


# Challenges and successes associated with a giant amphibian: the Hellbender

A large Hellbender (Cryptobranchus alleganiensis) is shown resting on a rocky stream bed. The amphibian has a mottled brown and tan pattern on its back and a lighter, yellowish-brown color on its head. It is positioned diagonally across the frame, with its head in the lower right and its body extending towards the upper left. The stream bed is composed of various sized rocks and pebbles, some of which are covered in green moss. The background shows a shallow stream with more rocks and some greenery.

Rod N. Williams  
Assistant Professor  
Purdue University



# What the \_\_\_\_\_ is a hellbender?

- *Cryptobranchus alleganiensis*
  - Ol' Lasagna Sides
  - Snot otter, Devil dog
  - Mud-devil, Grampus
  - Vulgo

# Endearing Name Origins

- The name “hellbender” may stem from:
  - settlers who thought "it was a creature from hell where it's bent on returning".
  - undulating skin of a hellbender reminded observers of 'horrible tortures of the infernal regions'



# Hellbender

- North America's largest salamander
- Weigh up to 5 lbs
- Up to 24" in length



# Identification

- Wide flat head
- Fleshy skin folds
- Slimy skin secretions
- Sexually monomorphic





# Habitat

- Cool, swift-flowing water
- Large shelter rocks
- Abundant prey
  - 90% crayfish



# Reproduction

- External Fertilization
- Fall breeder
- Females produce  
~150-300 ova



# Reproduction

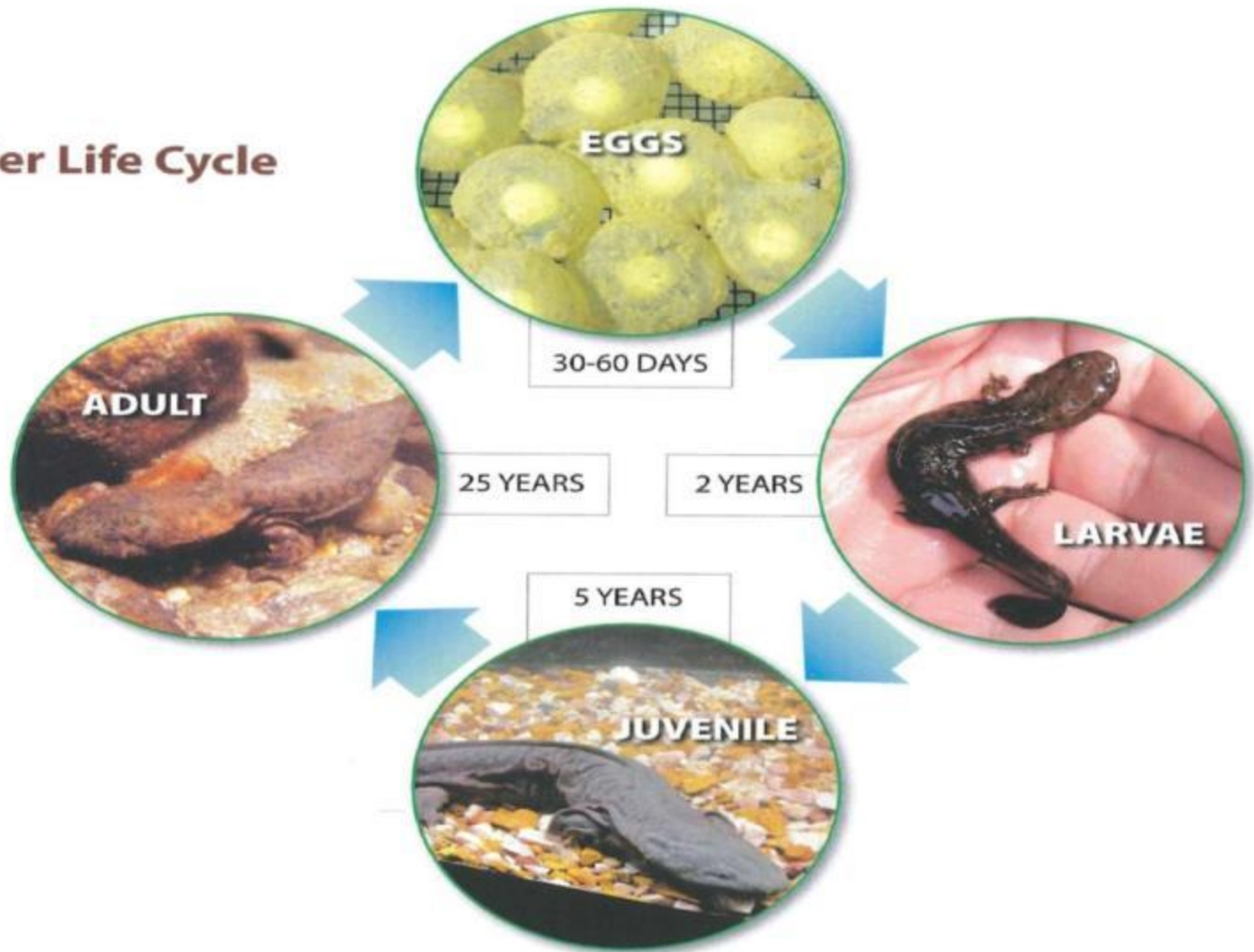
- Males guard nest and eggs



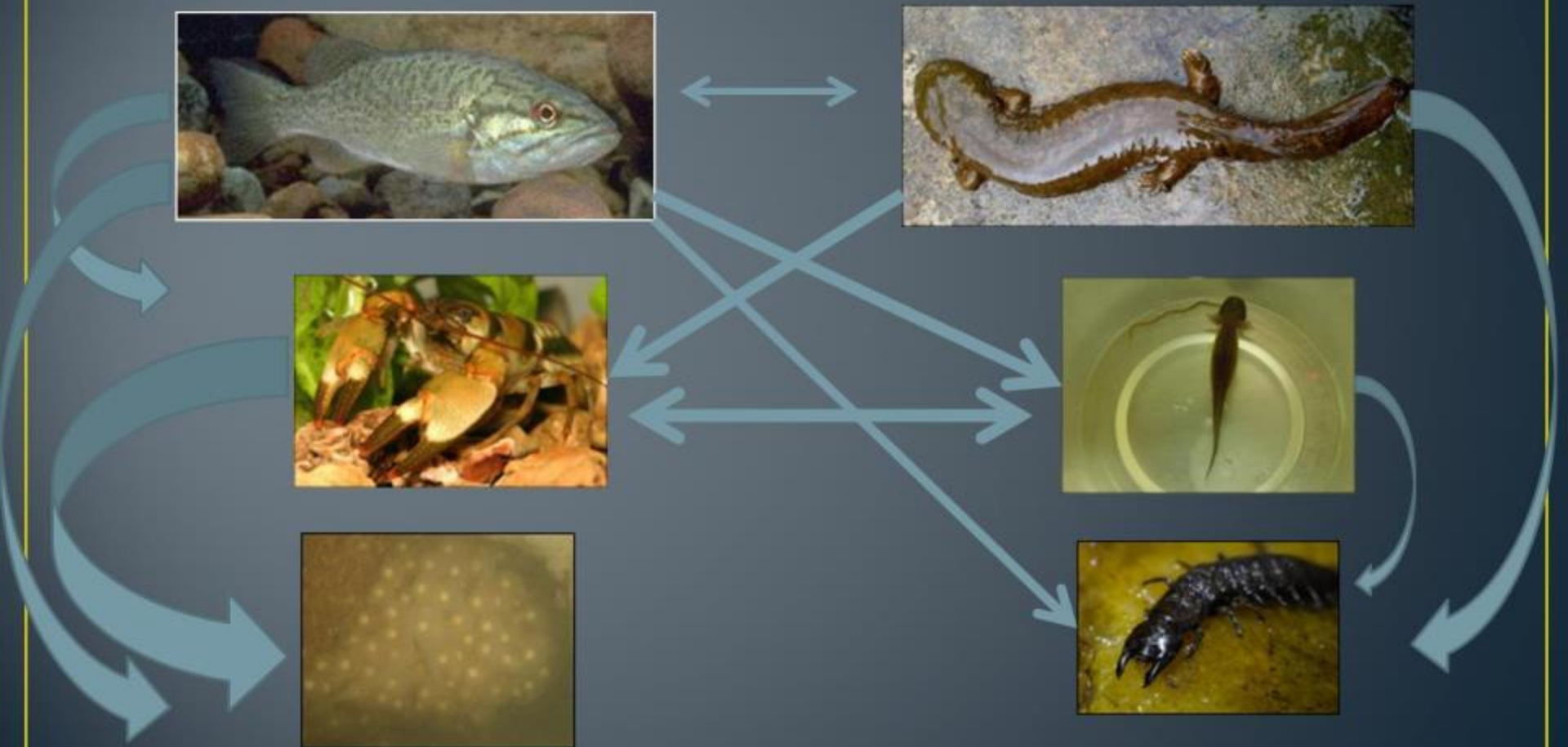


# Hellbender Life Cycle

## Hellbender Life Cycle



# Aquatic Food Webs



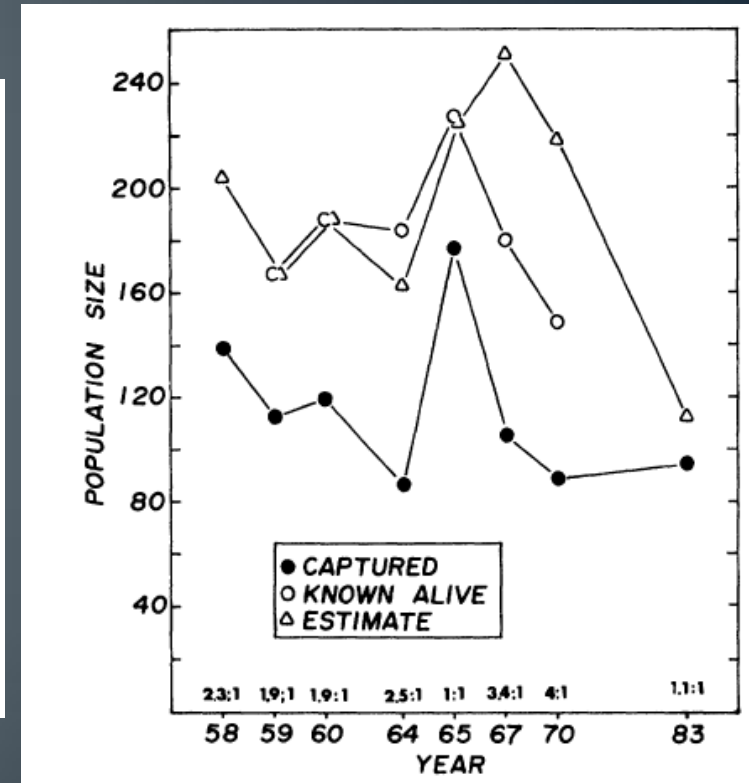
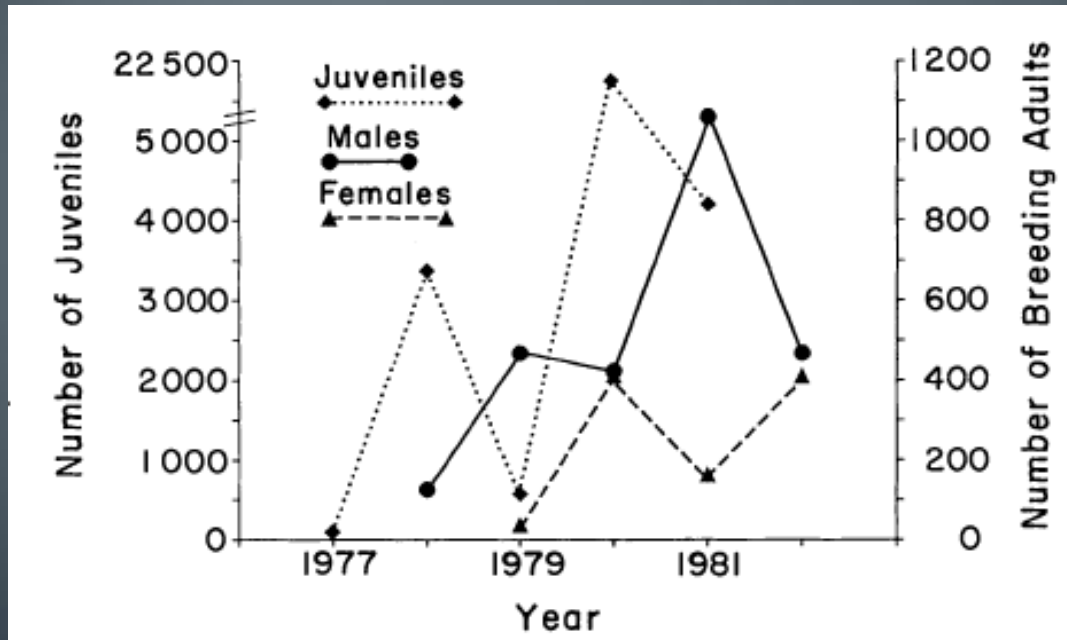


# Indicator Species

- Present in high quality streams
- Long-lived (30+ years)



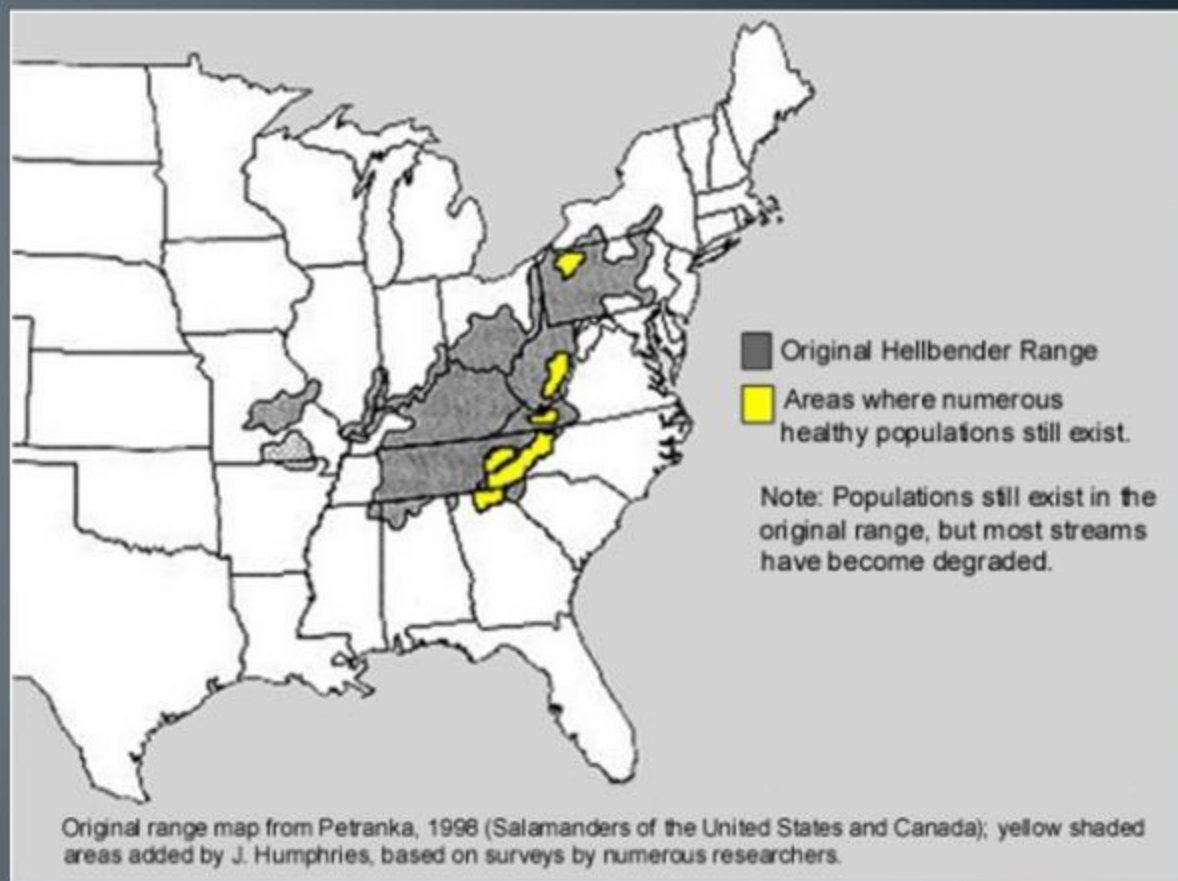
# Indicator Species: population turnover



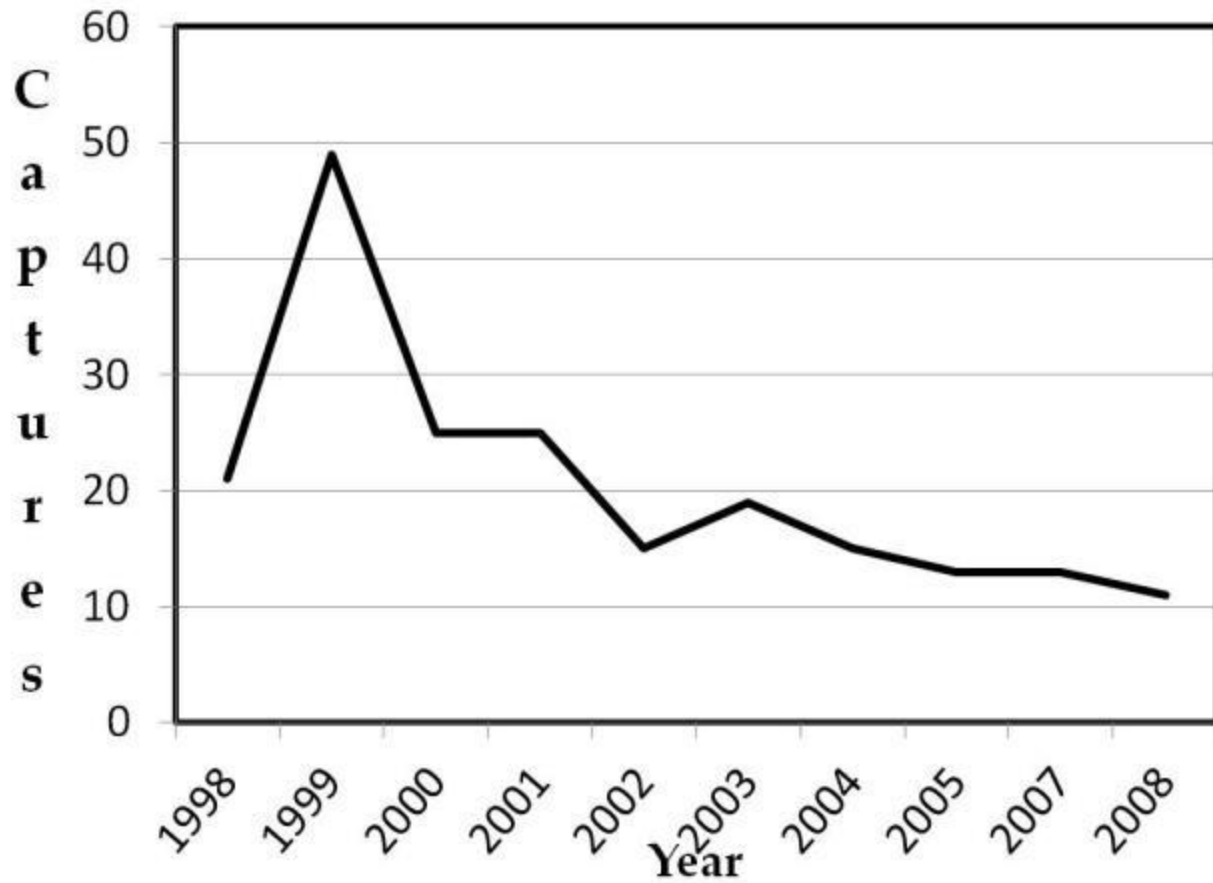


# Conservation Concerns

- Population declines
- ESA listing(s)
- Midwest at risk



# Indiana Population Declines





# Projects

## Phase I (Bio-assessment)

- Population Estimation
- Spatial ecology
- Animal health & water quality
- VTG sex determination
- Population genetics
- PIT-tag retention
- Food habitats
- Population modeling

## Phase II (Recovery efforts)

- Translocation survivorship
- Spatial ecology of translocates
- Detection probabilities
- Genetic parentage
- Non-invasive e-DNA
- Public perceptions
- Education & outreach
- Immunogenetics
- Ecological niche modeling

# Overarching Conservation Issues

- Population Declines
  - Obtaining estimates
  - Detection
- Genetics
  - Delineating populations
- Recovery Strategies
- Interactions with Humans
- Partnerships

# Study Area

- Blue River Watershed



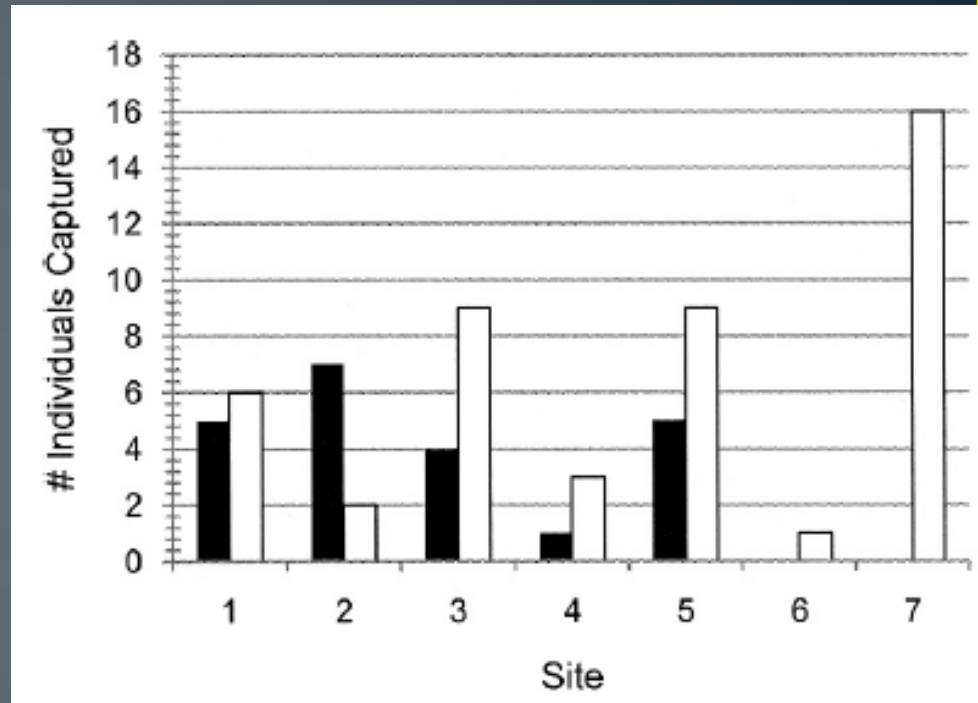
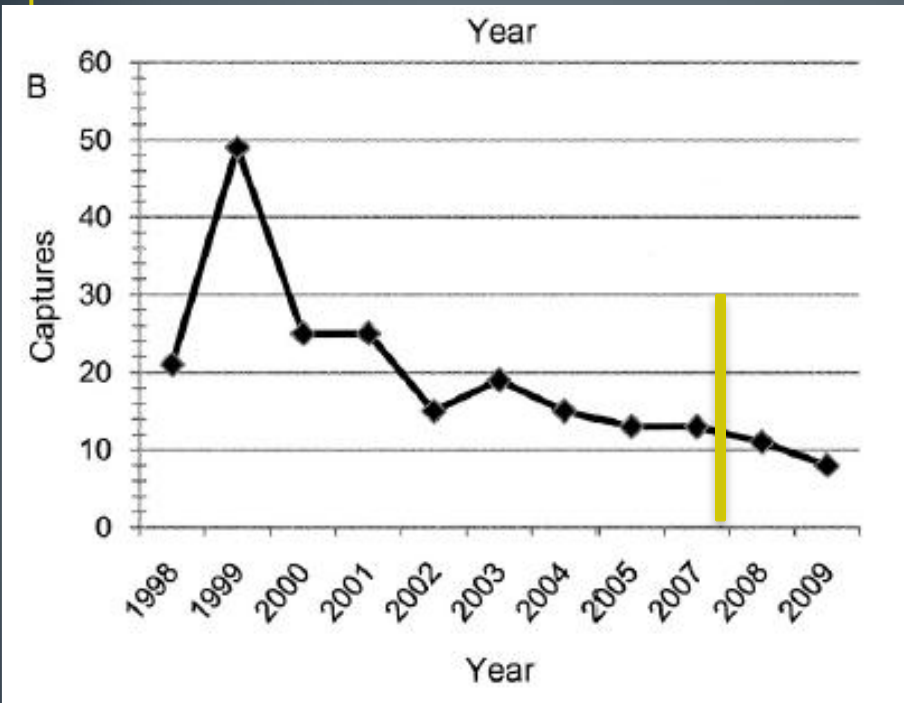


# Population Size

- 35 sites were surveyed 5 times
- 2008-09



# Results: Population



- 88 hellbenders captured
- Sex Ratio
  - 56M:22F (N=78)

# Range-wide Densities

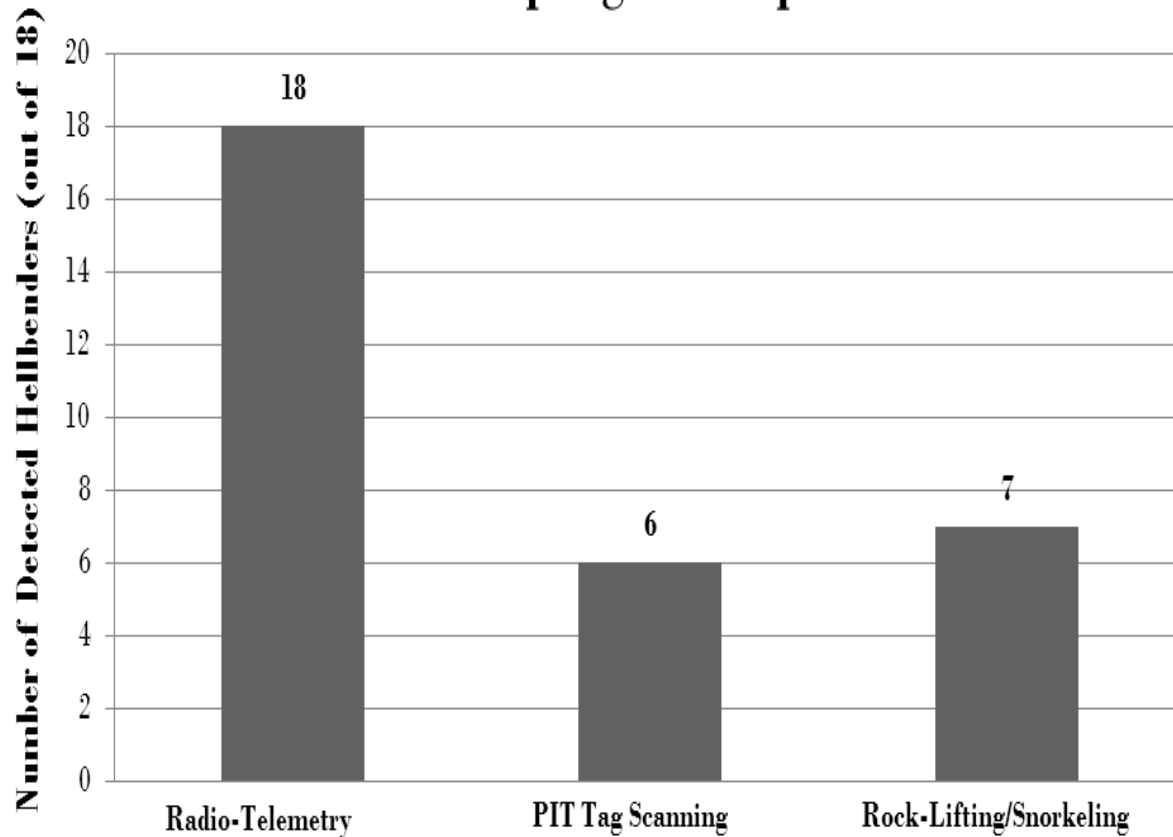
Author	Date	Density (#/100m <sup>2</sup> )	Location
Burgmeier et al.	2011	0.06	Indiana
Foster et al.	2009	0-1.07	New York
Hillis and Bellis	1971	0.99	Pennsylvania
Humphries and Pauley	2005	0.8-1.2	West Virginia
Peterson et al.	1988	1-6	Missouri
Nickerson and Mays	1973	10	Missouri
*Kern	1984	20.2	Indiana

- Are these estimates accurate?



# Detection Probabilities

**Number of Hellbender Detections - Three  
Sampling Techniques**



Radio-telemetry



PIT tag scanning

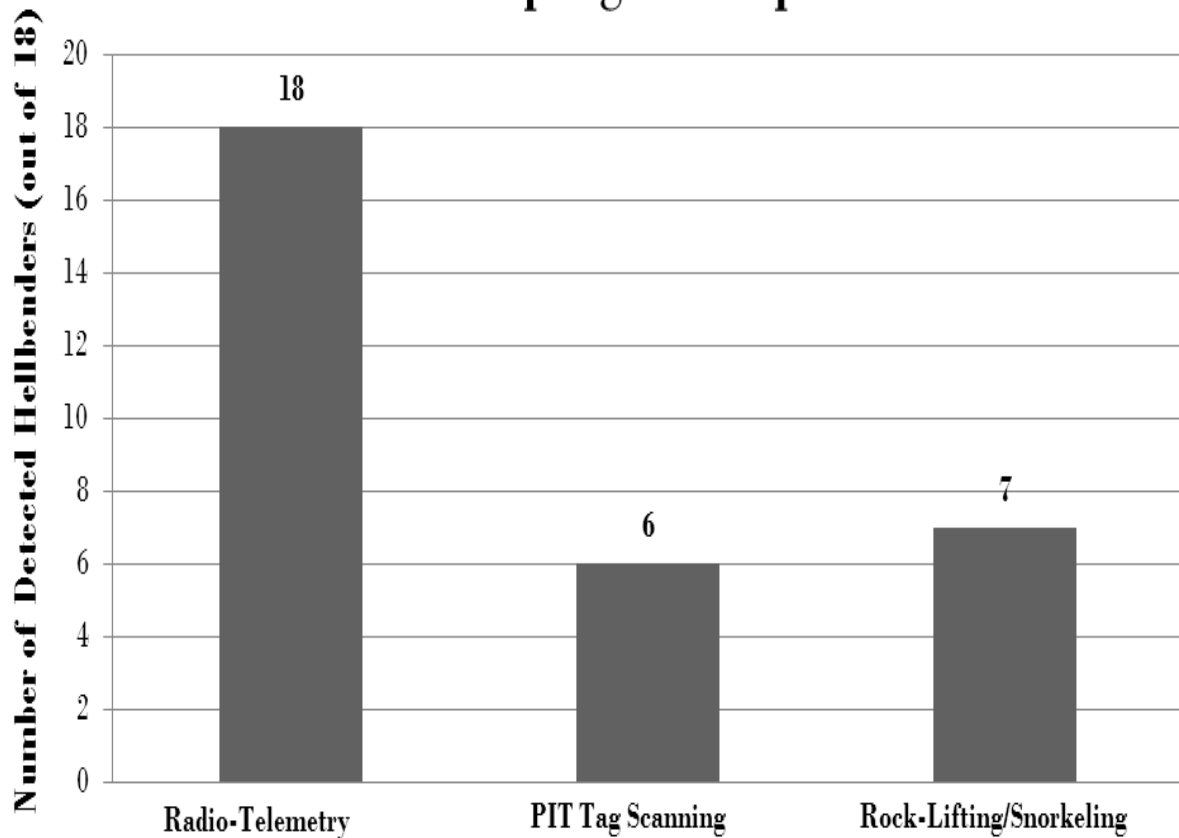


Rock-lifting



# Detection Probabilities

**Number of Hellbender Detections - Three  
Sampling Techniques**



**Radio-telemetry:  
100% detection**

**PIT tag scanning:  
33.3% detection**

**Rock-lifting:  
38.9% detection**

# Environmental Sampling

CSIRO PUBLISHING

*Wildlife Research*

<http://dx.doi.org/10.1071/WR12114>

## **An eDNA approach to detect eastern hellbenders (*Cryptobranchus a. alleganiensis*) using samples of water**

*Zachary H. Olson<sup>A,C</sup>, Jeffrey T. Briggler<sup>B</sup> and Rod N. Williams<sup>A</sup>*

<sup>A</sup>Department of Forestry & Natural Resources, Purdue University, West Lafayette, IN 47907, USA.

<sup>B</sup>Missouri Department of Conservation, PO Box 180, Jefferson City, MO 65102, USA.

<sup>C</sup>Corresponding author. Email: [olson.z.h@gmail.com](mailto:olson.z.h@gmail.com)



# 4 easy steps

## 1. Collect Water

- (40, 2-Liter, sterile bottles per site)



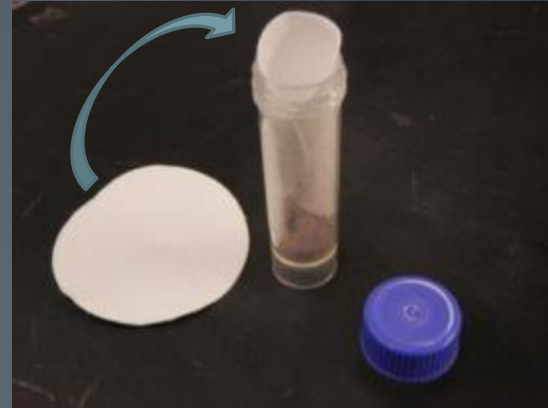
## 2. Filter Water

- (4 bottles per filter)
- Vacuum system



## 4 easy steps cont.

3. Extract DNA from filters
  - PowerWater DNA isolation kit from Mobio labs
4. Amplify DNA

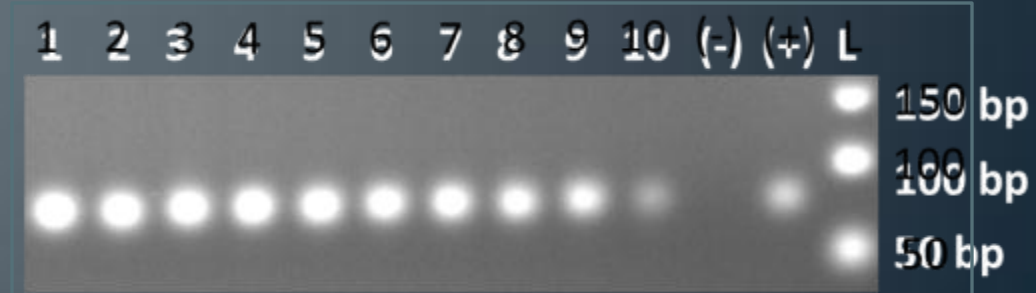


# QA/QC

- **Validate specificity**
  - Determine specificity in silico using Primer Blast
  - Panel of sympatric species
- **Demonstrate sensitivity**
  - Serial dilutions
- **Negative Controls**
  - Equipment Blank
    - Autoclaved bottles of ddH<sub>2</sub>O filtered 1<sup>st</sup>
  - Cooler Blank
    - Autoclaved bottles of ddH<sub>2</sub>O carried through field sites
    - Filtered 2<sup>nd</sup>
  - Reaction negatives
  - Negative site
- **Positive Controls**
  - Reaction positives
  - Tank test
- **Sequencing positives**

**Specificity:** No amplification

**Sensitivity:** Amplification down to  $2 \times 10^{-6}$  ng DNA



**Tank Test:** 4, 2-L bottles from a 30 gallon tank, 1 filter  
10 out of 10 positive replicate PCR's

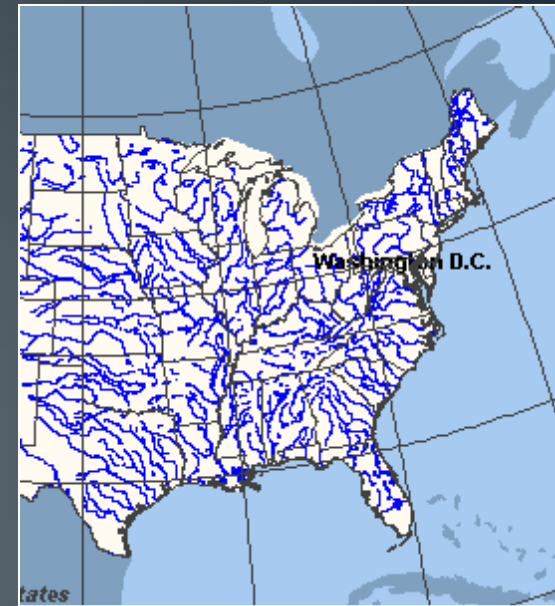
# Results

Parameter	Densities			
	Low	Medium	High	
	Indiana	Missouri 1	Site Missouri 2	Negative control
Hellbender density (individuals per 100 m <sup>2</sup> )	0.16	0.38	0.88	0
Discharge (m <sup>3</sup> s <sup>-1</sup> )	0.74	54.37	13.20	–
Filter				
1	1/10	0/10	2/10	0/10
2	0/10	1/10	1/10	0/10
3	0/10	0/10	1/10	0/10
4	0/10	0/10	0/10	0/10
5	0/10	1/10	1/10	0/10
6	0/10	0/10	1/10	0/10
7	1/10	0/10	1/10	0/10
8	0/10	0/10	0/10	0/10
9	0/10	0/10	0/10	0/10
10	–	6/10	3/10	0/10
Total positive reactions	2	8	10	0
Average positives per filter (s.e.)	0.22 (0.15)	0.80 (0.59)	1.0 (0.30)	–
No. of positive filters	2	3	7	0






# Implications

- Large-scale sampling
  - Quick
  - Efficient
  - Relatively inexpensive
  - Non-invasive
- Sets stage for other studies relying on presence/absence data



# Overarching Conservation Issues

- Population Declines 
  - Obtaining estimates 
  - Detection 
- Genetics
  - Delineating populations
- Recovery Strategies
- Interactions with Humans
- Partnerships

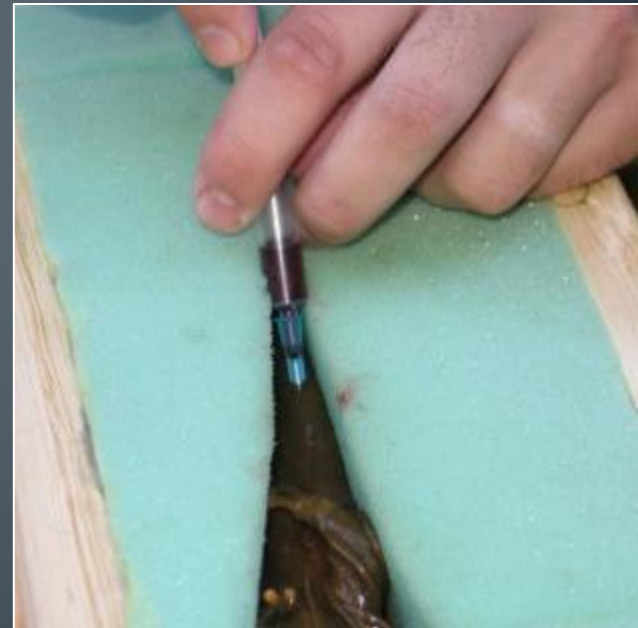
# Population Genetics

## Goals:

- **Range-wide**
  - Genetic Structure
  - Number of Populations
- **Landscape scale**
  - Hierarchical partitioning across stream networks

# Sample Collection

- 10 states
- 70 rivers
- 1200 samples
- Blood draws for health screens and DNA samples



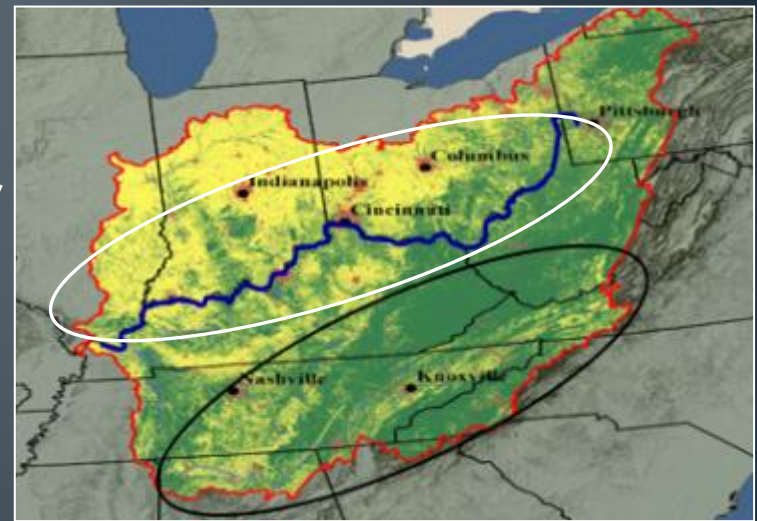
Burgmeier et al. 2010. Herp Rev.








# Genetics

## Two Large Clusters

- Ohio River Drainage
  - Indiana, Ohio, West Virginia, Pennsylvania
- Tennessee River Drainage
  - Georgia, Tennessee, North Carolina, Virginia



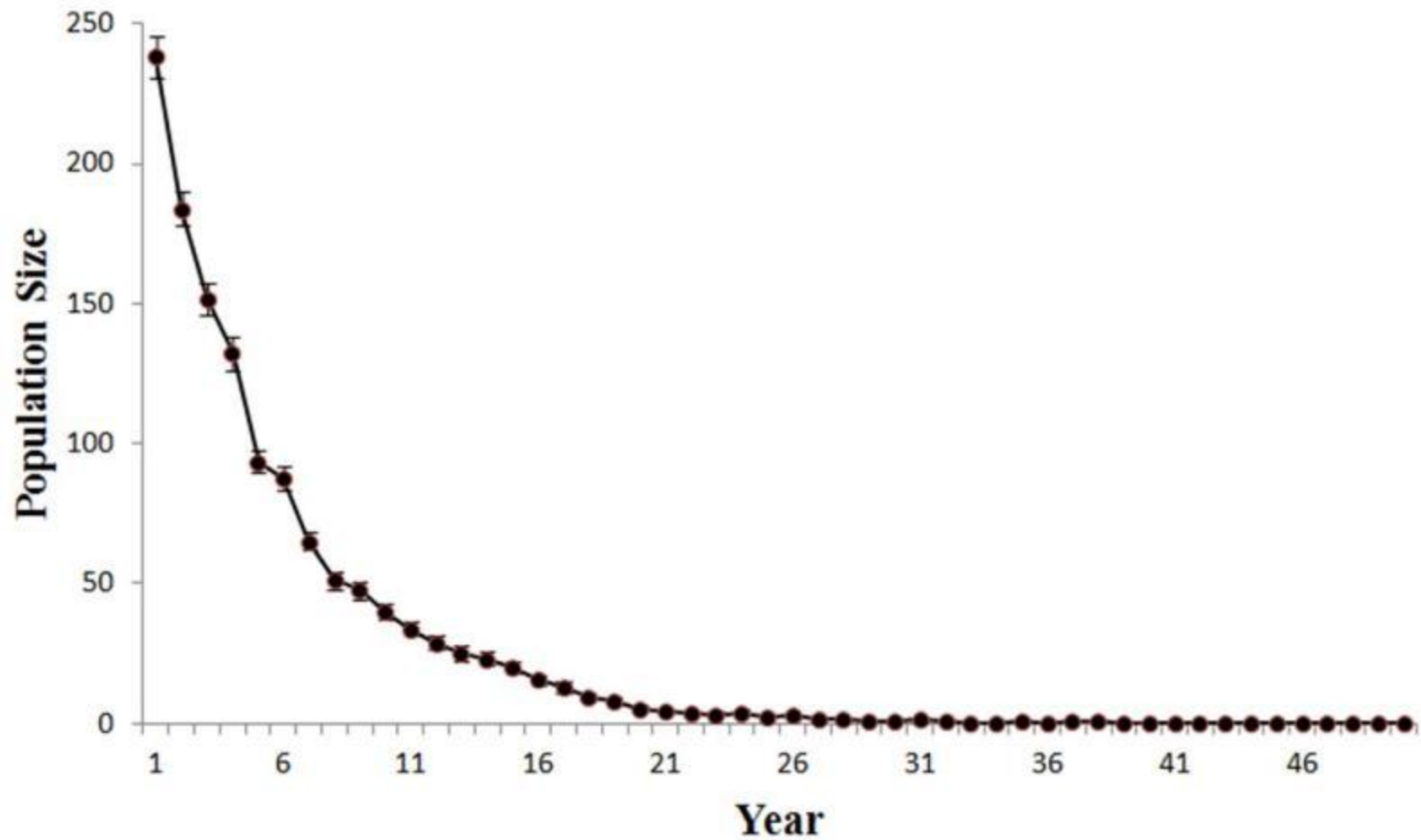
# Overarching Conservation Issues

- Population Declines 
  - Obtaining estimates 
  - Detection 
- Genetics 
  - Delineating populations 
- Recovery Strategies
- Interactions with Humans
- Partnerships

# Recovery Strategies

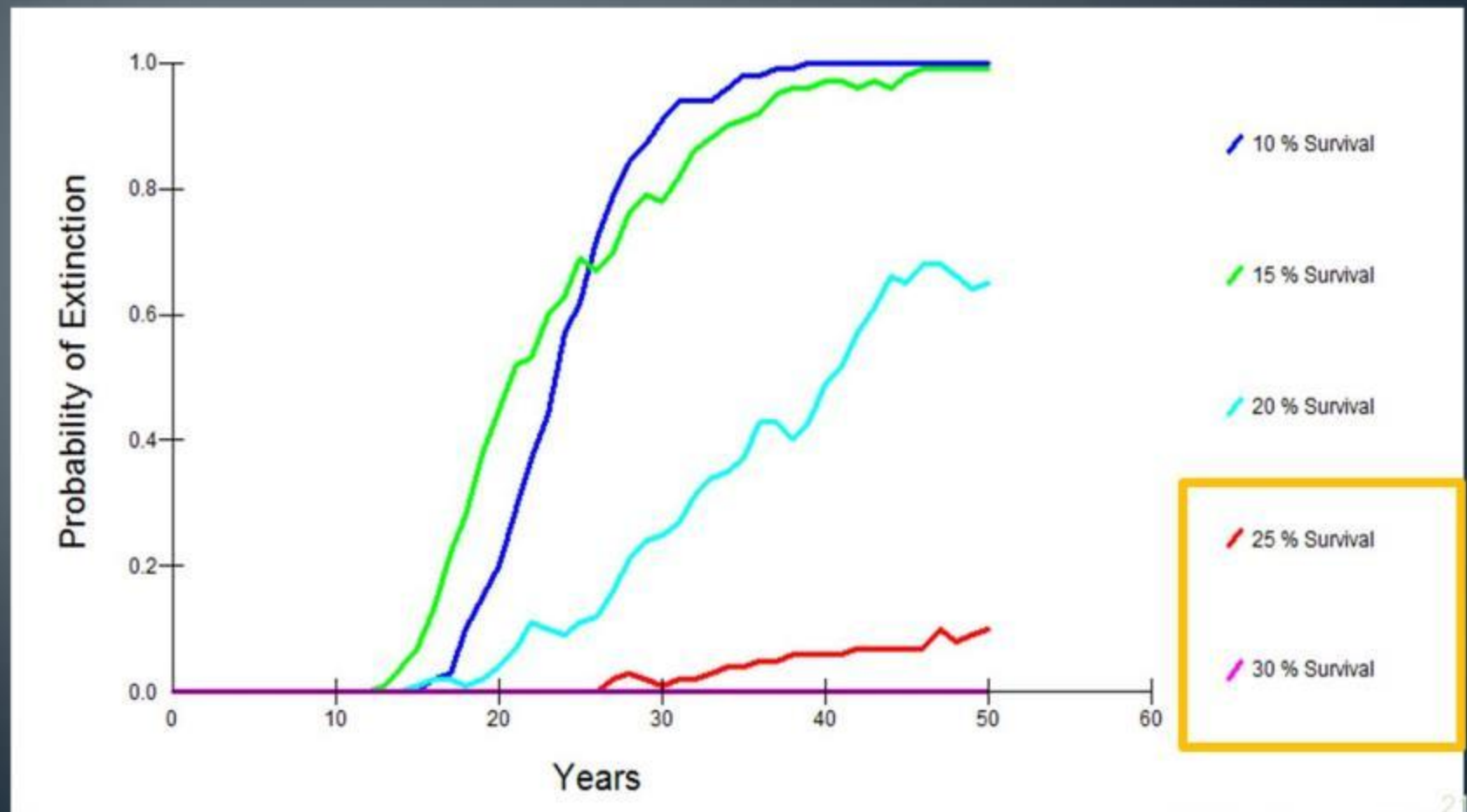
- Population Viability Analyses
- Translocations
- Captive Rearing and Release

# Population projection





# Population Projection: Management



# Efficacy of Population Manipulations

## Intra-river translocation

- 10 native adults
- 10 translocated adults



## Captive releases

- 10 native adults
- 10 captive juveniles



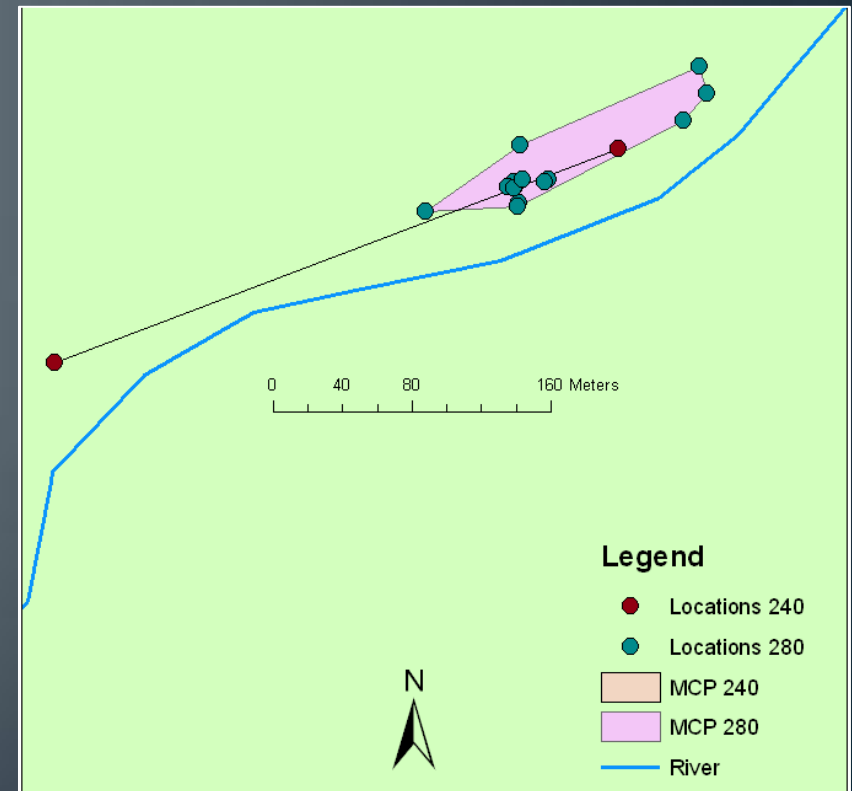
# Translocations

- Artificial nest rocks
- Soft releases



# Detection, Home Range, Movement, and Habitat Use

- Holohil 13g transmitters
- Tracked 21 individuals at 8 sites 1-3/week
  - ~57 locations/animal





# Translocation: Spatial Ecology

- Home Range Size nearly cut in half
  - 2212 vs. 1348 m<sup>2</sup>
- Extensive HR overlap among individuals
- Soft Release working
  - 18/20 adults
  - 10/10 juveniles



# Translocation: Reproduction

- Two new clutches within field sites each year
- Natural vs. Artificial Nest Rock
  - 3 clutches under natural; 1 under artificial



# Head Starting









# Headstarting

- Two releases occurred in 2012
  - 18 individuals released
  - 4 ½ years old
  
- Another release scheduled for 2013
  - 14 individuals
  - 1 year old





# Overarching Conservation Issues

- Population Declines 
  - Obtaining estimates 
  - Detection 
- Genetics 
  - Delineating populations 
- Recovery Strategies 
- Interactions with Humans
- Partnerships

# Humans and Hellbenders

- Mail Survey
  - 1378 Surveys Distributed
  - 281 Sent to Riparian Landowners
  - 541 Completed (41%)
- In-Person Survey
  - 242 Surveys Conducted
  - 6 Access Sites

## Your Views on Blue River Resources



Researchers at Purdue University are studying public perceptions of the natural resources in the Blue River area. We are interested in your opinions and would greatly appreciate your participation in this survey.

This survey should take approximately 20 minutes to complete and you may skip any questions that you do not want to answer. There are two ways in which you can complete our survey.

The easiest and quickest way is to enter the following website address into your web browser: <http://tinyurl.com/BlueRiver2> and provide your responses securely online. If you choose to complete the survey online, you will need to enter this code: \_\_\_\_\_. This lets us know that you have completed the survey. Alternatively, you can fill out this paper version and return it in the enclosed return envelope. Your responses are confidential and will never be linked to your name.

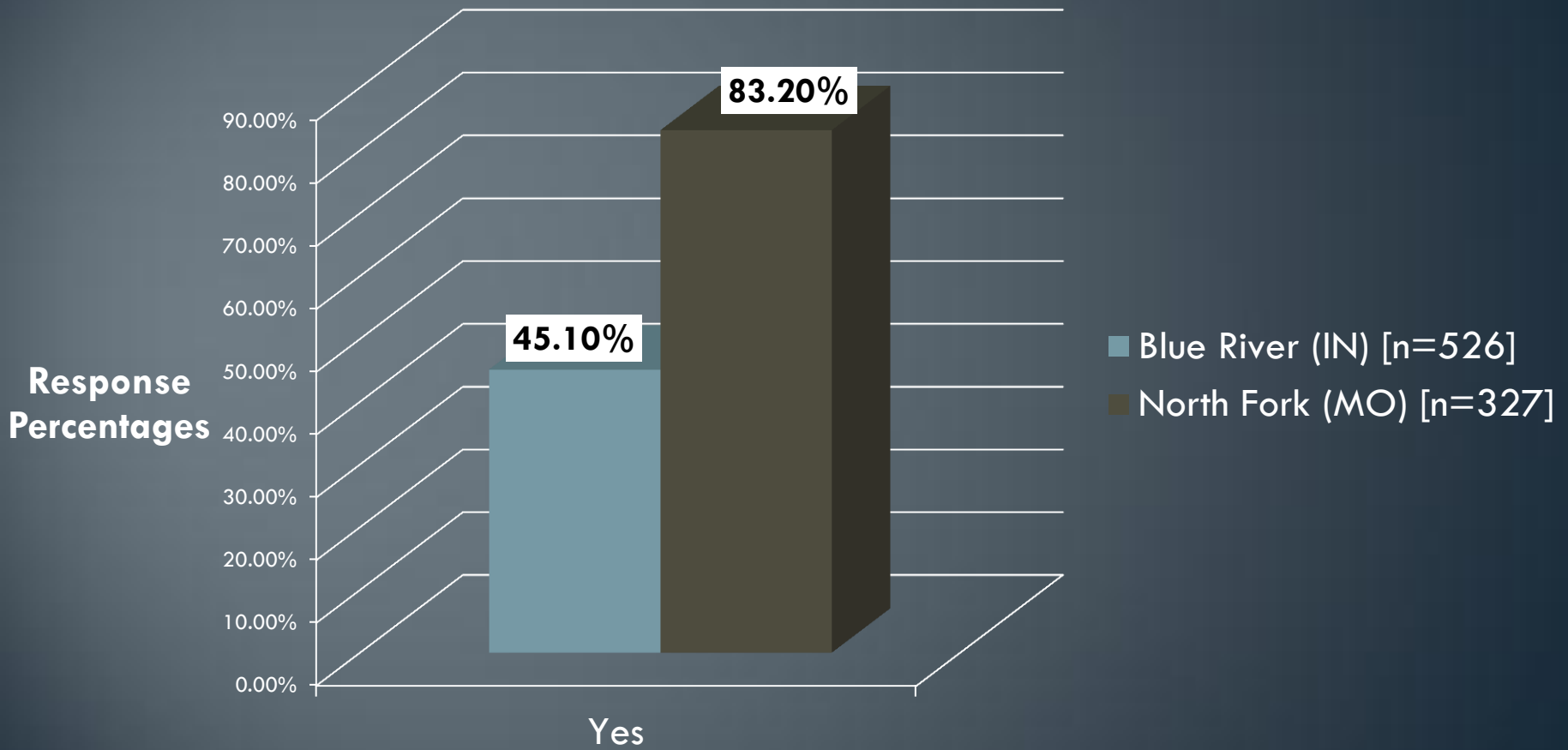
Please complete the survey by September 30, 2011. Completed surveys that are submitted online or postmarked by this date will be entered into a drawing to win one of several \$30 cash prizes. The odds of winning one of these cash prizes are better than 1 in 100.

**You could win  
a \$30  
CASH prize!**

Regardless of the method you use to return the survey, no one will have access to your individual responses, nor will your name be used in any report or publication. Your voluntary participation in this survey will help us understand the needs and interests of the residents in the Blue River area. This is your chance to be heard. If you have any questions about the survey, please contact Linda Prokopy at (765) 494-0825. Thank you in advance for your help.

  
Professor Linda Prokopy  
Purdue University

# Have you heard of the Hellbender?



# O & E Approach

- “3D Model” of O & E
  - **Develop** the portal
  - **Design** the content
  - **Deliver** the programs
- *HelpTheHellbender.org*

# 3D Model

## Develop the Portal

The screenshot shows the homepage of the 'Help the Hellbender' website. The header features a large title 'HELP the HELLBENDER' in blue and orange, with 'PURDUE EXTENSION' to the right. A search bar and navigation links for 'Purdue Agriculture' and 'Directory' are in the top right. Below the header is a navigation menu with tabs for 'Home', 'About Hellbenders', 'Anglers', 'Homeowners', 'Farmers', 'Teachers', 'Kids', and 'Project Partners'. The main content area includes a breadcrumb trail 'Purdue Agriculture > Extension > Help the Hellbender', social media sharing options (Like, 70, Facebook, Twitter), and a 'Highlights and Events' section. The 'New Hellbender Publications' section lists a 2014 paper by Hopkins, W.A., et al. The 'Welcome to Help the Hellbender' section contains introductory text and a 'Help The Hellbender Podcast series is here' link. Three promotional images are visible: 'Have you seen a Hellbender? Report a sighting!', 'Videos & Podcasts', and 'Request a brochure'.

# HELP the HELLBENDER

PURDUE EXTENSION

HOW CAN I HELP

- Home
- About Hellbenders
- Anglers
- Homeowners
- Farmers
- Teachers
- Kids
- Project Partners

Purdue Agriculture > Extension > Help the Hellbender

Like 70 Facebook Twitter

### Highlights and Events

#### New Hellbender Publications

Click on the Publications tab to view full PDF.

- Hopkins, W.A., et al. 2014. Morphological and molecular characterization of a new species of leech

### Welcome to Help the Hellbender

Help The Hellbender Podcast series is here

Welcome to Help the Hellbender - Use for formatted text, tables, and images

Everyone can do something to Help the Hellbender. On this website, you will find information about the hellbender, as well as household and farm management practices that can help keep our rivers and streams clean. People who fish and kayak can also learn what they should do if they see a hellbender in the wild.

The Help the Hellbender Project is a joint project involving partners from across the country. More information about our partners can be found by clicking on the highlighted states below or visiting our partners tab.

Have you seen a Hellbender? Report a sighting!

Videos & Podcasts

Request a brochure.



# 3D Model

Design the content – General Audience

PURDUE UNIVERSITY PURDUE EXTENSION

## THE HELLBENDER

**PROTECT INDIANA'S LIVING RELIC**

**HELLBENDERS** prefer cool, rocky, swiftly flowing streams. Their presence indicates good water quality.




**HELLBENDERS** feed mainly on crayfish, not fish.

**HELLBENDERS** can bite when provoked. But, they are **not** venomous and their slime is **not** poisonous.

If you find a **HELLBENDER**, take a photo and contact the Indiana Department of Natural Resources 812-334-1137.

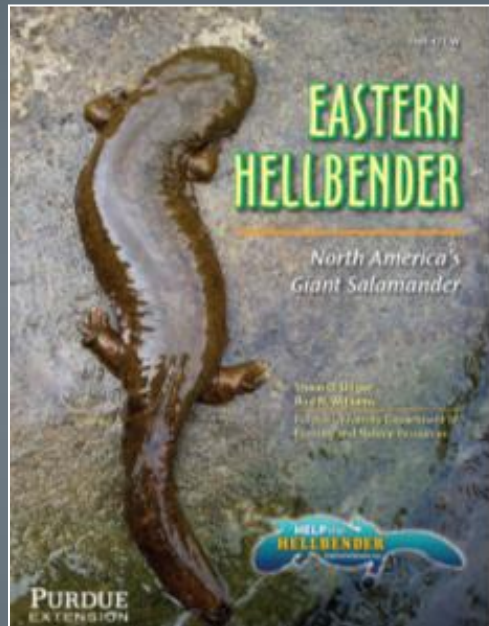
**HELLBENDERS** are giant aquatic salamanders (up to 2½ ft) found in the tributaries of the Wabash and Ohio Rivers in southern Indiana.

**HELLBENDERS** are occasionally caught on hooks and lines. They are endangered in Indiana and should be released unharmed.



# 3D Model

## Design the content – General Audience



**Hellbender or Mudpuppy?**  
These two species of aquatic salamanders are often misidentified.

	
	
<b>HELLBENDER</b>	<b>MUDPUDDY</b>

- Lacks gills as adult
- Large, flat head
- Warty appearance
- Five toes on hind feet
- Larger (more than 20 in.)

- Large external gills throughout life
- Triangular head
- Smooth appearance
- Four toes on hind feet
- Smaller (up to 12 in.)

 Hellbenders are distributed in northern throughout their geographic range.

**Table 1. Regions with state agencies and conservation status of eastern hellbenders. Contact information listed for each state to report hellbender sightings.**

State	Agency	Listing	Status	Contact
Indiana	Department of Natural Resources <a href="http://www.dnr.in.gov">www.dnr.in.gov</a>	Endangered	Depleted	(317) 234-1127
North Carolina	North Carolina Wildlife Resources Commission <a href="http://www.ncwildlife.org">www.ncwildlife.org</a>	Special Concern	Stable	(813) 449-3333
Tennessee	Tennessee Wildlife Resources Agency <a href="http://www.tn.gov">www.tn.gov</a>	Endangered	Stable	(615) 371-4839
Pennsylvania	Pennsylvania Fish and Boat Commission <a href="http://www.pfbc.pa.gov">www.pfbc.pa.gov</a>	Not Listed	Stable	(610) 693-0111
Ohio	Ohio Department of Natural Resources <a href="http://www.dnr.ohio.gov">www.dnr.ohio.gov</a>	Endangered	Depleted	(614) 644-1100
West Virginia	West Virginia Department of Natural Resources <a href="http://www.dnr.wv.gov">www.dnr.wv.gov</a>	Not Listed	Depleted	(304) 257-0245
Virginia	Virginia Department of Game and Inland Fisheries <a href="http://www.dgif.virginia.gov">www.dgif.virginia.gov</a>	Special Concern	Stable	(800) 547-7100
New York	New York Department of Environmental Conservation <a href="http://www.dec.ny.gov">www.dec.ny.gov</a>	Special Concern	Depleted	(518) 402-9030
Missouri	Missouri Department of Conservation <a href="http://www.mdc.mo.gov">www.mdc.mo.gov</a>	Endangered	Depleted	(314) 334-4111
Kentucky	Kentucky Department of Fish and Wildlife Resources <a href="http://www.kdr.com">www.kdr.com</a>	Special Concern	Stable	(606) 638-7100
Georgia	Georgia Wildlife Resources Division <a href="http://www.gwdnr.com">www.gwdnr.com</a>	Endangered	Stable	(478) 364-1100
Illinois	Illinois Department of Natural Resources <a href="http://www.dnr.state.il.us">www.dnr.state.il.us</a>	Endangered	Stable	(312) 381-4400
Maryland	Maryland Department of the Environment <a href="http://www.dnr.maryland.gov">www.dnr.maryland.gov</a>	Endangered	Depleted	(410) 344-6111

**Conservation Efforts**

Possible reasons for decline include habitat degradation, low-quality water, infectious diseases, over-collectors and poachers. Many states are developing conservation programs to increase local population densities. These conservation initiatives are critical to ensure the species' long-term viability. Conservation programs, education programs, increased protection through state and federal regulations, and

many research collaborations between academic institutions and government agencies. More recently, the Ohio hellbender subspecies, *A. opaciceps*, has gone extinct and federally listed as endangered. The most information on what you can do to help or to learn more about hellbenders, visit [www.hellbender.com](http://www.hellbender.com).

 Hellbenders use their sense of smell to capture crayfish, their primary food source.

# 3D Model

Design the content – General Audience

The image shows a YouTube video player interface. At the top left is the YouTube logo. To its right is a search bar containing the text "purdue hellbenders". The video player itself shows an underwater scene with a rocky riverbed. Overlaid on the scene is a large, stylized graphic of a hellbender. The graphic is colored with a gradient from light green at the top to dark blue at the bottom. Inside the graphic, the text "HELP the HELLBENDER" is written in a bold, sans-serif font. "HELP" is in white, "the" is in a smaller white font, and "HELLBENDER" is in yellow. Below this, the website "HelpTheHellbender.org" is written in a smaller white font. The video player controls at the bottom show a play button, a volume icon, a progress bar at 0:05 / 8:24, and icons for full screen, settings, and share.

YouTube 

**HELP** *the* **HELLBENDER**  
HelpTheHellbender.org

0:05 / 8:24

## Help the Hellbender

Purdue Agriculture

  Subscribed 

4,357



# 3D Model

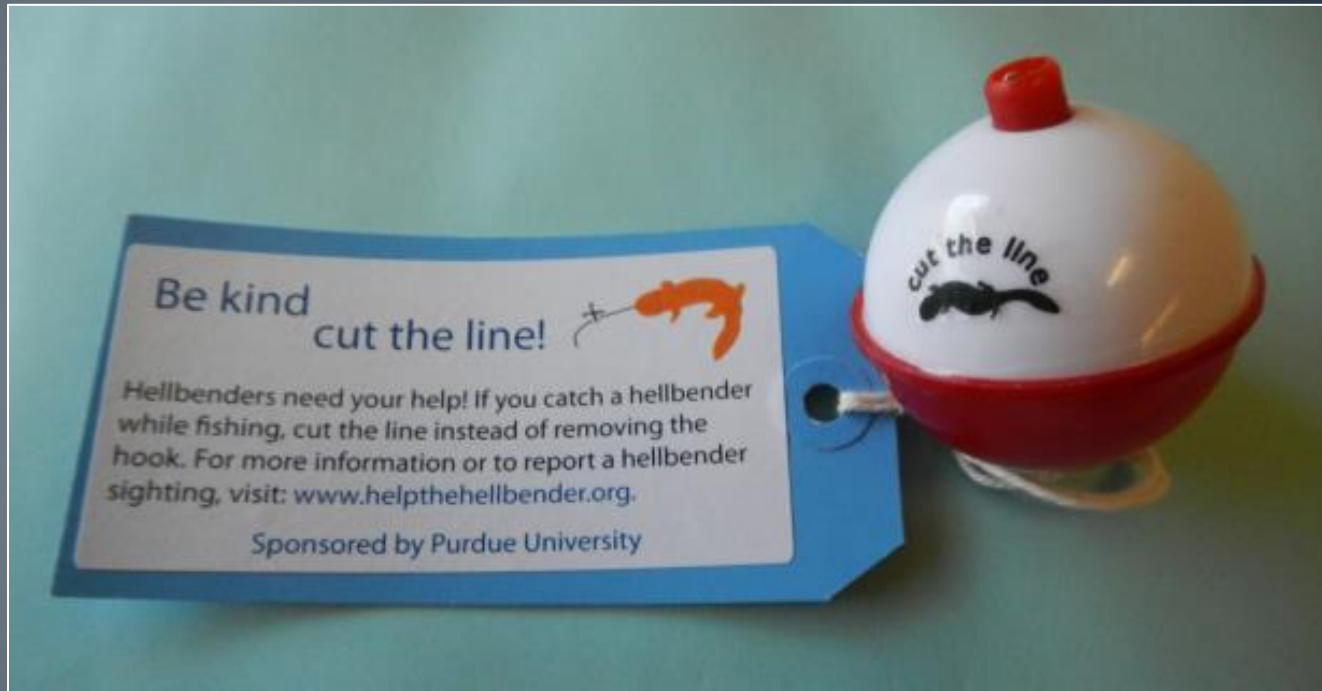
## Design the content – General



The image shows a screenshot of a Facebook page for "Help the Hellbender". The page header includes the Facebook logo, the page name "Help the Hellbender", a search bar, and the user's profile "Rod" with "Home" and a profile picture icon. Below the header, a status bar indicates "You are posting, commenting, and liking as Help the Hellbender — Change to Rod Nelson Williams". The main navigation tabs are "Page", "Activity", "Insights", and "Settings", with "Page" selected. The cover photo is a large black silhouette of a hellbender with the text "HELP *the* HELLBENDER" overlaid in white. A "Cover Photo" label is present. The profile picture is a circular logo with a brown hellbender and the text "help save the hellbender". The page name "Help the Hellbender" and category "Education" are displayed. Interaction buttons include "Liked", "Following", "Message", and a menu icon. Below the cover photo are tabs for "Timeline", "About", "Photos", "Likes", and "Manage Tabs". The "PEOPLE" section shows "1,350 likes". The main content area has a "Status" button and a "Photo / Video" button, with a "What have you been up to?" prompt and a small hellbender icon.

# 3D Model

## Design the content – Anglers



- Hellbenders can be 2 feet long-- that's the length of this sticker!
- It is illegal to keep or kill a hellbender. Please release it if caught.
- Cutting the line is better for the animal than pulling out the hook.
- Report your sighting or capture at: [www.HelpTheHellbender.org](http://www.HelpTheHellbender.org)



# 3D Model

## Design the content – Anglers

### Rare Salamanders

Be on the lookout for these salamanders! If caught, please cut the line, release unharmed, and contact (812) 334-1137.



#### Hellbenders

- A giant aquatic salamander that can reach 2 ½ feet in length
- Found in the tributaries of the Wabash and Ohio Rivers in Southern Indiana
- Prefer cool, rocky, swiftly flowing streams
- Their presence indicates good water quality
- Feed mainly on crayfish, not fish
- They are NOT venomous
- Their slime is not poisonous
- They have no negative effects on fish populations
- Endangered in Indiana



#### Mudpuppies

- A large aquatic salamander that can reach 16 inches in length
- Found throughout Indiana
- Live in lakes, ponds, rivers, and streams
- Their presence indicates good water quality
- Feed on crayfish, larval insects, and small fish
- They are NOT venomous
- Their slime is not poisonous
- They have no negative effects on fish populations
- Special concern in Indiana

Photo courtesy of Greg Lipps

# 3D Model

## Design the content – Kids

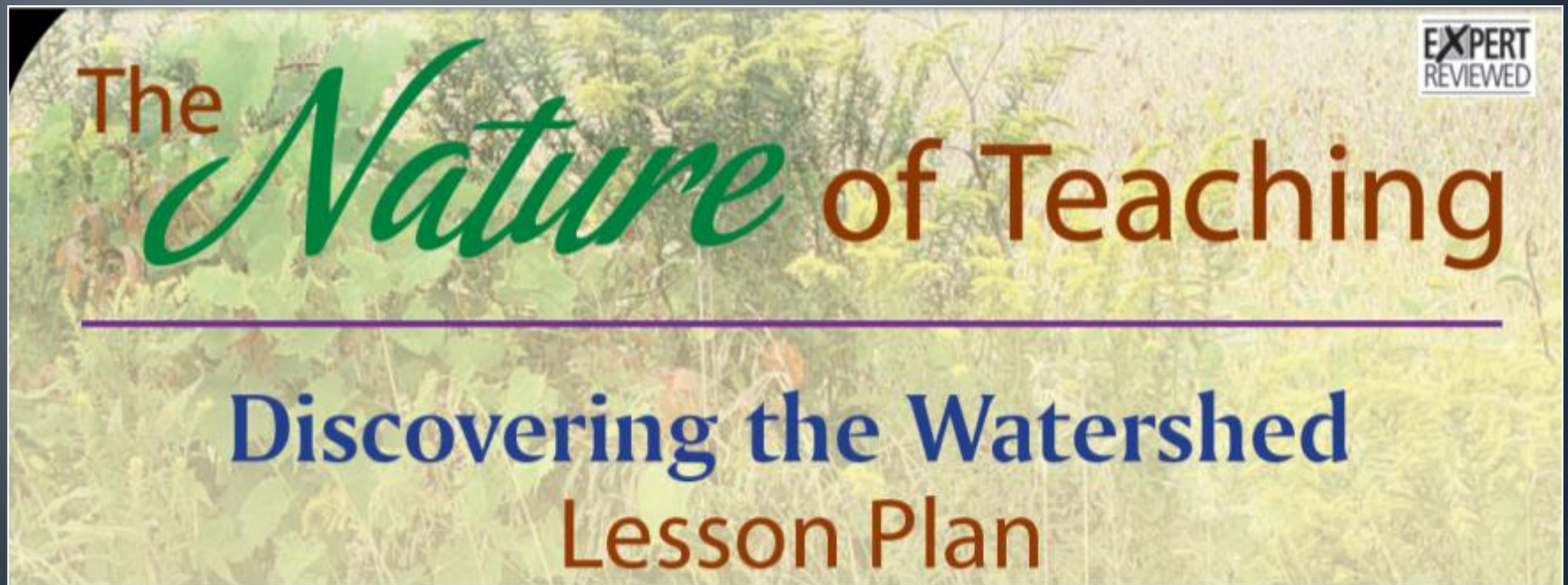
Coloring Pages

Click on the [coloring page](#) you want to [download](#), [print](#) and color.



# 3D Model

Design the content – Teachers



**EXPERT  
REVIEWED**

The *Nature* of Teaching

---

Discovering the Watershed  
Lesson Plan

# 3D Model

## Deliver the Program— Teachers



28 states  
350 schools  
>17,000  
students





# 3D Model

## Design the content – Local Watershed

### Current:

O'bannon Woods State Park  
County Extension Office  
Local Bait Shop

### Future:

County Schools  
Bass Pro Shops  
Canoe Shops





# 3D Model

## Design the content – Local Watershed



# 3D Model

Deliver the Program— Local Watershed

**Presentations:**  
SWCD  
Nature Centers

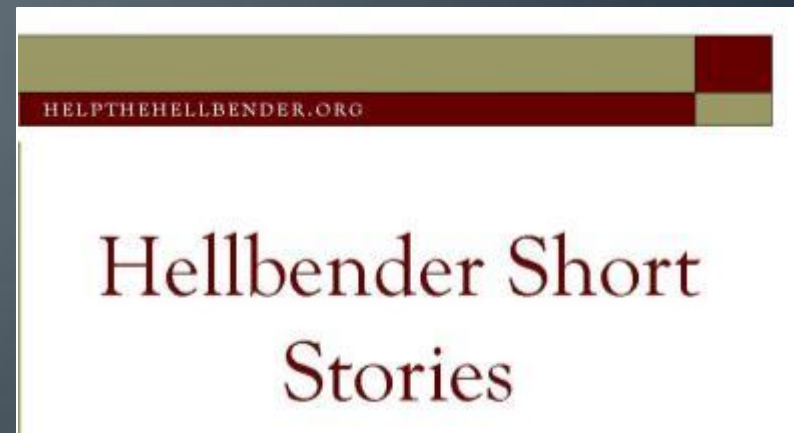


# Wildlife Programs

## Deliver the Program— Local Watershed

### Feast Like a Hellbender

- 4 Programs targeting:
  - Anglers, teachers, youth, and farmers
- School programs
  - Short stories, art, and mascot
  - 24 schools
  - 3 counties



# 3D Model

## Deliver the Program— Local Watershed

- **Short Story**
- **Art**
- **Mascot Naming**



# 3D Model

## Deliver the Program— Local Watershed

- Short Story
- Art
- **Mascot Naming**
- “Herbie”





## Resources for

# TEACHERS

- **Incorporate nature into the classroom with:**

- Lesson plans
- Activities

- **Door Prizes:**

- Posters!
- Full lessons with supplies for activities!
- A visit from the hellbender mascot!



# Coloration Station!



- Face Painting
- Coloring Pages
- Hellbender Models
- Trivia







PLAY TRIVIA  
AND EARN  
RAFFLE TICKETS.

### CRP & Me

Purdue University, Department of Forestry & Natural Resources

**ESSENTIAL CRP**

- 1. Establish a CRP plan
- 2. Obtain a CRP contract
- 3. Implement the CRP plan
- 4. Monitor the CRP plan
- 5. Evaluate the CRP plan

**WATER QUALITY**

- 1. Assess water quality
- 2. Identify water quality issues
- 3. Develop a water quality management plan
- 4. Implement the water quality management plan
- 5. Monitor water quality

**GENERAL SIGNS**

- 1. Excessive sediment
- 2. Excessive nutrients
- 3. Excessive herbicides
- 4. Excessive pesticides
- 5. Excessive herbicides
- 6. Excessive pesticides
- 7. Excessive herbicides
- 8. Excessive pesticides

**CRP5A**

**CRP5B**



**Get Involved & Educate**

**HELP THE HELLBENDER**

**Protect Hellbender**



## Fishing for Facts about Hellbenders

**Why should you care?**

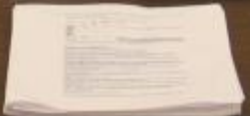
- Hellbenders are a good indicator of a healthy ecosystem for fish and other aquatic organisms.
- The Blue River ecosystem is being degraded which impacts both fish and hellbender populations.
- Anglers are more likely to encounter hellbenders because of their time spent on and in the Blue River.

**Misconceptions**

- "Hellbenders are poisonous!"
- "Hellbenders are not poisonous or venomous."
- "Hellbenders will eat all the fish in the river."
- "Their skin is almost entirely waterproof, not even fish."
- "Hellbenders have teeth and will attack me."
- "Hellbenders do have teeth, but are shy and will not approach a person. The only instances of bites have come from handling them, so do not pick them up!"

**How can you help?**

- If you have a hellbender, call a DNR staff member about the tagging to your local Conservation Officer, DNR Office, Purcell Conservation Specialist, or online at [www.hellbenderproject.com](http://www.hellbenderproject.com).
- Do not touch, pick up, or otherwise disturb them.
- If you hook a hellbender, cut the line every time.
- The hook will dissolve eventually as they are not hooked.



Protect Hellbender

Life History

Misconception



# Media Coverage



**Feast fit for a hellbender**  
 Guests at Saturday evening's "Feast... Like a Hellbender" event at the Purdue Building in south Corydon fill their plates with Cajun food as the hellbender mascot watches. The event, which included children's games, was to help support conservation efforts to protect the hellbender, an endangered giant salamander found in Blue River in Harrison County. The menu included shrimp crawfish, shrimp étouffée, crawfish creole, boiled crawfish and jambalaya. Rod Williams, a Purdue assistant professor and leader of the University's hellbender conservation program, said at least 100 people attended the event. All proceeds will go toward hellbender conservation in Blue River.



**Videos & Podcasts**

A6 THE CORYDON DEMOCRAT | APRIL 24, 2013

## In Corydon, it's all about the hellbender

**THE NEWS**

Purdue Extension is hosting an afternoon of games, educational programs and an all-around fun "Feast-Like a Hellbender" event to support protection efforts for the hellbender, an endangered giant salamander.

Feast-Like a Hellbender takes place from 4 to 8 p.m. Saturday at the Harrison County Extension office, 241 Arnold St., Corydon. Tickets are \$5 for adults and \$4 for children 12 and younger and can be purchased at [www.Hellbender.org](http://www.Hellbender.org).

Proceeds will go toward hellbender conservation in the Blue River, which runs through portions of seven southern Indiana counties.

Previous will go toward hellbender conservation in the Blue River, which runs through portions of seven southern Indiana counties.

Feast-Like a Hellbender is a mascot of the Hellbender Conservation Program, an all-around fun "Feast-Like a Hellbender" event to support protection efforts for the hellbender, an endangered giant salamander.

Feast-Like a Hellbender is a mascot of the Hellbender Conservation Program, an all-around fun "Feast-Like a Hellbender" event to support protection efforts for the hellbender, an endangered giant salamander.



Purdue Extension's hellbender mascot, mascot.

**THE BACKGROUND**

The hellbender is the largest salamander in North America, typically 15 to 24 inches long. The male hellbenders have flat green or brown bodies and have noticeable warts on the sides. They live under the rocks in rivers and streams across Appalachia, parts of the Midwest and the southern tip of several southern states.

The eastern hellbender is endangered in five states and is being protected in several states in water bodies.

During the event, Purdue University Extension and natural resources students will lead activities and demonstrations for teachers K-12, youth, farmers and fishermen.

**THERE'S A CONTEST**

"Everyone is invited to the event," said Rod Williams, an assistant professor of forestry and natural resources and leader of the university's hellbender conservation program. "We'll also introduce the Purdue hellbender mascot."

In conjunction with the event, Purdue is sponsoring student contests to name the hellbender mascot, write short stories about hellbenders and color or draw hellbender pictures.

Outdoor contests must be submitted by Monday, and winners will receive five tickets to Feast-Like a Hellbender and a Hellbender T-shirt.

Contest rules and submission information are on the "Help the Hellbender" website.

## Rare salamander calls Washington Co. home

For more than a year, researchers at Purdue University have been using 18 young hellbender salamanders in a light-colored laboratory setting to conduct a site that increases their survival in the wild. Some salamanders were released into the Blue River in early October. Before the release, a radio transmitter was attached to each hellbender to allow the scientists to track their movements. The information will help build understanding about factors that are suitable for hellbenders and their movement to stream, and track their survival.

Camie Hinesford from The Nature Conservancy was on hand to watch the small colored salamanders moved into the Blue River. Hinesford, the salamander release brought home the importance of the Conservancy's work to improve water quality in the Blue River.

"The release of the Blue River's young class - the hellbender salamander - is exciting" said Hinesford, who works for the Conservancy's Blue River office in Corydon. "We have worked hard to improve habitat and water quality along the Blue, not just for the hellbenders, but for all its residents. To physically place our hellbenders in the river is quite a thrill."

Hellbenders are large, aquatic salamanders known to many local residents by nicknames like "wampus" or "dud dog." Their defining feature is their one - a fully grown adult can reach two and a half feet long and weigh 100 pounds. Hellbenders are endemic to people.

The release team represents a combination of national and local efforts to "help the Hellbender." Project partners including Purdue University, Indiana Department of Natural Resources and The Nature Conservancy are working together to increase awareness of the animal and local water quality concerns, with a focus on educational outreach information and events.

The group has launched a website, [hellbender.org](http://hellbender.org), that brings a wide range of information, from local water quality to local water quality issues in the Blue River. The Nature Conservancy is currently partnering with a local water quality, locally-dependent and water quality to find a water quality assessment in the Blue River that supports them.



Photo courtesy of Rod Williams (left).

Teachers are invited to bring their students to the annual in-classroom water quality assessment in the Blue River. Teachers can include information about the animal in all areas known about their system and local natural history.

The efforts of individuals will be matched by the stewardship, local agencies and conservation professionals working on wildlife and water quality issues in the Blue River. The Nature Conservancy is currently partnering with a local water quality, locally-dependent and water quality to find a water quality assessment in the Blue River that supports them.

To students Indiana, we need to be focused on the protection of the creek and river that flows into the Blue and White Rivers. Here they appear to be linked to the Blue River area, and to increasing water quality.

Purdue University, the Indiana Department of Natural Resources and The Nature Conservancy hope the local community will rise to the challenge of protecting these special animals and the Blue River that supports them.

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# Opinions

## Help save the hellbender

WEDNESDAY, MAY 8, 2013 | THE CORYDON DEMOCRAT

**My Opinion**  
 ROSS SCHEIDT | STACY WARRICK

At this rate, the hellbender will be extinct from Blue River in about 30 years, unless active steps are taken.

Farmers need to continue what they're doing: keeping the river clean.

Anglers need to change their attitudes regarding the hellbender and not throw it on the bank or kill it if one is caught, as was too often the action many took when they were plentiful enough to catch.

Harrison County doesn't have too many things, especially animals. One we found only in Harrison County. The hellbender is something residents should be proud of and act to protect.

Hellbender awareness will continue to be pushed in the county, according to Purdue officials, and the hellbender mascot, which recently was given the name Hurtle following a contest, was introduced at the Feast.








The Hellbender Hurtle, a 3K run/walk, took place Saturday at O'Bannon Woods State Park. Now in its 10th year, the event helps raise awareness for Hurtle and his friends, including the endangered Allegheny Woodrat.

For more information about the hellbender and efforts to help save it, visit [www.ag.purdue.edu/extension/hellbender/pages/default.aspx](http://www.ag.purdue.edu/extension/hellbender/pages/default.aspx). There is a place on the website for residents to report hellbender sightings.

In a few years, hopefully, these sightings will become more and more prevalent.



# Overarching Conservation Issues

- Population Declines 
  - Obtaining estimates 
  - Detection 
- Genetics 
  - Delineating populations 
- Recovery Strategies 
- Interactions with Humans 
- Partnerships

# Partnerships — Extension



# Partnerships — Museums & Exhibits



# Partnerships — Museums & Exhibits





# Partnerships — Museums & Exhibits





# Partnerships — Zoos



# Partnerships — Zoos

- Hellbender rearing
- Outreach and Education



# Partnerships —

Indiana Department of Environmental Management

- Water Quality testing
- Macro-invertebrate sampling





# Partnerships — The Nature Conservancy

- Posters and stickers
- Addresses for surveys
- Access sites for sampling
- Displays





# Partnerships — Indiana Department of Natural Resources

- Funding
- Field support
- Strategic planning
- Headstarting
- Partnerships
- Much, much more!

The image shows a screenshot of the Indiana Department of Natural Resources (DNR) website. At the top, the DNR logo and the text "Indiana Department of Natural Resources" are displayed in a green header. Below this is a large banner image featuring two hunters in camouflage gear walking away on a dirt path. To the right of the path is a close-up image of a coyote's face. Text on the banner includes "INDIANA HUNTING & TRAPPING GUIDE" and "2014-2015 HUNTING & TRAPPING GUIDE". A white callout box with a red border says "2014-15 guide now available >>". Below the banner are three small circular indicators. At the bottom, there is a navigation menu with four green buttons: "HUNTING & TRAPPING", "FISHING", "LICENSES & PERMITS", and "PLACES TO GO". Each button has a list of links below it.

HUNTING & TRAPPING	FISHING	LICENSES & PERMITS	PLACES TO GO
<ul style="list-style-type: none"><li>◆ General Info</li><li>◆ Hunting Guide</li></ul>	<ul style="list-style-type: none"><li>◆ General Info</li><li>◆ Fishing Guide</li></ul>	<ul style="list-style-type: none"><li>◆ General Info</li><li>◆ Fees</li></ul>	<ul style="list-style-type: none"><li>◆ Fish &amp; Wildlife Areas</li></ul>

# Partnerships — Indiana State Parks

- Field Headquarters
  - 7 years
- Access sites
- Nature center presentations
- Hellbender Hustle

## O' Bannon Woods State Park

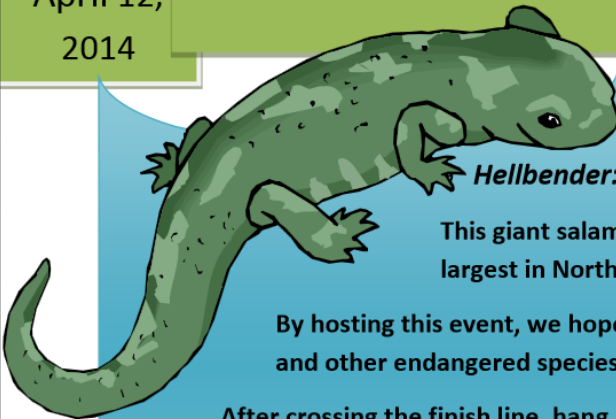


captions | credits

The  
April 12<sup>th</sup>,  
2014

## Hellbender Hustle 5K Run/ Woodrat Walk

The 11<sup>th</sup> consecutive Hellbender Hustle 5K Run/Woodrat Walk Saturday, April 12st  
@ Hickory Hollow Nature Center OBWSP



*Hellbender: a giant aquatic salamander in Indiana*

This giant salamander can be found in Blue River. It is the largest in North America. Come see how they are faring.

By hosting this event, we hope to raise awareness for the hellbender and other endangered species unique to this community.

After crossing the finish line, hang around to enjoy the excellent refreshments that are a hallmark of this event and listen for your name to be drawn to take home a

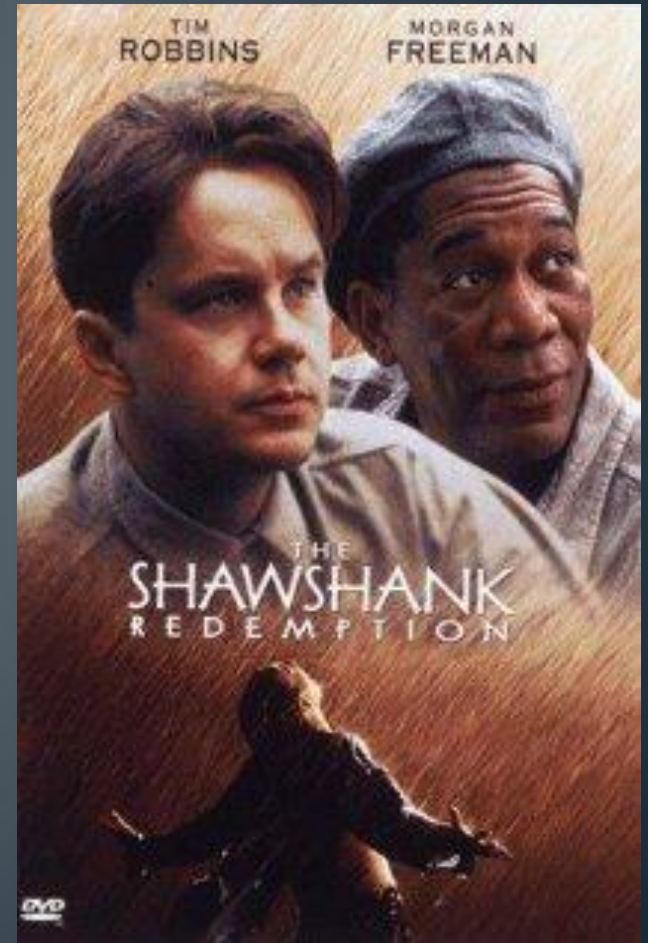
# Partnerships — Indiana Department of Corrections

- Nest rock construction
- 100 nest rocks in 2015

## Indiana Department of Correction



The Indiana Department of Correction operates state prisons in Indiana. It has its headquarters in Indianapolis. [Wikipedia](#)





# Acknowledgements

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- CIG Jennifer Elwood Conservation Grant
- CIG Ron Goellner Conservation Fund
- Purdue University

## Partners

- O'Bannon Woods State Park
- Scores of strong-backed field technicians
- L. Williams, J. Groves, J. Humphries, J. Briggler, K. Irwin, B. Hopkins, J. Greathouse, The Wilds, E. Chapman, K. Register, G. Lipps, C. Urban, J. Jensen, P. Petokas, K. Hecht, M. Freake, M. Souza, M. Nickerson



Animal Welfare  
Institute

