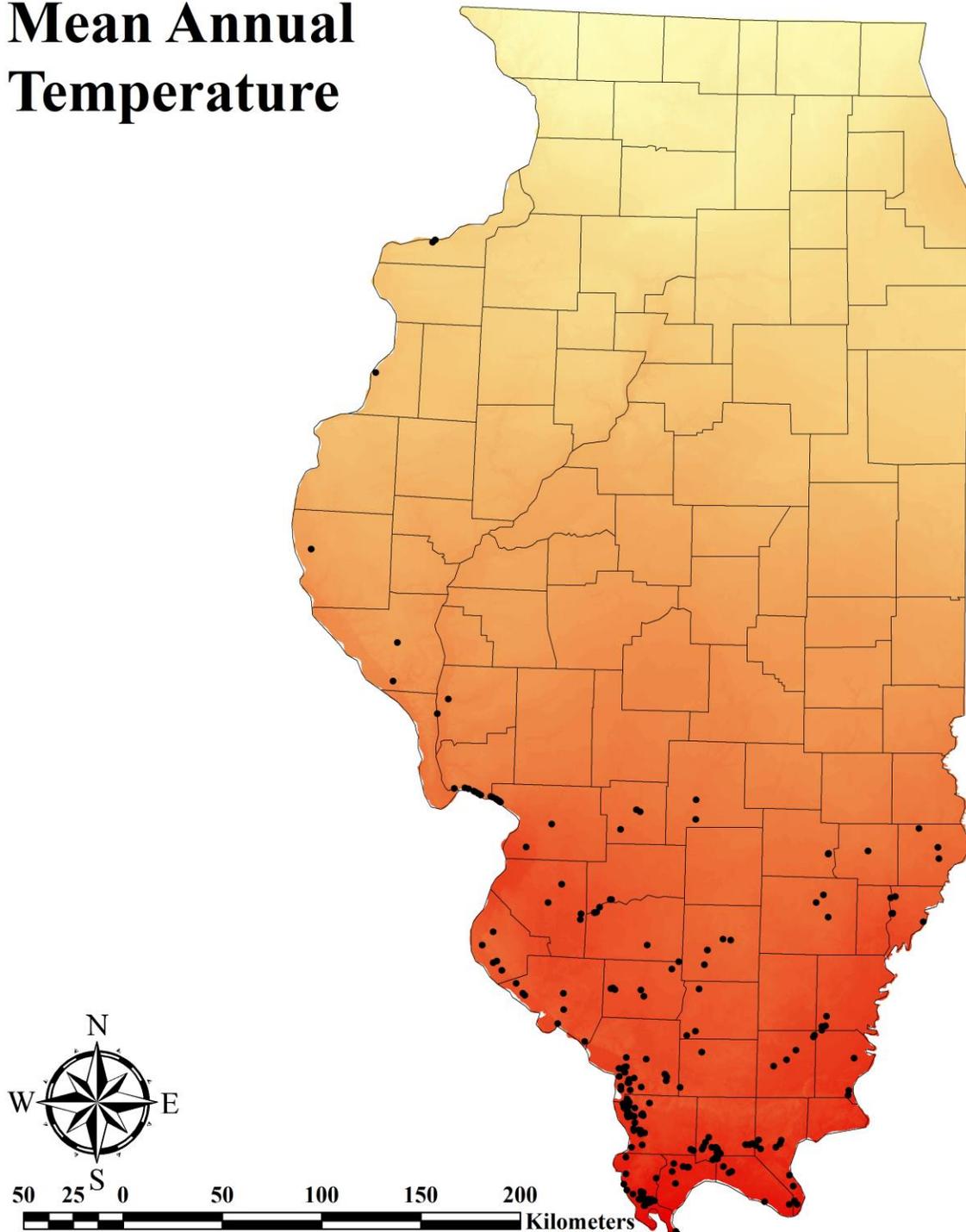


PLATE 5: Dot Map of all Plain-bellied Watersnake (*Nerodia erythrogaster*) museum records on the mean annual temperature GIS data layer. The darker the color, the warmer the temperature.

Minimum of Coldest Month

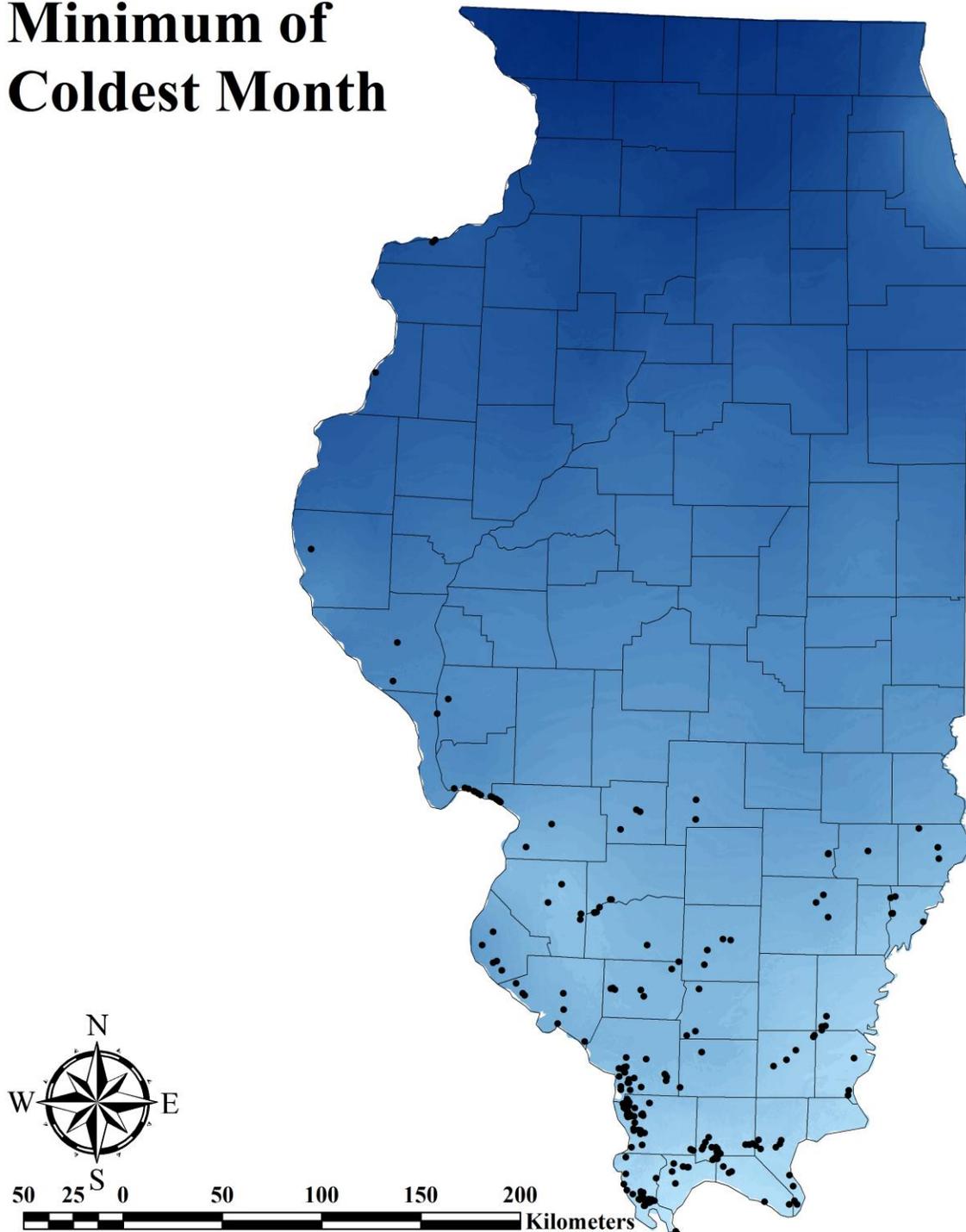


PLATE 6: Dot Map of all Plain-bellied Watersnake (*Nerodia erythrogaster*) museum records on the minimum temperature of the coldest month GIS data layer. The darker the blue, the colder the temperature.

Precipitation in Warmest Quarter

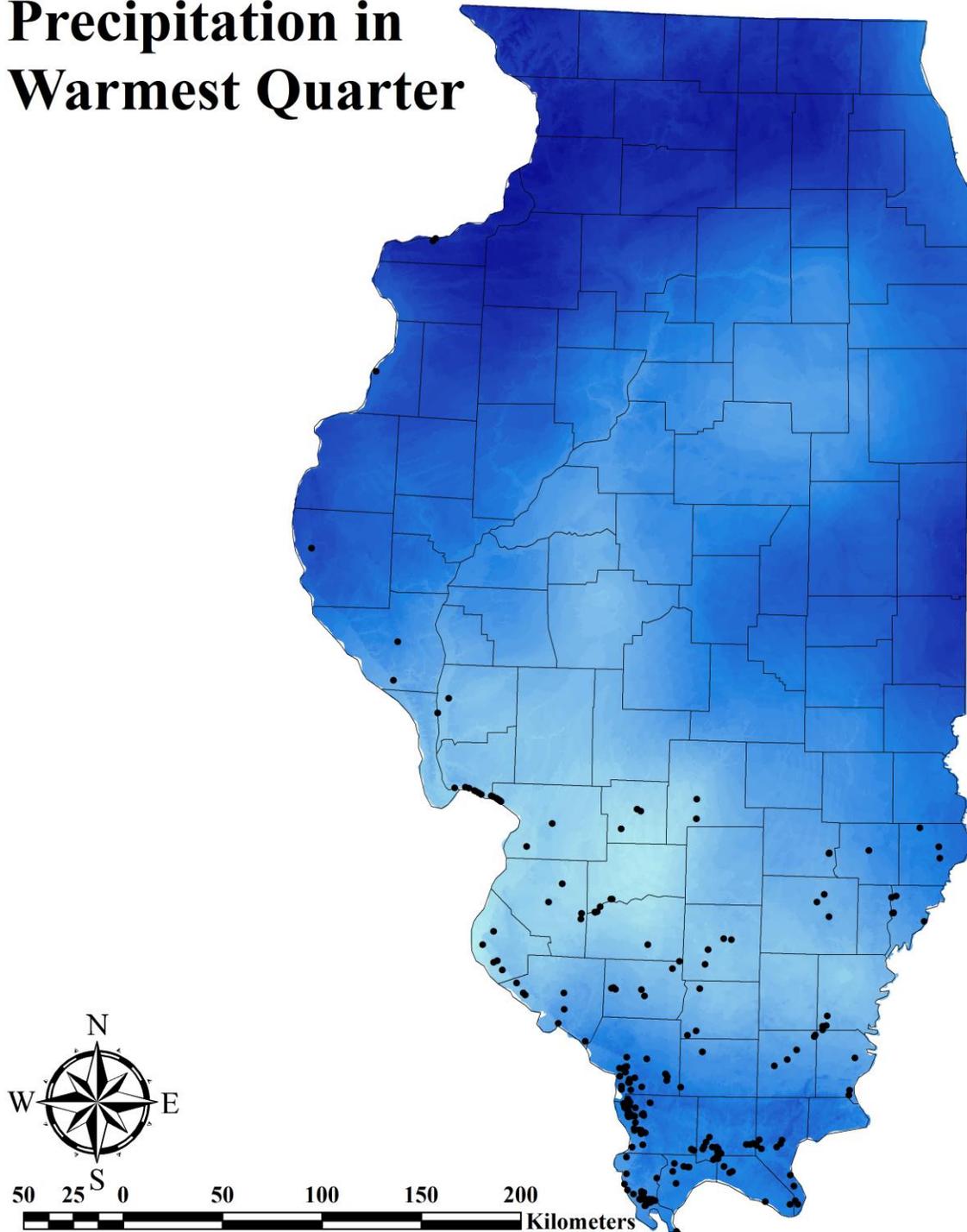


PLATE7: Dot Map of all Plain-bellied Watersnake (*Nerodia erythrogaster*) museum records on the precipitation in the warmest quarter GIS data layer. The darker the blue, the more precipitation.

Predicted Distribution

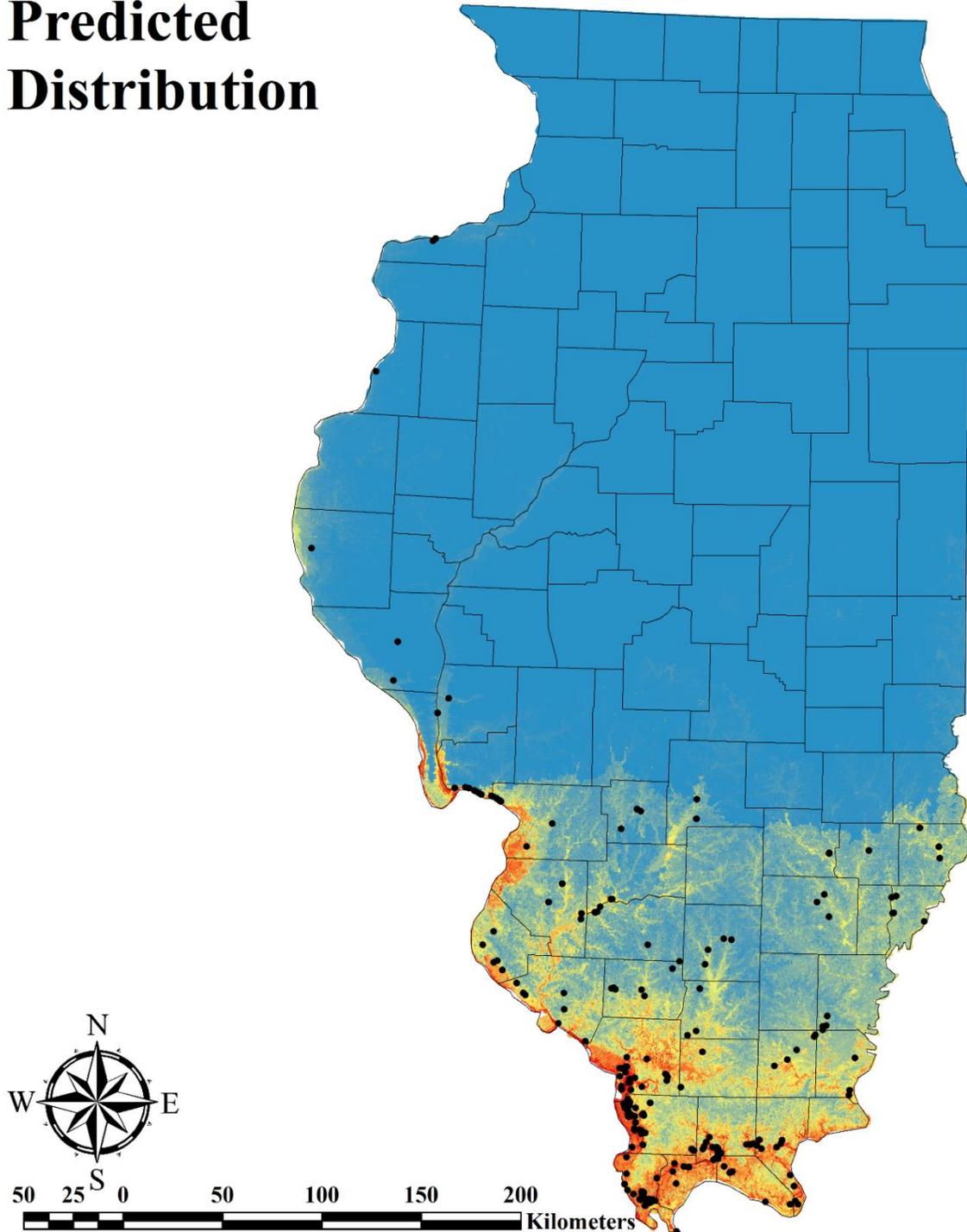


PLATE 8: Dot Map of all Plain-bellied Watersnake (*Nerodia erythrogaster*) museum records on the MaxEnt predicted distribution GIS data layer. The color ramp runs from blue (very low probability) to red (very high probability) of occurrence.

Predicted Distribution Using Two Thresholds

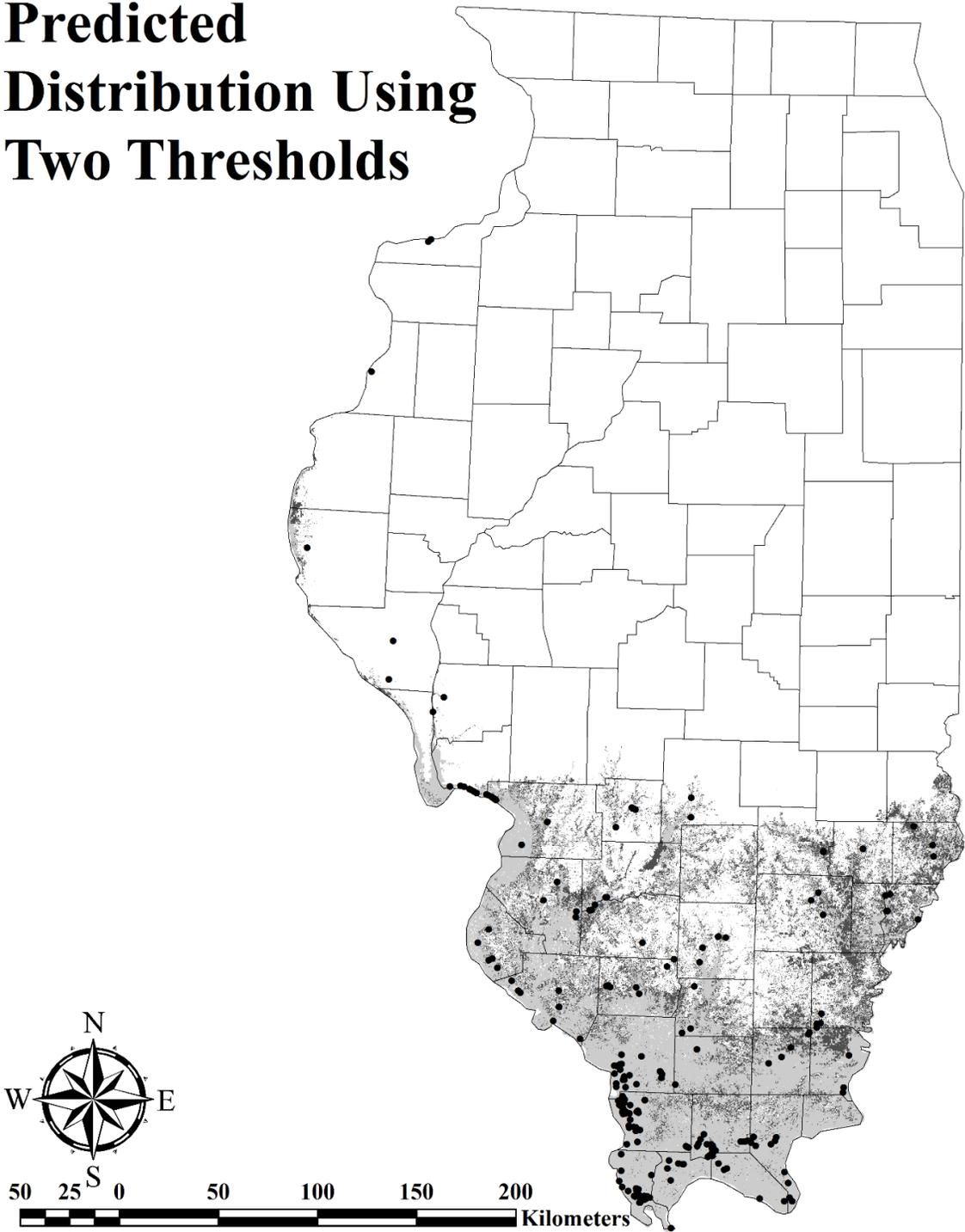


PLATE 9: Dot Map of all Plain-bellied Watersnake (*Nerodia erythrogaster*) museum records on the MaxEnt predicted distribution GIS raster data layer using the thresholds of equal training of sensitivity and specificity (light gray) and maximum training of sensitivity plus specificity (dark gray).

SUPPLEMENTAL MATERIAL

PERSONAL COMMUNICATION WITH
DR. E. FREYFOGLE



Plainbelly Watersnake

Freyfogle, Eric T <efreyfog@illinois.edu>
To: "Dreslik, Michael Joseph" <dreslik@illinois.edu>

Wed, Mar 19, 2014 at 4:53 PM

Dear Dr. Dreslik,

I've spent time looking into the legal issue that you raise, and while the law is not completely clear my strong view is that the Illinois ESPB need not, and very probably even cannot, list the Illinois population of the Copperbelly Watersnake under the Illinois ESA if (as you relate) the snake is not actually threatened in Illinois and if the federally listed distinct population segment is not present in Illinois.

As you note in your inquiry, the resolution of this question is very much wrapped up in the definitions used, not just in the Illinois ESA, but in the federal ESA and in the Illinois regulations that govern the ESPB.

The beginning point is with the federal statute. It defines "species" (in section 3(16)) as a catchall term that includes subspecies and distinct population segments. Thus, the US FWS can and sometimes does list, separately, a subspecies or a distinct population segment. When it does this, the protection only extends to the subspecies or distinct population segment described, not to the entire full species. This means that, when we talk about a federally listed species, we mean, more precisely, the biological group that the US FWS has actually protected, which could be, of course, only a subspecies or a distinct population segment.

In the instance of this snake, the US FWS has listed a distinct population segment. But that listed "species," as you state, does not exist in Illinois. This means that this case is the same as any other case involving a federally listed species that does not exist in Illinois (for instance, one of the many listed salmon runs that live only in the Pacific Northwest). The federal listing relates to a "species" the only exists outside Illinois. Illinois could, of course, duplicate the federal protection by extending state protection to the same snakes. But if it did so—if it listed the exact same distinct population segment that the US FWS has listed—it would be protecting snakes that live only in another state. The Illinois snakes are not federally protected.

The Illinois ESA and implementing regulations are a bit more uneven in their use of the term species. The statutory definitions (in section 2) seem to use the term the same as the federal statute does in that they define, e.g., an endangered species so as to include any species listed as endangered under federal law. The implication is that a federally listed subspecies or distinct population segment would qualify as a species under Illinois law in the same way and to the same extent. That conclusion is a bit muddled by section 7 of the Illinois statute, which, as you note, makes express reference to "any species of subspecies . . . designated" under federal law. In this sentence, the term species would seem to have its more common biological meaning (that is, a full species) but that interpretation doesn't fit with the definition in section 2. I'm inclined to think that the opening words of section 7 should not be read narrowly. Section 7 simply says that any federal listing of a plant or animal is automatically listed also in Illinois. To me this would apply to a listed distinct population segment as well as a species or subspecies. The whole point of this provision—mandating automatic listing—is to save Illinois time and money, avoiding the need to go through a fact-intensive listing process in Illinois. The federal process

suffices, and listing is automatic in Illinois to the same extent as under federal law.

This interpretation of section 7 is supported by the implementing regulations. The regulations (in title 17, 1050.20 and 1025) track the federal definitions of endangered and threatened species, and in doing so implicitly seem to incorporate the federal definition of species as including a distinct population segment. The listing criteria (1025) state that a species shall be listed if it has been federally listed. The most appropriate interpretation of this regulatory provision is that the word “species” as used in it (that is, section 1025) has a consistent meaning throughout the regulatory section. Thus, when the federal “species” that has been listed is a distinct population segment, then the species automatically listed by Illinois is the same distinct population segment. (The term is used the same way in regulation section 1010.20). This means that, if Illinois were to duplicate a federal listing, it would, as already noted, list the same “species” as the federal agency; that is, the same distinct population segment.

My conclusion is thus as follows: the Illinois ESPB can (and must) duplicate federal listings by adding state listings to the federal protection. It does this by listing, in Illinois, any “species” protected by the US FWS. For this purpose, “species” can only have under Illinois law the same meaning that it does under federal law. Thus, if the species listed by the federal agency is a distinct population segment, then the species listed by the state should be the exact same distinct population segment. Only that distinct population segment would qualify for automatic state listing. In order for the state to go further and list something not federally protected, the state ESPB would need to go through its normal state processes for listing. To do that it would need to apply the definition of a state threatened and endangered species. If, as you say, the snake is common in Illinois, then it would not qualify under the definitions of state endangered and threatened species because it is not adequately at risk. The snake can thus gain Illinois protection only if and to the extent it is federally protected. If the Illinois population is not protected under federal law, then it cannot qualify for protection under state law.

What complicates this a small bit is that the Illinois statute does not have separate provisions, similar to those under federal law, that provide guidance for listing a distinct (vertebrate) population segment as either threatened or endangered. It is thus not clear whether a distinct population segment can fit within the statutory definition of either “state endangered” or “state threatened” when the population segment is at risk in Illinois but the full species is not at risk in Illinois. I have not dug into this enough to know whether the Illinois ESPB could or could not do this. But I am quite confident that the Illinois ESPB can, in fact, list a distinct population segment separately (and not list the rest of the species or subspecies) when the distinct population segment has been protected under federal law. Indeed, I think it must do so; it must protect the distinct population segment (to comply with section 7, which mandates automatic listing), and yet cannot go further to protect more than that because (as noted), (i) the larger population is not federally protected, and thus does not qualify for automatic Illinois protection, and (ii) the larger population (as in the case of this snake) is not in fact at risk enough in Illinois to qualify as “state threatened” or “state endangered” under regulation section 1010.20 (also, 1050.20).

The Illinois statute literally says that any federal protected species is automatically protected under Illinois law. I don’t know what the ESPB’s practice is, but I assume it only lists species that are found or might be found in Illinois. If that is the case, then this snake should not be listed under Illinois law at all. If the ESPB does list species not found in the state (the statute certainly allows it), then it can list this snake, but again the listing would only be of the exact distinct population segment protected by federal law—no more than that.

If this doesn’t answer your question in full, please let me know.

Sincerely,

Eric T. Freyfogle

Swanlund Chair and Professor of Law

University of Illinois at Urbana-Champaign

504 E. Pennsylvania Ave.

Champaign, IL 61820 (217) 333-8713

efreyfog@illinois.edu

From: dreslikmj@gmail.com [mailto:dreslikmj@gmail.com] On Behalf Of Mike dreslik

Sent: Wednesday, February 26, 2014 10:59 AM

To: Freyfogle, Eric T

Subject: Plainbelly Watersnake

[Quoted text hidden]

From: [Holtrop, Ann](#)
To: [DNR.Espb](#)
Subject: 2014 List Review public comment
Date: Friday, July 11, 2014 4:30:43 PM
Attachments: [Cooperbelly_listing_comments.pdf](#)

Dear Endangered Species Protection Board:

Please see the attached comment that opposes the listing of *Nerodia erythrogaster neglecta* (Copper-bellied Water Snake) as Illinois threatened. Thank you for your consideration of these comments.

Regards,
Ann

Ann Marie Holtrop
Illinois Department of Natural Resources
Office of Resource Conservation
One Natural Resources Way
Springfield, IL 62702
(217) 785-4325
Ann.holtrop@illinois.gov



Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
<http://dnr.state.il.us>

Pat Quinn, Governor
Marc Miller, Director

July 11, 2014

Illinois Endangered Species Protection Board
One Natural Resources Way
Springfield, IL 62702-1271

Dear Endangered Species Protection Board:

I am writing on behalf of the Illinois Department of Natural Resources – Office of Resource Conservation to oppose listing of *Nerodia erythrogaster neglecta* (Copper-bellied Water Snake) as Illinois threatened.

Listing the Copper-bellied Water Snake in Illinois confers no conservation benefit to the Distinct Population Segment (DPS) that is listed as threatened by the U.S. Fish and Wildlife Service. The threatened DPS consists of populations north of the 40th Parallel in Indiana, Michigan, and Ohio.

The Copper-bellied Water Snake is common and distributed widely in Illinois. In 2013, Karsen found this species in 90 localities in southeastern Illinois. He also recorded evidence of recruitment and a wide range of age cohorts.

The northern DPS of Copper-bellied Water Snake was listed as threatened by U.S. Fish and Wildlife Service on 1/29/1997. Illinois' Endangered Species Protection Board has reviewed the State list several times since the northern DPS of the Copper-bellied Water Snake was listed federally. The Board was not compelled to list it in Illinois, where the species is common. The listing of this species in Illinois is a complex issue that deserves further discussion, examination of facts, and consideration of the consequences of listing based on a DPS that is far removed from our state.

The Board's justification for listing the Copper-bellied Water Snake as threatened in Illinois has not been applied consistently. The same argument could be made for other species with geographic limitations to their federal status (e.g., American Black Bear, Mountain Lion, Chinook Salmon, Coho Salmon).

The Board's decision to list the Copper-bellied Water Snake as threatened in Illinois has far-reaching implications for Department operations because of the species' abundance and widespread distribution in the state. We are committed to conservation of listed species and view the Act as a powerful tool toward that end. We are deeply concerned that listing the Copper-bellied Water Snake as threatened in Illinois will serve to undermine Illinois' Endangered Species Protection Act rather than uphold its intent.

Thank you for the opportunity to comment.

Regards,

A handwritten signature in cursive script that reads "Ann Marie Holtrop".

Ann Marie Holtrop
Acting Chief, IDNR – Division of Natural Heritage

From: [Seth Fielding Turner](#)
To: [DNR.Espb](#)
Subject: 2014 List Review: Illinois Cave Beetle
Date: Friday, July 11, 2014 9:26:07 PM
Attachments: [Illinois Cave Beetle 2014 List Review.pdf](#)

Hi,

I have attached a petition to list the Illinois cave beetle as endangered. If clarifications or more information is needed, please do not hesitate to ask.

Thank you,

Seth Turner
910 Walnut Avenue
Redlands, CA 92373

618 841 2884

Illinois Endangered Species Protection Board (ESPB) required 5-year review of the Illinois List of Endangered and Threatened Species (Illinois List) ending in 2014:

Public hearing and comment period nomination form for recommending addition of a species to the Illinois List of Endangered and Threatened Species

Form prepared by:
Anne Mankowski, Director
Illinois Endangered Species Protection Board
One Natural Resources Way
Springfield, IL 62702-1271
Office phone: 271-785-8687

Complete one form for each species nomination. Do not remove any parts of the form text. Fill-in all sections to the best of your ability with available information. A completed form and copies of attachments can be submitted via email to dnr.espb@illinois.gov during the public comment period of Noon on June 26, 2014 – Midnight on July 11, 2014.

A.

Date: 7/11/2014

B. **Proposer Information**

Name: Seth Fielding Turner

Address: 910 Walnut Avenue; Redlands, CA 92373

Phone number: (618) 841 2884

Email address: speleo@siu.edu

Title: None

Institution/Organization affiliation: None

C. **The scientific and common name, including nomenclature citation, of any species involved (the ESPB may elect to use the common name identified by NatureServe).**

Scientific Name: *Pseudanophthalmus illinoisensis*

Common Name: Illinois Cave Beetle

Nomenclature Citation:

D. Identification of the specific listing status recommended – endangered or threatened – and reference to specific ESPB listing criteria that are affecting the species, including where these factors are acting upon the species, the magnitude and imminence of these factors, and whether, either singly or acting in combination, these factors may cause the species to be an endangered or threatened species (**endangered = at risk of extinction in the wild in Illinois**; threatened = likely to become endangered in the wild in Illinois within the foreseeable future).

Recommend listing as endangered X

Recommend listing as threatened

Identify which ESPB listing criteria are affecting the species and for which your proposal provides supporting evidence: **The Illinois Cave Beetle has a global conservation status of G1 and is a Forest Service Region Nine-Regional Forester’s Sensitive Species (as cited in USFS, 2014).**

1. Species or subspecies designated as federally endangered or threatened.
2. Species proposed for Federal Endangered or Threatened status that occurs in Illinois.
3. Species which formerly were more widespread in Illinois but have shown significant declines which may lead to extirpation from the State due to habitat destruction, collecting, or other pressures resulting from the development of Illinois. This includes species which:
 - a. are experiencing reproductive impairment;
 - b. have experienced a range reduction;
 - c. occur in reduced numbers even though range or number of populations remains steady.
4. **Species which are low in numbers and for which known or potential threats are likely to cause significant declines, including:**
 - a. **species which exhibit very restricted geographic ranges, of which Illinois is a part;**
 - b. **species which exhibit restricted habitats or low populations in Illinois;**
 - c. **species which are significant disjuncts in Illinois, i.e., the Illinois population is far removed from the rest of the species' range.**

E. **Biological information on the species (including habitat and life-history traits) that is relevant to determining whether a species may be endangered or threatened.** All GPS locations are Geographic / WGS-84.

As the name suggests, the Illinois cave beetle is a cave adapted species. The only publication that provides original research is a 1966 journal article written by Barr and Peck for inclusion in *The American Midland Naturalist*. In this publication, the authors provide very few details concerning the species' habitat and life-history traits. Barr and Peck only state that, “All of the beetles were taken in gravel or mud banks in the lower 220 m. [of Cave Spring Cave]. (521)

The Illinois Cave Beetle is believed to be endemic to Cave Spring Cave in Hardin County, Illinois (Soto-Adams & Taylor 2013). Alterations to Cave Spring Cave caused by quarrying may have adversely impacted the Illinois cave beetle. The status of the Cave Spring Cave population is largely uncertain (USFS, 2007; USFWS, 1994). This uncertainty is likely due to a lack of access, the presence of a real threat, and the demanding nature of the cave's passages. These three factors are not conducive to promoting research.

Cave Spring Cave has two entrances that are separated by a water filled cavity. The cave drains an area of approximately 1,170 acres. Water enters the cave through the northern entrance (N 37.45607, W 88.40013) and flows southeast towards the spring resurgence (N 37.45155, W 88.39771) located along Wallace Branch, before entering the Ohio River. The northern or upstream entrance is located in a thirty-one acre sinkhole, which was likely formed when a portion of the cave collapsed. The former continuation of the cave is indicated by the presence of a spring located in the same thirty-one acre sinkhole (N 37.45753, W 88.40239) and a large swallow hole located 1,500 feet to the northeast (N 37.45939, W 88.40708).

The continuation of Cave Spring Cave is important for several reasons. Inaccessible cave passages that are located farther away from the quarry and are suitable habitat for the Illinois cave beetle may exist. In studying cave adapted *Asellus brevicauda*, Lisowski sampled both Cave Spring Cave and the aforementioned swallow hole and spring (1979). Cave adapted *Asellus brevicauda* were collected at the swallow hole and resurgence. Another cave site, known as Rhine Mine, exists nearby in a quarry that is currently inactive.

F. A detailed narrative justification for the recommended measure, describing, based on available information, Illinois-specific past and present numbers and distribution of the species involved (location information should include lat/long coordinates and other information necessary to add a record to the Natural Heritage (Biotics 4) Database) and any threats faced by the species; it is most helpful if this narrative contains an analysis of the information presented.

My justification for listing the Illinois cave beetle is simply based on the idea that research regarding the species' extirpation or extinction is non-existent. When the species was evaluated by the Illinois Endangered Species Protection Board (IESPB) in 2008, the decision was made to not list the species because no recent collections had been made. However, since no one has attempted to make such a collection, concerns of extirpation are not necessarily meaningful or justified. The IDNR and United States Fish and Wildlife Service have never sought action against the quarry regarding an endangered species taking. Any quarry activities that would have served to extirpate the Illinois cave beetle would have also resulted in a taking of an endangered species. This issue is further discussed in Section H. Feature locations are provided in Section E and threats are discussed in Section G.

G. Information on regulatory protections and conservation activities initiated or currently in place that may or may not protect the species or its habitat.

Cave Spring Cave's drainage basin is delineated by an Illinois Natural Areas Inventory Site (INAIS) by the same name. Due to such a designation and the presence of federal and state listed species, the cave and its biological resources would seemingly be provided some protection pursuant to Public Acts 520 ILCS 10 and 525 ILCS 30 and Administrative Code 1075, which sets forth consultation procedures.

Any state permitted activities that might cause adverse impacts to the site would necessitate consultation between the IDNR and any other interested parties. A quarry and fish farm operate within the Cave Spring Cave INAIS. Both mining and aquaculture are regulated through state permits due to concerns regarding effluent, public safety, and other environmental issues. As a result of a FOIA request that I submitted to the United States Fish and Wildlife Service in November of 2013, I have reason to believe that the consultation process is not being adequately performed.

Cave Spring Cave provides habitat for the gray bat, Indiana bat, southeastern bat, and Packard's cave amphipod. All of these species are listed as endangered at the federal and/or state level. The quarry that operates

near the cave is not in the possession of any taking permits (P. Percy USFWS FOIA Officer, personal communication, February 10, 2014; F. Page IDNR FOIA Officer, personal communication, April 4, 2014).

In the provided attachments, I have included a copy of an email exchange that took place between the IDNR and the United State Fish and Wildlife Service to satisfy the consultation procedure. In this exchange, Keith Shanks of the Office of Mines and Minerals states:

Lacking any information about the location or severity of past blasting or its effects on the cave, and lacking any information on future blasting which would aid in predicting effects in the cave, the consultation program is unable to formulate an opinion that the blasting would definitely adversely impact or harass the bats. To our knowledge, no one has attempted to observe the bats during blasting operations or collect any other empirical data in this line. (personal communication, February 18, 1998).

Provided below are excerpts from relevant publications that detail damage to Cave Spring Cave and actions that would have likely had a negative impact on the cave's biota:

Banton, O. T. (1965, November 28). Shovels near cave: Beauty spot abused. Southern Illinoisan, pp. 4-5.

The hill above the cave is being quarried for limestone, and if continued, this operation eventually will destroy the cave, Tersinor said, voicing the opinion that "Any one of a dozen hills in the immediate locality could just as well have been chosen for the quarrying." He and others familiar with the cave are trying to find some means of saving it and developing it as a scenic attraction. [This news article predates the listing of the Indiana bat in 1967 and the gray bat in 1976.]

Illinois Nature Preserve Commission, (1975). Illinois nature preserves two-year report 1973-1974.

Cave Spring Cave, Hardin County: Damage from nearby limestone quarry.

Whitaker, J. O. (1975). Bats of the caves and mines of the Shawnee National Forest of southern Illinois with particular emphasis on *Myotis sodalis* the Indiana bat.

The Illinois Nature Preserves Commission has been aware of the gray bat colony in Cave Spring Cave, and in 1970 initiated mapping and studies on the cave. At that time quarrying operations by Williams Beecher Stone Co. were occurring very close to the cave and blasting operations were causing major breakdown in the cave. The Nature Preserves Commission discussed this with the operators of the quarry, enlisted their cooperation in preserving the cave and its bats, and quarrying operations have since been moved farther from the cave.

White, J. (1978). Illinois natural areas inventory technical report volume I survey methods and results.

The overall most outstanding cave in Illinois was spared from a quarry that came within 15 feet of the cave, when the quarry operators were told of the value and exact location of the cave. Over one thousand gray bats, an endangered species, use this room in the cave as a nursery in the summer. The cave has a beetle and a millipede known from no other locality in the world.

(1979). In Kleen, V. M. (Eds.), Proceedings of the Illinois Non-game Wildlife Symposium.

Also, their [bat] habitats, especially caves, old trees, and old buildings must be protected to a greater extent. For example, Cave Spring Cave in Hardin County and the Blackball Mines in LaSalle County need protection as soon as possible.

Lisowski, E. A. (1979). Variations in body color and eye pigmentation of *Asellus brevicauda* Forbes (Isopoda: Asellidae) in a southern Illinois cave stream. *NSS bulletin*, 41(1), 11-14.

The Williams brothers operate a limestone quarry at the very edge of Cave Spring Cave. They seem interested in preserving the cave and the bats. However, it is suspected that blasting operations in the quarry have caused large blocks to fall from the ceiling of the cave, and runoff from the quarry has contributed large amounts of fine limestone gravel to the stream below the cave.

Natural Land Institute, (1981). Endangered and threatened vertebrate animals and vascular plants of Illinois.

Quarry operations near Cave Spring Cave and disturbance from spelunkers are detrimental to the gray bat maternity colony. [Based on citations in popular media dating from the 1950's to the present and the physical nature of the cave's passages, I believe that concerns regarding recreation in Cave Spring Cave and declines in the gray bat population are largely exaggerated.]

Telegraph Capital Bureau (1984, May 16). Legislators move to protect cave haven of endangered bats. Alton Telegraph, pp. A-3.

SPRINGFIELD - An attempt to eliminate a \$400,000 state appropriation to buy a cave where rare species of bats allegedly hang out was rejected by the Illinois House Wednesday. The funds were added to the Illinois Department of Conservation's budget at the request of Rep. Robert Winchester, R-Rosiclaire, who said a cave in Hardin County frequented by two endangered species of bats —“the gray and the Indiana”—was in danger of being destroyed. Rep. Richard Mautino, D-Spring Valley, sought to eliminate the funding on the House floor, arguing there was no evidence any of the bats were actually in the cave and it was a waste of state funds. "How do you put a price on a bat," responded Winchester, in an impassioned speech for the winged mammals. Winchester said the cave in question was part of a quarry area under private ownership and the owner wanted to demolish it unless he could sell it. With other legislators praising the merits of bats in general; such as their consumption of large quantities of mosquitoes, the attempt to eliminate the funding to buy the bat cave drew only 26 "yes" votes, with 61 against.

Gardner, J. E., & Hofmann, J. E. Illinois Natural History Survey, (1986). Preliminary investigations into Indiana bat (*Myotis sodalis*) and gray bat (*Myotis grisescens*) occurrence, distribution and status in the Shawnee National Forest, Illinois.

The cave passageway has suffered severe structural damage as a result of blasting from a surface limestone quarry east of and parallel to the cave's passageway. In addition to this disturbance, water was being pumped from an inundated portion of the quarry up into drill holes in the ceiling of the cave. This water, being pumped at a rate of 1,000,000 gals./day was not only causing additional structural damage to the passageway, but was drastically changing the microclimate of the cave.

Gardner, J. E., Hofmann, J. E., Garner, J. D., Krejca, J. K., & Robinson, S. E. Illinois Natural History Survey & Illinois Department of Conservation, (1992). Distribution and status of *Myotis austroriparius* (southeastern bat) in Illinois

A second large past population of *M. austroriparius* recorded in Illinois was that of 120 hibernating bats in Cave Spring Cave, Hardin County, on 29 November 1953; Wayne H. Davis banded three *M. austroriparius* from this cluster (Whitaker and Winter 1977). Once (1958-1961) a maternity site for $\geq 10,000$ *Myotis grisescens* (Hall and Wilson 1966), Cave Spring Cave has been visited periodically since 1950 with none to only a few individual *M. austroriparius* encountered (Layne 1958; Whitaker and Winter 1977; Hoffmeister

1989; this study). Due to permanent surface disturbance (rock quarrying) above the cave, the microclimate of Cave Spring Cave is now considered completely unsuitable for either summer or winter use by more than a few bats of any species.

Lewis, J. J. J. Lewis & Associates, Biological Consulting, (2002). Conservation Assessment for Packard's cave amphipod (*Crangonyx packardi*).

Numerous caves have been affected by quarry activities prior to acquisition. However, at Cave Spring Cave, Hardin Co., Illinois limestone containing the cave (and *Crangonyx*) is being quarried away.

Illinois Department of Natural Resources, (2004). Shawnee area assessment volume 3: Living Resources.

However, the area around Cave Spring Cave has been heavily quarried since Packard's cave amphipod was last collected there. Cave Spring Cave formerly housed a large maternity colony of this [gray bat] species (Hoffmeister 1989).

Nyboer, R. W., Herkert, J. R., & Ebinger, J. E. Illinois Endangered Species Protection Board, (2004). Endangered and threatened species of Illinois: Status and distribution volume 2: Animals.

Former Illinois Distribution: Although probably never common [gray bat] or widely distributed in Illinois, the population has drastically decreased from 10,000 animals in the mid-1960s to 1,000 to 2,000 in 1975. A large majority of this population, and the subsequent decline, occurred at the Cave Spring Cave in Hardin County (Whitaker 1975).

Shear, W. A., Lewis, J. J., & Farfan, M. (2007). Diplopoda, Chordeumatida, Cleidogonidae, *Pseudotremia salisae* Lewis: Distribution extension north of the Ohio River in Ohio and Illinois, U.S.A. *Journal of Species Lists and Distributions*, 3(1), 67-69.

Cave Spring Cave is briefly described by Bretz and Harris (1961). At the time the 1975 collection was made, the cave was endangered by a quarrying operation, but to the best of our knowledge still exists.

U. S. Forest Service. (2012). Review of new information related to White-Nose Syndrome and occurrence on the forest of the Indiana bat and gray bat.

Cave Springs Cave is owned by a mining company that allows access to only state and federal biologists and researchers to monitor bat populations in the cave. Consequently, this cave is relatively secure from disturbance or vandalism and the inadvertent introduction of *G. destructans* by the public. However, the mining company is actively mining limestone aggregate from their property very near the cave. Some bat researchers have suggested that past blasting activity has had adverse effects on the cave, such as warming the internal temperatures and increasing the amount of water flowing through the cave.

U. S. Forest Service. (2012). Biological Evaluation Invasive Species Management Project Federal Threatened and Endangered Species Shawnee National Forest, Illinois Alexander, Gallatin, Hardin, Jackson, Johnson, Massac, Pope, Saline, and Union Counties. Shawnee National Forest. Harrisburg, Illinois

With few documented occurrences for the species [gray bat] statewide in Illinois except for Cave Springs Cave East, its population appears to be decreasing in Illinois and on the Forest but steady or increasing across its range. The major reason for the decline in southern Illinois within the Forest boundaries is the mining activities at the largest, known summer cave on private land.

H. Information regarding the status of the species over all or a significant portion of its range.

Information concerning the distribution and vulnerability of the Illinois cave beetle is lacking (USFS, 2007; USFWS, 1994). Population numbers are not known and no specimens have been collected in over thirty years (IESPB, 2008). Aside from the initial description of the species provided by Barr and Peck in 1966, no publications exist detailing original research. All ten specimens that have been collected were captured between 7/14/1965 and 10/24/1965 in Cave Spring Cave (Barr & Peck, 1966).

In 2008, the Illinois cave beetle was not considered for preliminary listing as endangered by the IESPB due to concerns of extirpation (IESPB, 2008). As previously noted, no specimens have been collected in over thirty years. Dr. Phillips stated that under such circumstance considering the Illinois cave beetle for listing would not be congruent with how other species are evaluated.

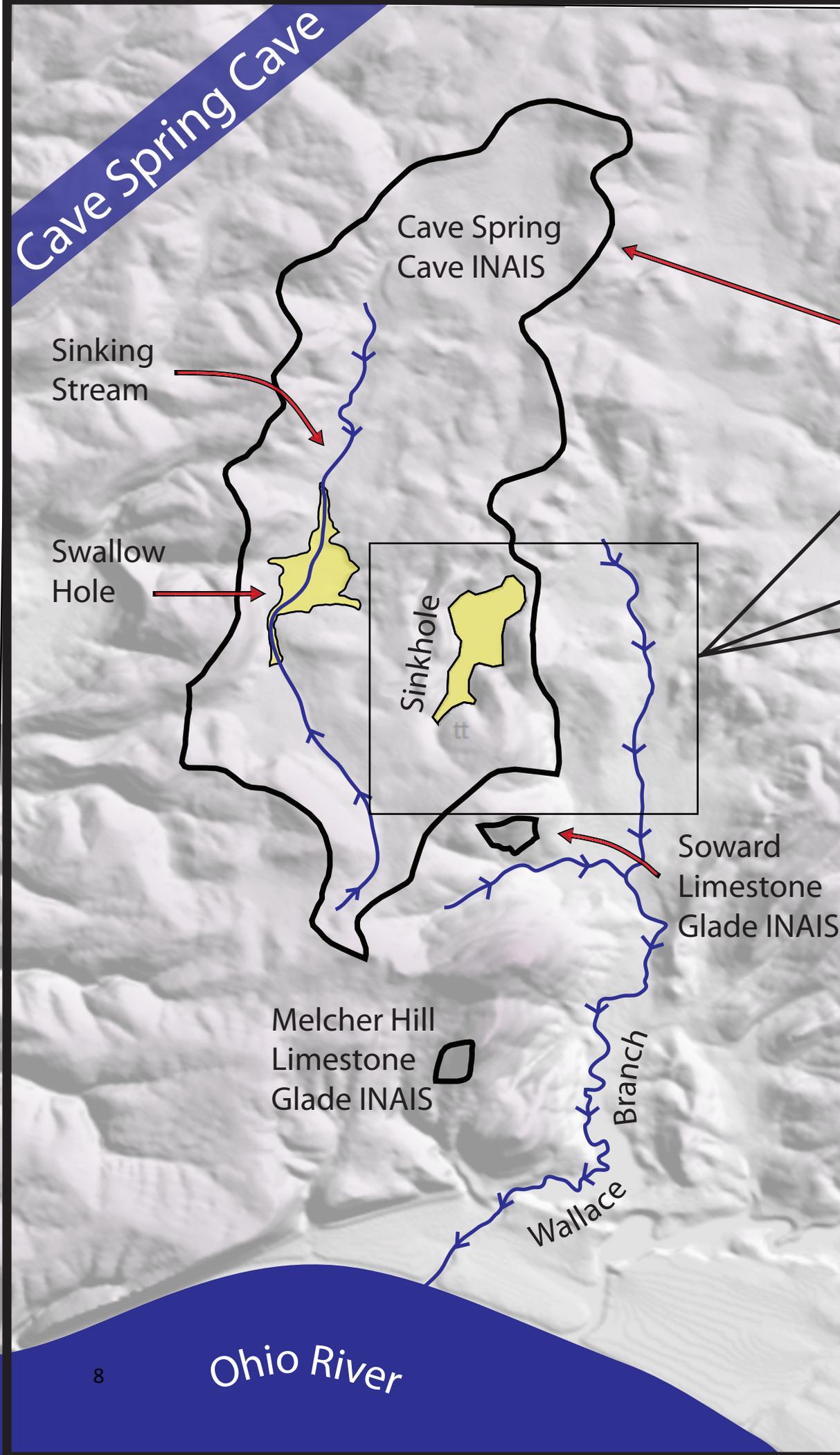
In reaching their 2008 decision, the IESPB does not appear to have considered whether or not efforts had been undertaken to relocate the species since 1965. Concerns regarding extirpation or extinction of a species are only valid to the extent that research supports such an opinion. It would not be congruent to consider species for which no field work has been conducted as extirpated alongside species that have not been located following intensive searches. Concerns regarding extirpation should take into account frequency of research.

As an example, La Rue-Pine Hills is considered the most diverse area in all of Illinois (Frankie et al., 1998). This variability is only partially explained by geology, La Rue-Pine Hills is also easily accessed, under public ownership, and located within thirty road miles of a state university. When frequency of research and access are considered, the argument can be made that Cave Spring Cave is the most diverse area in the entire state.

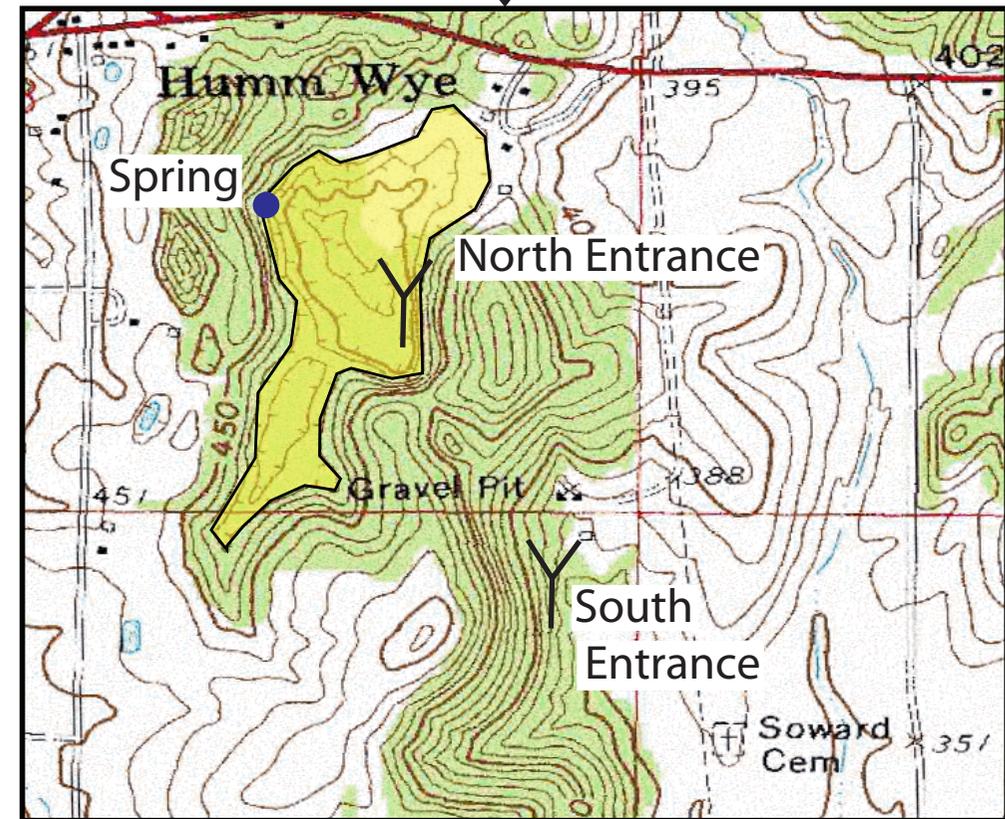
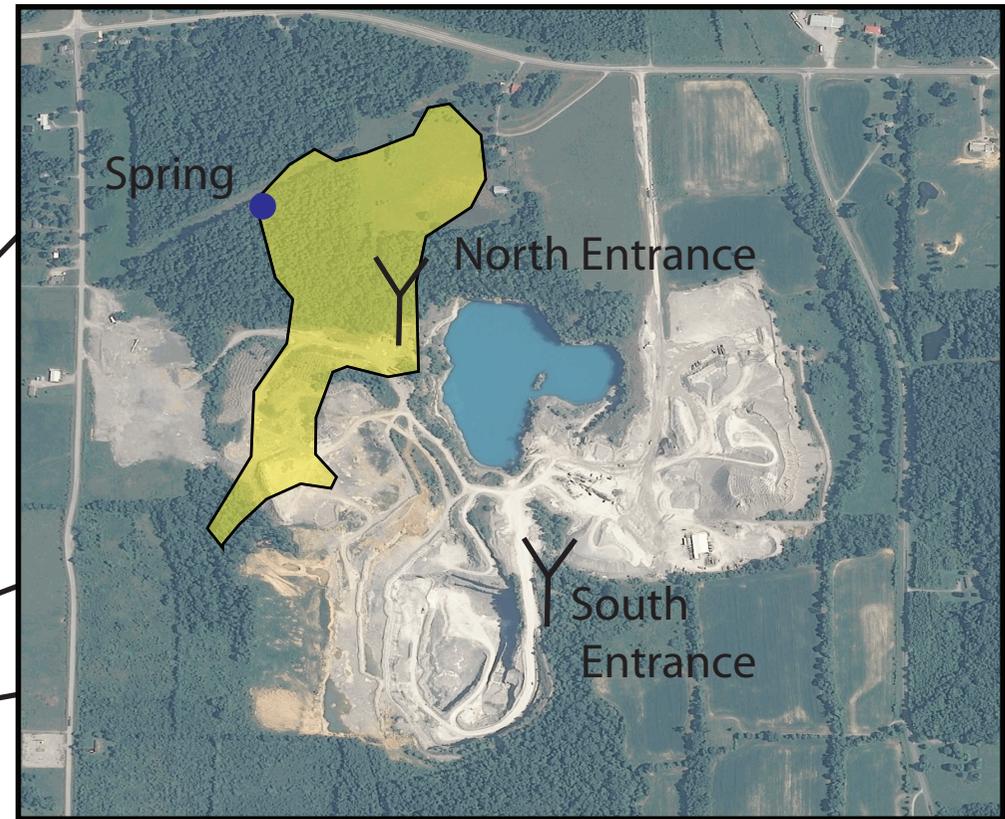
In 1977, Jerry Lewis nominated twenty subterranean and shelter bluff habitats as biologically significant to the Illinois Natural History Survey. Cave Spring Cave was included in his nomination. The lack of current research regarding one of Illinois' most biologically significant caves should be an issue of concern.

I. Supporting documentation in the form of copies of reprints of pertinent publications, data, reports or letters from authorities, and maps.

The ESPB may consult information already in our files for a subject species, but will only conduct additional research as time and resources allow when evaluating whether a listing recommendation presents substantial information indicating listing may be warranted. Therefore, to ensure that we will consider any supporting documentation you reference, you should provide either electronic or hard copies of any supporting materials cited in the recommendation, or valid links to public websites where the cited materials can be accessed; these materials should be in English. If you do not, we may at our option contact you to obtain supporting documentation. However, if you do not provide the supporting documentation, and it is not otherwise readily available in our files, we will be unable to consider this information in making our finding. In addition, we request that you provide literature citations that are specific enough to allow us to easily locate within the documentation the particular information cited in the petition, including page numbers or chapters, as applicable.



Enlarged Views



Provide specific citations/references here:

- Barr T. C. & Peck, S. B. (1966). Discovery of *Pseudanophthalmus* (Coleoptera: Caraibidae) in Southern Illinois. *The American Midland Naturalist* 76(2): 519-522.
- Frankie, T. W., Devera, J. A, Jacobson, R. J., Phillips, C. A., Locke, R. A., & Wagner M. J. (1998). Guide to the Geology of the La Rue-Pine Hills Area, Jackson and Union Counties, Illinois. Illinois State Geological Survey. Champaign, Illinois.
- Illinois Endangered Species Protection Board. (2008, November 14). *Minutes of the 140th meeting*.
- Lewis, J. (1977). Illinois Caves Recommended as Significant to Illinois Natural Areas Inventory. *North American Biospeleology Newsletter* 12(6), 6
- Lisowski, E. A. (1979). Variations in body color and eye pigmentation of *Asellus brevicauda* Forbes (Isopoda: Asellidae) in a southern Illinois cave stream. *NSS bulletin*, 41(1), 11-14.
- Soto-Adames, F. N., & Taylor, S. J. (2013). New species and new records of springtails (Hexapoda: Collembola) from caves in the Salem Plateau of Illinois, USA. *Journal of Cave and Karst Studies*, 75(2), 146–175.
- U. S. Fish and Wildlife Service. (1994). Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species. *Federal Register*, 59(219), 58982-59028\
- U. S. Forest Service. (2007). *Shawnee National Forest Land and Resource Management Plan: Monitoring and Evaluation Report*. Shawnee National Forest. Harrisburg, Illinois.
- U. S. Forest Service. (2014). *Biological Evaluation For Region Nine Regional Foresters Sensitive Terrestrial and Aquatic Animal Species: Ramsey Branch Hardwood Restoration Project*. Shawnee National Forest. Harrisburg, Illinois.

Provide a list of attachments here:

I have appended the following documents to the end of this pdf:

Barr T. C. & Peck, S. B. (1966). Discovery of *Pseudanophthalmus* (Coleoptera: Caraibidae) in Southern Illinois. *The American Midland Naturalist* 76(2): 519-522.

IDNR & USFWS, personal communication, February 18, 1998

- . 1950. The male of *Dracunculus insignis* (Leidy, 1858) Chandler, 1942. *Proc. Helminthol. Soc. Wash.*, **17**:14-15.
- CRITES, J. L. 1963. Dracontiasis in Ohio carnivores and reptiles with a discussion of the dracunculid taxonomic problem. (Nematoda: Dracunculidae). *Ohio J. Sci.*, **63**:1-6.
- DIKMANS, G. 1948. Another case of guinea-worm, *Dracunculus* sp. infestation in a dog in the United States. *Proc. Helminthol. Soc. Wash.*, **15**:39-40.
- ELDER, C. 1954. Dracontuliasis in a Missouri dog. *J. Amer. Vet. Med. Assoc.*, **124**:390-391.
- ERICKSON, A. B. 1946. Incidence of worm parasites in Minnesota Mustelidae and host lists and keys to North American species. *Amer. Midl. Natur.*, **36**:494-509.
- FARMER, H. H. AND W. F. WITTER. 1952. Canine guinea-worm (*Dracunculus insignis*) infestation. A clinical report. *J. Small Animal Med.*, **1**:174.
- GOBLE, F. C. 1942. The guinea-worm in a Bonaparte weasel. *J. Mammal.*, **23**:221.
- HELMBOLDT, C. F. AND E. L. JUNGHERR. 1955. Distemper complex in wild carnivores simulating rabies. *Amer. J. Vet. Res.*, **16**:463-469.
- HUGHINS, E. J. 1958. Guinea-worms from carnivores in South Dakota and Minnesota, with a review of the distribution and taxonomy of dracunculid worms in North America. *Proc. South Dakota Acad. Sci.*, **37**:40-46.
- LAYNE, J. N., D. E. BIRKENHOLZ AND J. V. GRIFFO. 1960. Records of *Dracunculus insignis* (Leidy, 1858) from raccoons in Florida. *J. Parasitol.*, **46**:685.
- LEIDY, J. 1858. Contributions to helminthology. *Proc. Acad. Nat. Sci. Philadelphia*, **10**:110-112.
- MOHLER, J. R. 1933. Report of the Chief of Bureau of Animal Industry, United States Department of Agriculture: 42-47.
- SCHWABE, C. W. 1956. A case of dracontiasis in a New England dog. *J. Parasitol.*, **42**:651.
- SIEGLER, H. R. 1946. Guinea-worm infestation of raccoons in New Hampshire. *J. Mammal.*, **27**:179.
- TURK, R. D. 1950. Guinea-worms *Dracunculus insignis*, (Leidy, 1858) infection in a dog. *J. Amer. Vet. Med. Assoc.*, **117**:215-216.
- WILSON, W. D. 1958. The guinea-worm, *Dracunculus insignis* (Leidy, 1858) Chandler, 1942 in a raccoon, *Procyon lotor*, from Michigan, a new location. *Amer. Midl. Natur.*, **59**:256.

S. A. EWING AND C. M. HIBBS, Department of Pathology, Parasitology and Public Health, College of Veterinary Medicine, Manhattan, Kansas 66504. Submitted 15 October 1965; accepted 2 November 1965.

Discovery of *Pseudanopthalmus* (Coleoptera: Carabidae) in Southern Illinois¹

ABSTRACT: *Pseudanopthalmus illinoisensis* Barr and Peck n. sp., described from Hardin Co., Illinois, is the first troglobitic carabid beetle reported from southern Illinois. The species is closely similar to *P. barberi* Jeannel, which inhabits caves of the north Pennyroyal plateau in Kentucky.

The large trechine genus *Pseudanopthalmus* Jeannel has been reported from caves of Kentucky, Indiana, Tennessee, Virginia, West Virginia, Alabama, and Georgia. C. H. Krekeler (*in litt.*) has taken *Pseudanopthalmus* spp. in southern Ohio and southwestern Pennsylvania. Until the summer of 1965, attempts to find cave trechines in Illinois had been unsuccessful, despite

¹ This investigation was supported in part by a grant from the National Science Foundation (GB—2011).

the occurrence of numerous apparently suitable limestone caverns in the southern and southwestern tiers of counties.

The presence of species of *Pseudanophthalmus* of the PUBESCENS and CUMBERLANDUS groups across the Ohio River from southern Illinois, in Crittenden and Livingston counties, Kentucky, added impetus to the search. Farther east, between Harrison and Crawford counties, Indiana, and Meade County, Kentucky, the Ohio separates the range of *P. tenuis* (Horn) and *P. barberi* Jeannel. These two closely related species presumably diverged at the onset of Illinoian glaciation, when the Ohio was transformed from a relatively small stream to a large river with its present dimensions (Jeannel, 1949; Krekeler, 1958).

The first known Illinois *Pseudanophthalmus* — two females — were collected in June, 1965, in a Hardin County cave by S. and J. Peck. Seven additional specimens from the same cave were obtained in mid-July by T. C. Barr and W. M. Andrews. The species, described below, is clearly a member of the TENUIS group as defined by Barr (1960). Its discovery extends the geographic distribution of the TENUIS group southwestward more than 100 miles.

Acknowledgments.—The authors wish to express their thanks to J. Peck and W. M. Andrews for assistance in collecting the species described in this paper, and to Mr. Harry Parkinson for permission to visit the cave and for other courtesies.

Pseudanophthalmus illinoisensis Barr and Peck *n. sp.*

Closely similar to *P. barberi* Jeannel, from which it differs in slightly smaller mean lengths and widths of head, pronotum, and elytra (Table 1), and in the more arcuate aedeagus (Figs. 1, 2). Length 3.8-4.9, mean 4.5 mm. Rufotestaceous, shining. Head rounded, as wide as long. Pronotum wider than long (length/width = 0.88-0.97, mean 0.92, std. dev. = 0.03); disc subconvex, with sparse, rather long pubescence; margins rounded anterior 2/3, then sloping back to shallow antebasal sinuosity before hind angles, which are large and acute; base trisinate, *i.e.*, with shallow emargination behind each hind angle and also in the middle. Elytra elongate-oval, subdepressed, about 1.6 times as long as wide (length/width = 1.59-1.74, mean 1.66, std. dev. = 0.05); sparse, rather long pubescence in double rows on intervals; longitudinal striae shallow, feebly punctate; recurrent portion of apical groove short and rounded, running into 3rd longitudinal stria lateral to apical puncture. Aedeagus (0.77 mm in holotype) about as in *P. tenuis* and *barberi*, but more arcuate, so that basal bulb is strongly deflexed.

Holotype male (U. S. National Museum) and 4 female paratypes, Cave Spring Cave, Hardin Co., Illinois, 14 July 1965 (T. C. Barr and W. M.

TABLE 1.—Comparative measurements of type series of *P. illinoisensis* n. sp. ($n_1 = 9$) and *P. barberi* Jeann. ($n_2 = 30$) from Thornhill Cave*

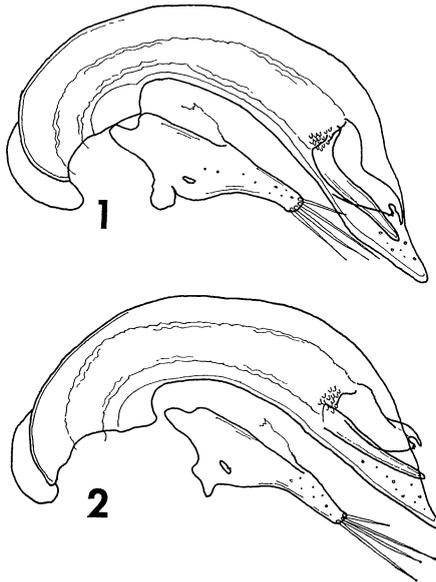
	Range	Mean	Std. dev.
Head length	0.75-0.92 (0.82-0.95)	0.84 (0.87)	0.05 (0.04)
Head width	0.77-0.87 (0.80-0.95)	0.83 (0.87)	0.03 (0.03)
Pronotum length	0.80-1.00 (0.87-1.07)	0.93 (0.96)	0.04 (0.05)
Pronotum width	0.87-1.07 (1.00-1.22)	1.01 (1.08)	0.06 (0.05)
Elytra length	2.22-2.95 (2.55-3.25)	2.70 (2.81)	0.20 (0.13)
Elytra width	1.40-1.82 (1.57-1.92)	1.63 (1.76)	0.11 (0.11)
Total length	3.77-4.82 (4.29-5.24)	4.46 (4.65)	0.30 (0.19)

* *P. barberi* values given in parentheses; all measurements in millimeters. Thornhill Cave is in Breckinridge Co., Kentucky.

Andrews); 2 female paratypes, Cave Spring Cave, 15 July (Barr and Andrews); 2 female paratypes, Cave Spring Cave, 27 June (S. and J. Peck).

Cave Spring Cave, the type locality, is located 5 mi NW of Rosiclare, in sec. 23 and 26, T 12S, R 7E, Hardin Co., Illinois. It is developed in the Fredonia member of the Ste. Genevieve limestone. A stream enters near the north entrance, flows through the cave, and emerges at the south entrance, 500 m southeast. The cave is approximately 650 m in length because of twists and turns. The lower 150 m and a shorter section near the upper mouth can be traversed only by swimming or using a boat. All of the beetles were taken in gravel or mud banks in the lower 220 m. Bretz and Harris (1961) have discussed the origin and vadose modification of the cave.

P. illinoisensis is readily distinguished from the northern members of the TENUIS group — *P. blatchleyi* Barr, *stricticollis* Jeannel, *morrisoni* Jeannel, and *jeanneli* Krekeler — by the smaller aedeagus. In *P. stricticollis* the aedeagus is 0.90-0.94 mm long (Krekeler, 1958), and in the other forms cited it averages about 1.0 mm. From *P. tenuis* (Horn) it is distinguished by the smaller size, the more deeply sinuate margins of the pronotum, and the sharply deflexed basal bulb of the aedeagus. It is virtually a sibling species when compared with *P. barberi*, from which it is geographically separated not only by the Ohio River but by a broad expanse of noncaverniferous strata (sandstones, coals, and shales). The single male in the type series makes it impossible at present fully to assess the validity of the cited difference between male genitalia of *P. illinoisensis* and *P. barberi*. However, an examination of more than 30 aedeagi of *P. barberi* from all parts of its range failed to reveal a single aedeagus which showed the extreme deflection of the basal bulb seen in the single aedeagus of



Figs. 1-2. Aedeagi of *Pseudanophthalmus* spp., left lateral view. (1) *P. illinoisensis* n. sp., holotype; 0.77 mm. (2) *P. barberi* Jeannel, topotype from Rock Haven Cave, Meade Co., Kentucky; 0.78 mm.

P. illinoisensis.² On morphological grounds alone, *P. illinoisensis* would be considered only as a subspecies or a local, variant population of *P. barberi*. Applying the biological species concept (e.g., Mayr, 1963), and confronted with geologically incontrovertible barriers, we are forced to treat *P. illinoisensis* as a full species.

According to recent interpretations (Jeannel, 1949; Barr, 1965), cave *Pseudanopthalmus* are regarded as postglacial relicts of widespread soil populations of beetles. One can speculate that, whereas the pre-Illinoian Ohio River was a small stream, easily crossed by ancestral *Pseudanopthalmus* between the Mitchell plain and the Pennyroyal plateau (cf. Barr and Peck, 1965), it was a barrier to *Pseudanopthalmus* between southern Illinois and western Kentucky. In the intervening distance it took the drainage of the Green and Wabash rivers, in pre-Illinoian times as well as now. This implies that the common ancestor of *P. barberi*, *tenuis*, and *illinoisensis* occurred rather widely in southern Illinois, southern Indiana, and adjacent Kentucky prior to becoming isolated in different cave systems. It is worth noting that these two very similar species (*P. barberi* and *illinoisensis*) are also the two most isolated, peripheral species of the TENUIS group.

² A second male, collected by Peck in Cave Spring Cave 24 October 1965, came to our attention after acceptance of this paper for publication. The aedeagus is essentially similar to that of the type: length 0.76 mm, with the basal bulb deflexed in the same way.

REFERENCES

- BARR, T. C. 1960. A synopsis of the cave beetles of the genus *Pseudanopthalmus* of the Mitchell plain in southern Indiana (Coleoptera, Carabidae). *Amer. Midl. Natur.*, **63**:307-320.
- . 1965. The *Pseudanopthalmus* of the Appalachian valley (Coleoptera: Carabidae). *Ibid.*, **73**:41-72.
- AND S. B. PECK. 1965. Occurrence of a troglobitic *Pseudanopthalmus* outside a cave. *Ibid.*, **73**:73-74.
- BRETZ, J. H. AND S. E. HARRIS, JR. 1961. Caves of Illinois. *Illinois State Geol. Surv., Rept. Inv.* No. 215. 87 p.
- JEANNEL, R. 1949. Les coléoptères cavernicoles de la région des Appalaches. Etude systématique. Notes Biospeleol., fasc. 4. *Publ. Mus. Nat. Hist. Natur.*, Paris, no. 12: 37-104.
- KREKELER, C. H. 1958. Speciation in cave beetles of the genus *Pseudanopthalmus* (Coleoptera, Carabidae). *Amer. Midl. Natur.*, **59**:167-189.
- MAYR, E. 1963. Animal species and evolution. Harvard Univ. Press, Cambridge, Massachusetts. 797 p.

THOMAS C. BARR, JR. AND STEWART B. PECK, Department of Zoology, University of Kentucky, Lexington 40506 and Department of Biological Sciences, Northwestern University, Evanston, Illinois 60201. Submitted 30 August 1965; accepted 16 September 1965.

Changes in Populations of Some Western Bats

ABSTRACT: Data taken from bats captured in mist nets provide information regarding seasonal and annual fluctuations of populations for a period of eight years, and relative abundance of the 19 species encountered.

Seasonal changes in populations of bats are correlated with the availability of water, especially in areas where water is relatively scarce. In addition to predation and the presence of suitable roosting sites and adequate food supplies,

Author: ~~Kay Parks at 3MS-CRO~~
 Date: 3/23/98 9:31 AM
 Priority: Normal
 TO: Joyce Collins at 3MS-FA
 Subject: Re[2]: Martin-Marietta Application

*From: Gerry
 3/20/98*

----- Message Contents -----

Carl, Joyce Collins has been reviewing this. According to her, the company is staying away from the cave and she doesn't believe there will be any take (harrasment). Also there is no Federal action so we can't get involved. If you believe otherwise, I suggest you contact Joyce and discuss it with her.

 Reply Separator

Subject: Re: Martin-Marietta Application
 Author: <carl_becker_at_con084p2@dnrmail.state.il.us > at ~internet
 Date: 3/18/98 2:49 PM

Please look this over. Does the Service have a role here?

 Forward Header

Subject: Re: Martin-Marietta Application
 Author: DAVE COOPER at CON028P1
 Date: 3/18/98 2:03 PM

I am curious if federal law protecting T&E's includes a similar definition of "take" to mean, among other things, "mere harassment".

Do the feds agree with us that "the potential for adverse impact exists"?

What would USFWS do if they were brought into an identical situation of consultation with a federal agency, e.g., if this were Forest Service land and the Forest Service wished to issue a permit to a mining company for blasting near this hibernaculum. What would be the USFWS course of action here if asked to close consultation?

Perhaps we are, as we certainly should be, in close coordination with the feds on this.

 Reply Separator

Subject: Martin-Marietta Application
 Author: DEANNA GLOSSER at CON084P4
 Date: 3/18/98 12:53 PM

Keith has written an excellent summary of a mining permit which is under evaluation through the consultation process. M&M indicates they are ready to issue the permit and want consultaton closed. We have serious reservations about closing the consultation process given the likelihood of damage to the hibernaculum and damage/harrasment to the endangered bats, which is a violation of the IESPA.

Please look this over and advise as to how we should proceed...Many of the questions are again legal in nature, but if the permit is issued can we as an agency pursue monitoring to determine whether the bats are the hibernaculum are being adversely affected?

61

Forward Header

Subject: Martin-Marietta Application
Author: KEITH SHANK at CON084P4
Date: 3/18/98 11:55 AM

Martin-Marietta has applied for a mining permit in the vicinity of a cave known to be a hibernaculum for Indian Bats and Gray Bats, both of which are not only State-listed endangered species, but federally-listed species as well.

The type of mining here involves blasting. Mining has been conducted at this site for more than twenty years. Bats are still using the cave. However, there is evidence the cave has been physically damaged by past blasting. Neither USFWS or IDNR has ever contemplated action against the mining company for a "taking" of the bats. However, this may be more the result of ignorance or lack of data about the effects of blasting on bats. Since the State definition of "take" includes mere harassment, it is quite possible violations of the ESPA have routinely occurred here in the past.

It is reasonable to postulate an adverse impact to the bats as a result of blasting, not direct mortality but weakening hibernating bats by disturbing them, and perhaps decreasing fertility or infant survival (gray bats use the cave year-round). Adverse impacts could result from physically shaking the cave (peak particle velocity, otherwise called ground motion) or air overpressure (airblast or noise). Bats have sensitive echo-location abilities which conceivably could be damaged or compromised by extreme overpressures.

Lacking any information about the location or severity of past blasting or its effects on the cave, and lacking any information on future blasting which would aid predicting effects in the cave, the consultation program is unable to formulate an opinion that the blasting would definitely adversely impact or harass the bats. To our knowledge, no one has attempted to observe the bats during blasting operations or collect any other empirical data in this line. The best we can do is say the potential for adverse impacts exists. We cannot say that blasting will necessarily result in a "take."

OMM clearly lacks any statutory or regulatory authority under SMLCRA to regulate the level of blasting as it may affect the bats. Their authority is limited to protecting humans and human structures. Nor can they require information on past blasting (although they can inspect records since 7-1-96) nor can they require a blasting plan, unless they accept a broader interpretation of the statute's admonition to consider the effects on wildlife.

While the principal has been stated that OMM cannot issue a permit which would necessarily violate another statute, such as the ESPA, it is not clear this can be said without better information. Thus, I think our only course in consultation is to request additional information which we will be told cannot be "required." Of course, consultation rules say the consulting government is responsible for conducting the necessary investigations to evaluate the probable effects. Applied to IDNR, that would mean IDNR should act to determine the effects prior to acting to issue the permit.

I suspect the USFWS and IDNR have never taken any action here because they had no data and no proof.

If the permit is issued, IDNR should itself act to acquire the information needed to establish whether the blasting "harasses" the bats by direct observation of the bats during blasting operations. It may be possible to establish "safe" blasting levels. Blasting is really quite scientific, and OMM has the equipment and expertise to monitor and measure blast effects in the cave, and NHS or Heritage should have the expertise to determine whether the bats are disturbed by a given level of ground motion or airblast. However, this "safe level" would not be established under SMLCRA, but through ESPA enforcement.

If blasting is currently going on under the existing permit, the opportunities for observation may exist without first issuing a new permit.

All of this would have to be worked out, but doing nothing would seem to be taking a "see no evil, hear no evil" approach to the matter, as has been done up to now.

Author: Kay Parks at 3MS-CRO
 Date: 3/23/98 9:30 AM
 Priority: Normal
 TO: Joyce Collins at 3MS-FA
 Subject: Re[3]: Martin-Marietta Application

*Carl Becker
 3/20/98*

----- Message Contents -----

Joyce maybe you should do broadcast email to other ES offices and ask for info on quarry blasting effects to bats. Maybe ask about a fed nexus too.

 Reply Separator _____

Subject: Re[2]: Martin-Marietta Application
 Author: Gerald Bade at 3MS-RIFO
 Date: 3/20/98 8:22 AM

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