Office of Indiana State Chemist

174th Indiana Pesticide Review Board Meeting

Did Pesticide SLAs See ESA Label Mitigation Measures Coming & Do We Have a Plan for Ensuring Compliance?

August 8, 2023

-Dave Scott-

Endangered Species Act Implementation under FIFRA

- Endangered Species Act (ESA)…federal law enacted in 1973

- Designed to protect threatened & endangered species from extinction
  - Impacts EPA's historic risk/benefit calculation
  - Tips more weight to risk (ecological)

- U.S. Fish & Wildlife Service manages:
  - land species &
  - freshwater species

- National Marine Fisheries Service (within NOAA) manages:
  - marine species &
  - anadromous species (migrating from saltwater to freshwater to spawn)

Did SLAs see it coming? ……Not Really

- ESA established in…1973

- EPA's Endangered Species Protection Program est. …1988
  - FIFRA coop. agreements, SLAs required to commit to ESA implementation
  - Originally embodied concept of Voluntary County Bulletins
  - Enforceable County Bulletins never materialized, at least not in my state
  - Numerous starts & stops & renegotiations between EPA & FWS & NMFS

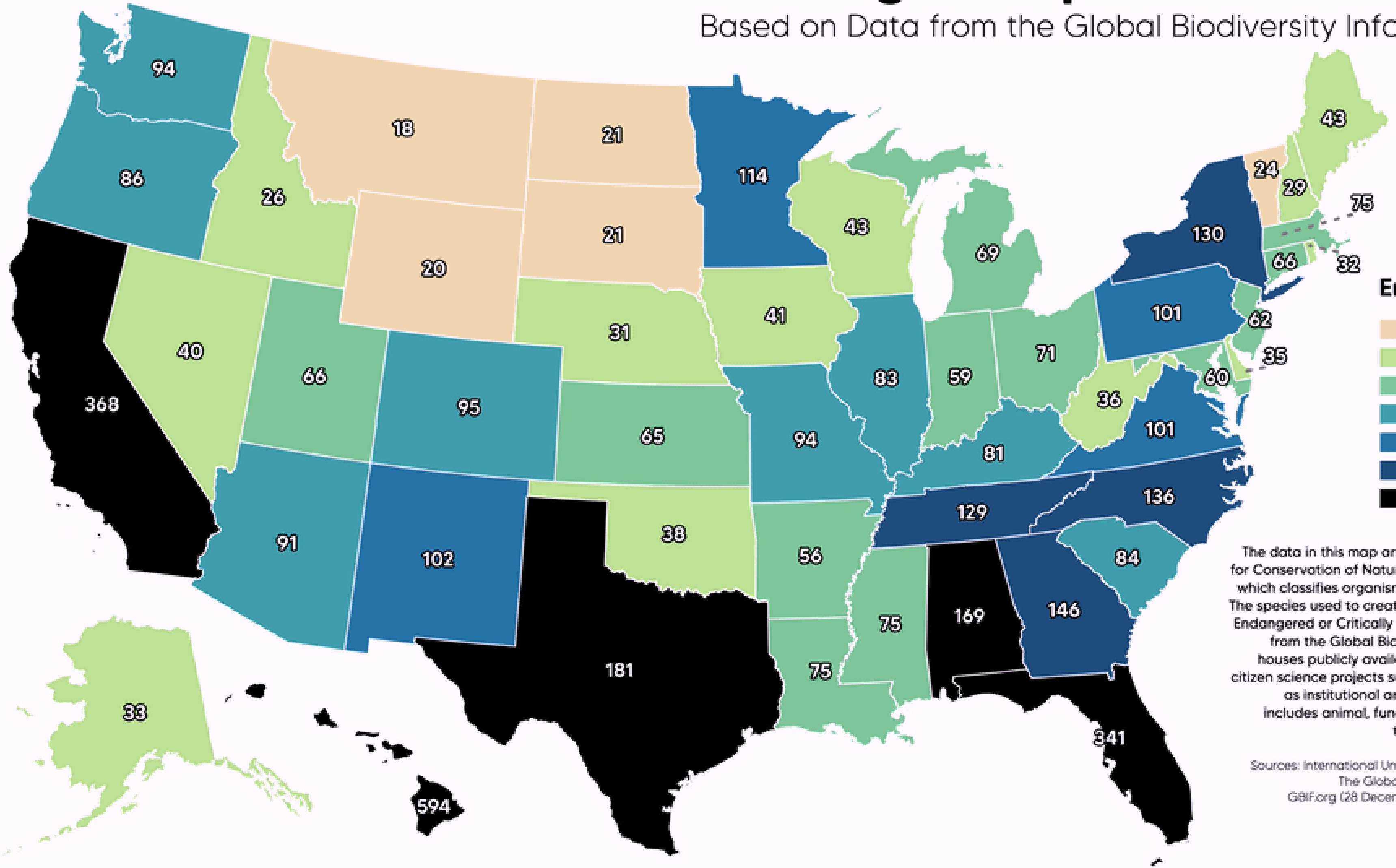
- After over 30 years of having been put largely to sleep by the slow-moving ESA implementation throughout many parts of U.S., many SLAs were caught off guard by recent wider-scale mitigation determinations.

Association of American Pesticide Control Officials

- AAPCO ESA Work Group
- Formulated…. February,2023
- Co-chairs…Gretchen Paluch (IA) & Steve Dwinell (VT)
  - FL
  - NE
  - WA
  - OR
  - ND
  - MI
  - GA
  - IN

Number of Endangered Species in Each US State

Based on Data from the Global Biodiversity Information Facility



Map Created By
Malcolm Tunnell

Number of Endangered Species

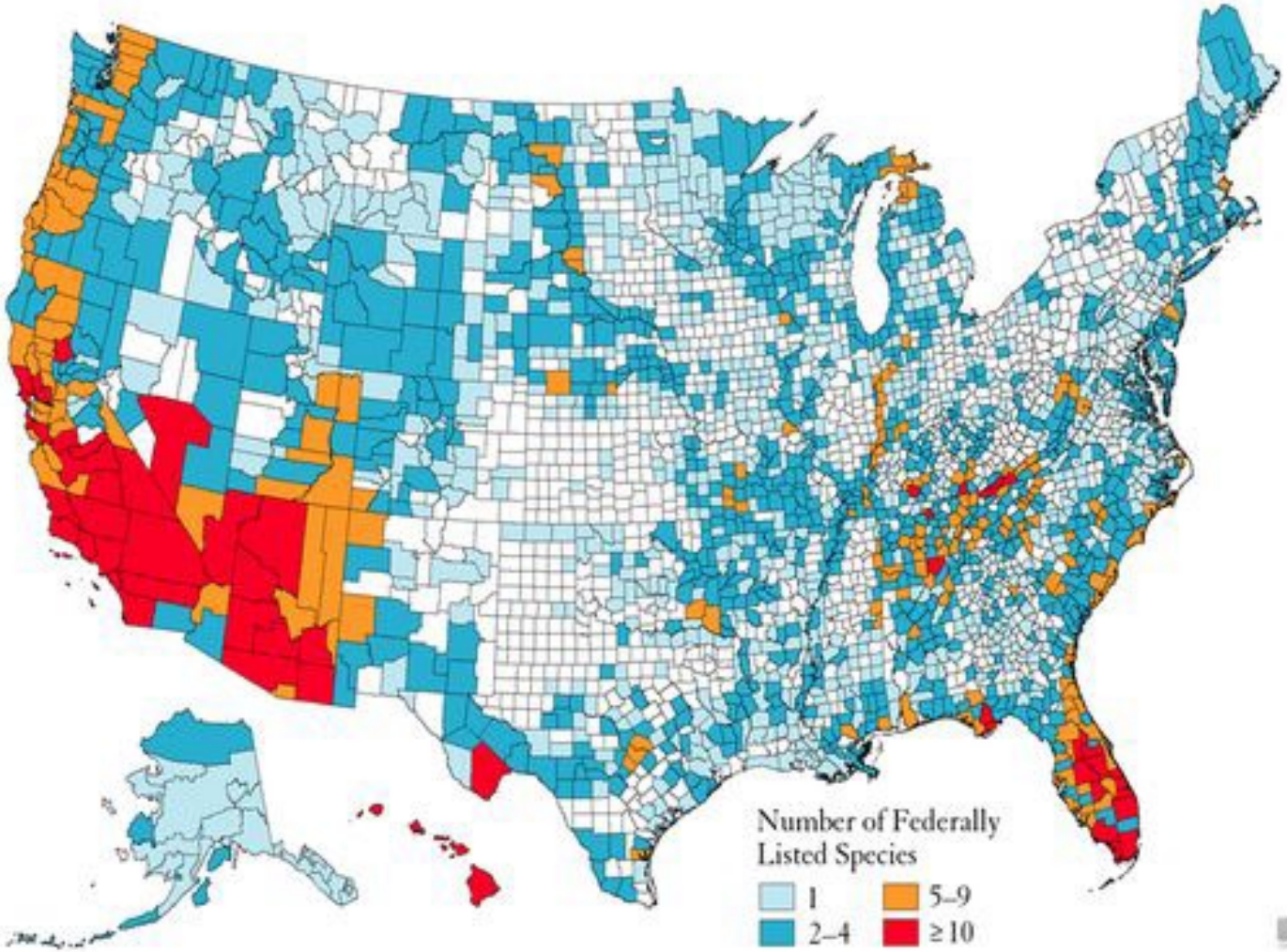
Less than 25
25 - 50
50 - 75
75 - 100
100 - 125
125 - 150
150+

The data in this map are based on the International Union for Conservation of Nature's Red List of Threatened Species which classifies organisms by their risk of global extinction. The species used to create this list are categorized as either Endangered or Critically Endangered. The data were pulled from the Global Biodiversity Information Facility which houses publicly available species occurrence data from citizen science projects such as iNaturalist and eBird as well as institutional and governmental surveys. This map includes animal, fungi, and plant species found in both terrestrial and aquatic ecosystems.

Sources: International Union for Conservation of Nature's (IUCN)
The Global Biodiversity Information Facility (GBIF)
GBIF.org (28 December 2022) GBIF Occurrence Download
https://doi.org/10.15468/dl.s9b3es

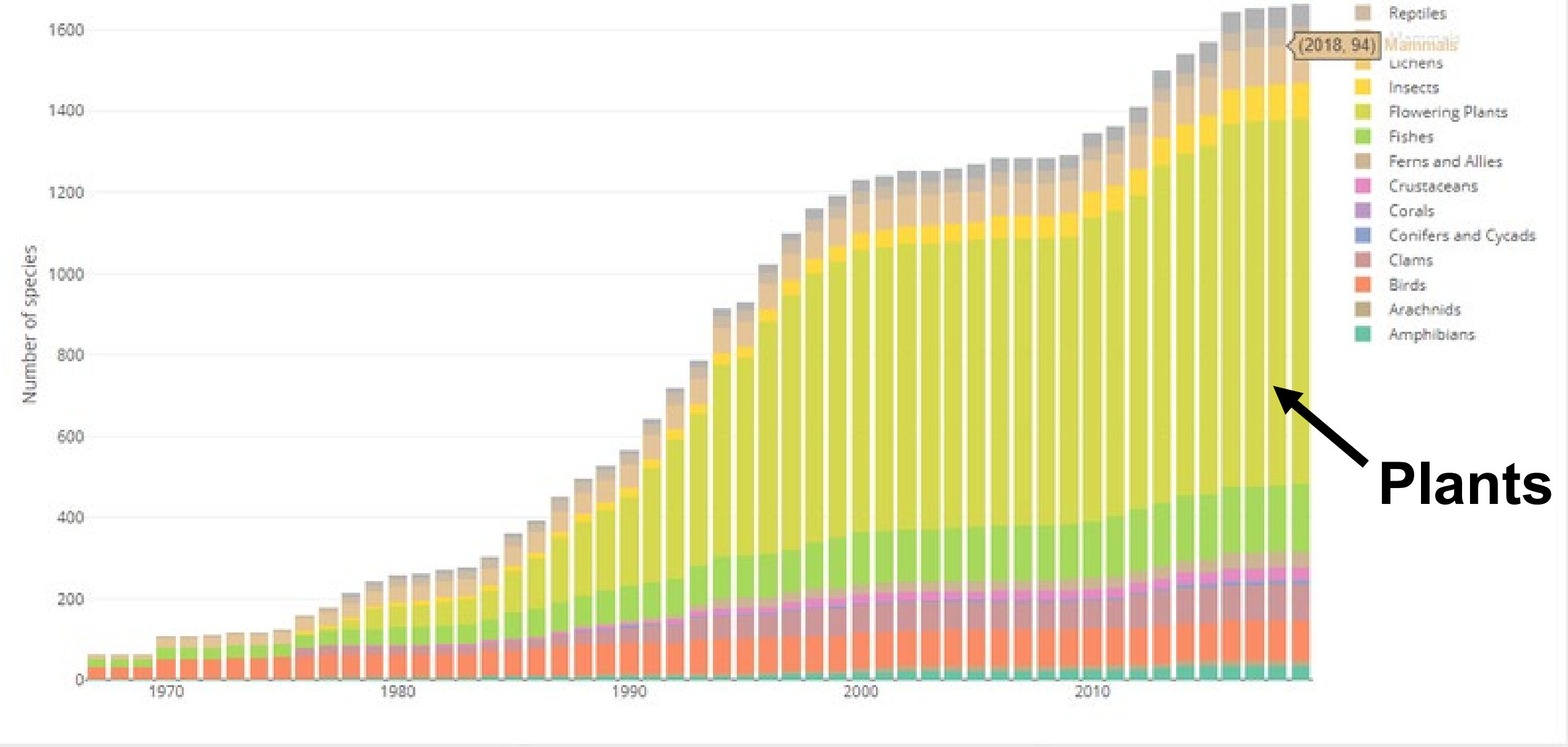
Data Current as of December 28, 2022

Endangered species clustered in subset of counties



EcoWest.org

Source: *Precious Heritage: The Status of Biodiversity in the United States*



1662

Number of ESA-Listed Species

388

Number of Threatened Species

1274

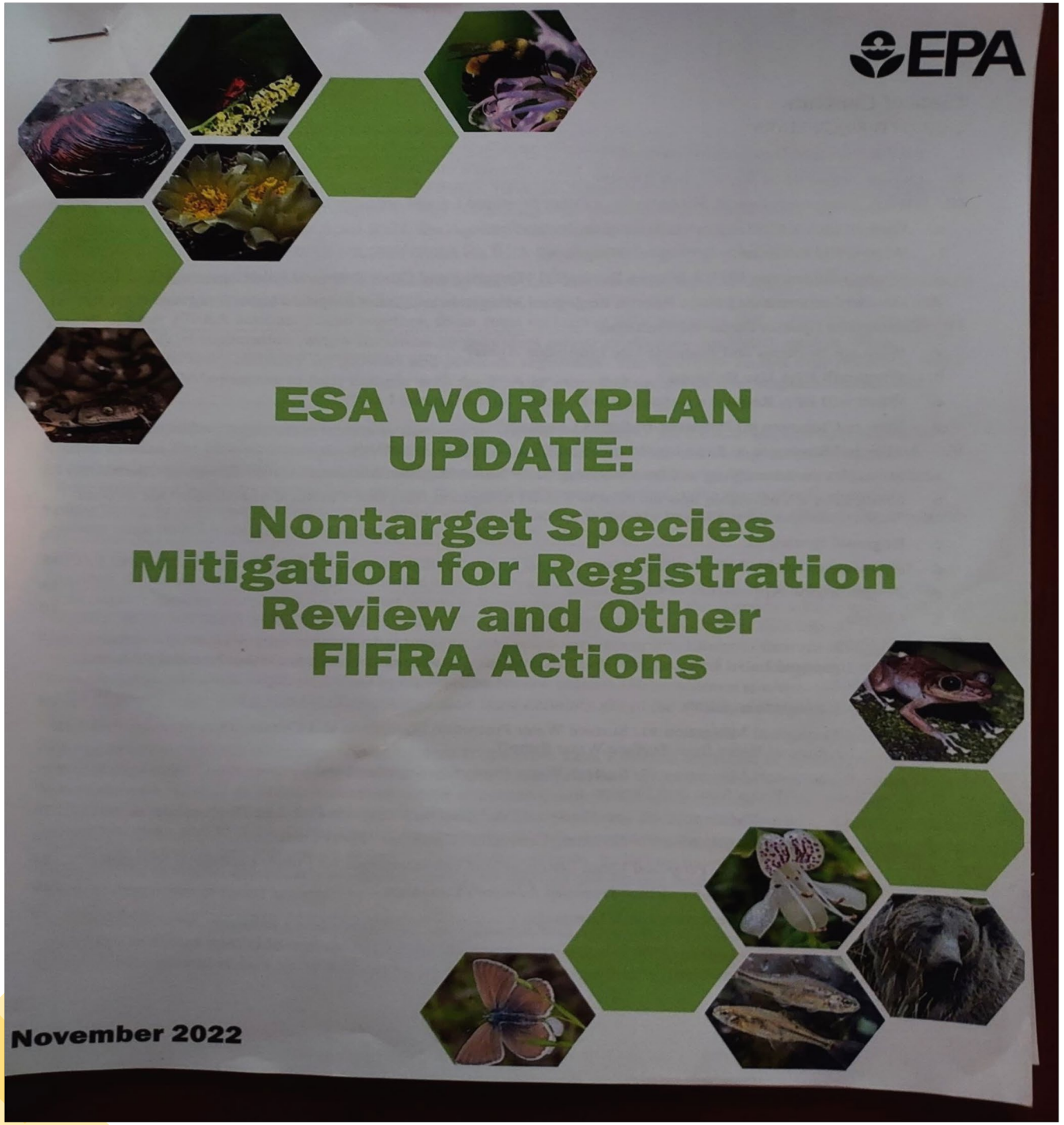
Number of Endangered Species

How well has EPA been complying with ESA since 1973?

- Less than 5% of the FIFRA decisions have met ESA obligations.
- Many 1000s of registration & reevaluation decisions.
- Why such poor compliance by EPA?
  - 4-15 year EPA and FWS/NMFS consultation process
  - active ingredient by active ingredient
  - label amendment by amendment
  - new use by new use
  - species by species
  - 15-year reevaluation mandate in FIFRA
  - inadequate EPA staffing levels

So, why are we addressing ESA now?

- Lawsuits against EPA for failure to comply with ESA obligation
- Over 20 lawsuits
- Covering over 1000 products
- EPA's ESA priorities now driven by:
  - litigation settlements
  - court imposed deadlines
  - risk of courts vacating registrations & loss of products *(dicamba 2019, Enlist 2020)*


EPA
ESA WORKPLAN UPDATE:
Nontarget Species Mitigation for Registration Review and Other FIFRA Actions
November 2022

How will EPA implement mitigation measures?

- Bulletins Live! Two (BLT) https://www.epa.gov/endangered-species/bulletins-live-two-view-bulletins
- Web-based application to access ES protection Bulletins .
- Bulletins contain enforceable pesticide use limitations that are necessary for ESA compliance.
- Proposed for all products except:
  - Residential (homeowner) use products; *commercially applied residential products in*
  - Products with negligible exposure or no expected toxic effects to ES

ENDANGERD AND THREATENED SPECIES PROTECTION REQUIREMENTS

It is a Federal offense to use any pesticide in a manner that results in an unauthorized “take” (e.g., kill or otherwise harm) of an endangered species and certain threatened species, under the Endangered Species Act section 9.

When using this product, you must follow the measures, including any timing restrictions, contained in the Endangered Species Protection Bulletin for the area where you are applying the product.

Before using the product, you must obtain a Bulletin at any time within six months of the day of application. To obtain Bulletins, consult http://www.epa.gov/espp/. For general questions or technical help, call 1-844-447-3813, or email ESPP@epa.gov .

What type of mitigation measures are being proposed?

Surface Water Protection Requirements

Runoff Mitigation

Erosion Mitigation

Spray Drift Management Requirements

Aerial

Airblast

Ground Boom

Buffers to Aquatic Habitats

Buffers to Wildlife Conservation Areas

OISC Complaint Investigations…as of July 31, 2023

	Total Complaints	Total Drift Complaints	Dicamba Drift	2,4-D Drift	Cat. 1 Drift	PA Drift
2005		30				
2006		35				
2007		54				
2008		95				
2009		62				
2010		69				
2011		64				
2012		68				
2013		108				
2014		100				
2015		83				
2016		90	5			
2017		233	134			
2018		231	158			
2019	455	344	197	59	82	219
2020	316	231	83	49	58	101
2021	299	200	70	47	51	68
2022	324	227	84	55	53	93

Proposed labels…spray drift mitigation

- Do not spray at a height greater than (typically 10 ft *air* or 2-3 ft *ground*) above the ground or crop canopy.

- Applicator must select nozzle and pressure that deliver medium or courser droplets in accordance with American Society of Agricultural & Biological Engineers Standard 572 (ASABE S572).

- Do not apply when wind speeds exceed (typically 10 or 15) mph at the application site.

- Do not apply during temperature inversions.

Spray drift buffer to aquatic habitats

Do not apply within (typically 15-150 *air* or 15-50 *ground*) feet of aquatic habitats, such as, but not limited to:

- lakes
- reservoirs
- rivers
- permanent streams
- wetlands
- natural ponds
- estuaries
- commercial fish farm ponds.

Spray drift buffer to wildlife conservation areas

Do not apply within (typically 15-150 *air* or 15-50 *ground*) feet of any conservation areas, e.g.

- public lands and parks
- Wilderness Areas
- National Wildlife Refuges
- reserves
- conservation easements.

Exemptions: Spray drift buffer to aquatic habitats

Applications are exempted from this spray drift buffer requirement when:

1. A 10-ft high windbreak is established between the field and the aquatic habitat…OR
2. The application is conducted for conservation purposes(e.g. to control invasive species) by federal, state, or local personnel or persons under their direct supervision, OR
3. The landowner or applicator has completed an ESA section 7 consultation with U.S. FWS or NMFS on the use of the product.

Proposed labels…surface water protection

- Do not apply during rain.

- Do not apply when a storm event likely to produce runoff from the treated area is forecasted (by NOAA/National Weather Service, or other similar forecasting service) to occur within 48 hours following application.

Proposed labels…runoff & erosion mitigation

Users of this product must access (website address) and follow the instructions in the descriptions for one or more of the following mitigation measures:

- Vegetative filter strip (30 ft. minimum width)
- Field border
- Field terracing/contour buffer strips
- Contour farming
- Cover cropping
- No/reduce tillage
- Grassed waterways
- Riparian buffer zone/riparian herbaceous zone
- Vegetative/grassed ditch banks

Cont. …runoff & erosion mitigation

- Runoff retention pond
- Water sediment control basin
- Sediment catchment basin
- Constructed wetland
- Strip cropping
- Vegetative barriers
- Mulching with natural materials
- Alley cropping

Enlist Herbicide

Runoff Mitigation Labeling

To reduce the potential for runoff and avoid off field impact from treated fields to maximum extent practicable, applicator must plan/schedule applications to maximize time between an application of this product and anticipated rainfall (or planned irrigation).

Application must take place no less than 48 hours prior to irrigation or predicted rainfall (by NOAA/National Weather Service, or other similar forecasting service).

Enlist Herbicide

Runoff Mitigation Labeling

Hydrologic Soil Group (HSG) definitions:			
A = Sand, loamy sand, or sandy loam;	B = Sandy clay loam;	C = Silt loam or loam;	D = Clay loam, silty clay loam, sandy clay, silty clay or clay.

For land with Hydrologic Soil Groups A & B: The land manager/applicator must effectively implement measures in the following tables to equal a minimum of **4 credits**.

For land with Hydrologic Soil Groups C & D: The land manager/applicator must effectively implement the measures in the following tables to equal a minimum of **6 credits**.

Extension
University of Missouri

Enlist Label Compliance: How to Determine Hydrologic Soil Groups

For compliance with the Enlist label registered in February 2022, producers must know the Hydrologic Soil Group (HSG) for the soil series on which they are applying the herbicide. HSGs are used to estimate runoff potential of a soil, and now they will be used to determine which mitigation measures a producer needs to implement before applying these products. This tutorial is intended to simplify your HSG determination.

An HSG A or B requires mitigation measures to equal a minimum of four credits. These measures can be selected from the tables provided on page 4 of the Enlist One and Enlist Duo labels. For an HSG of C or D, mitigation measures must be selected to equal a minimum of six credits.

A relatively simple way to determine the HSG at your application site is to use the USDA Web Soil Survey at https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Click on the green button labeled "START WSS".

This takes you to a map of the United States (Figure 1). Click on the zoom icon (circled in red) and use the cursor to draw a rectangle around Missouri or search for a specific address under "quick navigation" on the left-hand side (highlighted in green).

A zoomed map of Missouri will appear (Figure 2). From here, continue zooming your way toward your property by drawing increasingly smaller boxes until you recognize the field to be sprayed.

Once you zoom down to your property, click the AOI (area of interest) icon (circled in Figure 2) and use the cursor to surround your property or the field you plan to spray.

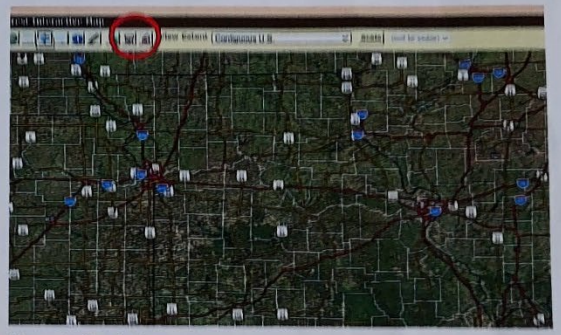


Figure 2. Use the interactive map to zoom in and find the field of interest.

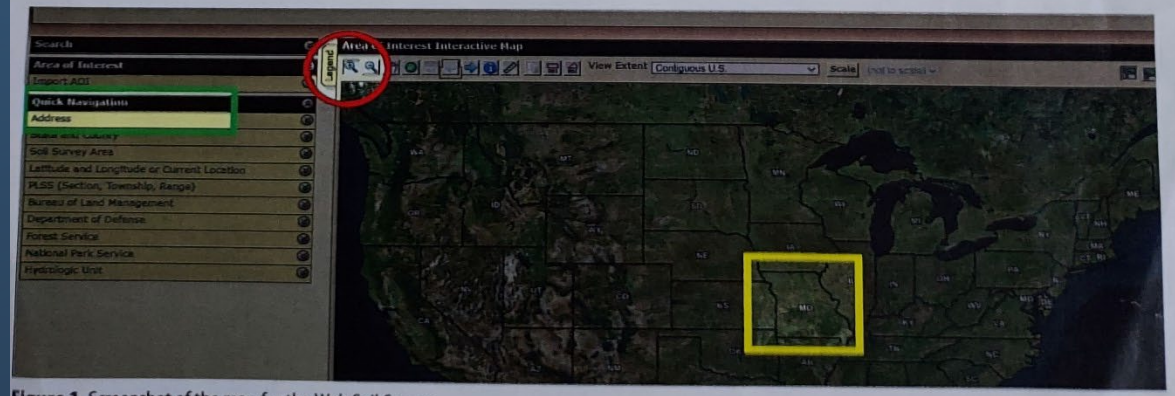


Figure 1. Screenshot of the map for the Web Soil Survey.

Written by
Sam Polly, Extension Specialist, Plant Science and Technology

Enlist Label Compliance: How to Determine Hydrologic Soil Groups

For land with **Hydrologic Soil Groups* A & B**: The land manager/ applicator must effectively implement measures in the following tables to equal a **minimum of 4 credits.**

For land with **Hydrologic Soil Groups* C & D**: The land manager/ applicator must effectively implement the measures in the following tables to equal a **minimum of 6 credits.**

Mitigation Measures			Credits
Reduce number of applications - Reduced number of applications of Enlist products per year. Applications may be made at any time during crop development but must maintain a minimum 12-day retreatment interval.		3 applications	0
		2 applications	2
		1 application	4
Residue Tillage Management: no-till, strip-till, ridge-till, and mulch-till			4
Vegetative Filter Strips	30 ft off-field vegetative buffer on down slope	HSG A or B	2
		HSG C or D	0
	100 ft off-field vegetative buffer on down slope	HSG A or B	4
		HSG C or D	1
Field border: border with dense vegetative stands with a minimum width of 30 ft.			2
Cover Crop			2
Vegetative Barrier: Permanent strips of dense vegetation along the contours of the field with a minimum width of 3 ft.			2
Contour Buffer Strips or Terrace			2
Grassed Waterway			2
Water and Sediment Basin			1
Contour Farming or Contour Strip Cropping			1

*Hydrologic Soil Group (HSG) definitions: A = Sand, loamy sand, or sandy loam; B = Sandy clay loam; C = Silt loam or loam; D = Clay loam, silty clay loam, sandy clay, silty clay or clay.

NEBRASKA
Good Life. Great Roots.
DEPARTMENT OF AGRICULTURE

ANIMAL AND PLANT HEALTH PROTECTION
PESTICIDE PROGRAM

Runoff Mitigation Measures and Determining Hydrologic Soil Groups for the Enlist Herbicide Labels

The following is provided to assist applicators in complying with the runoff mitigation section of the Enlist product labels (Enlist One and Enlist Duo). The Nebraska Department of Agriculture (NDA) believes that compliance should not be too burdensome for most landowners and operators, however there will need to be communication between those individuals and the pesticide applicator if the applications are done by someone other than the landowner or tenant.

Applicators (both private and commercial) must know the Hydrologic Soil Group (HSG) for the soils on which they are applying the herbicide. HSGs are used to estimate runoff potential of a soil, and for these products they will be used to determine which mitigation measures a producer should have in place before applying them. The information below should be helpful in determining the HSGs and using that info for determining the minimum mitigation measures required. Once the HSG is determined for a field it should not change, and NDA recommends applicators keep a permanent record of the field's HSG for future reference.

For both Enlist labels, an HSG soil group A or B requires mitigation measures selected from the table provided on the label (Figure 1) to equal a minimum of four credits. For an HSG soil group of C or D, mitigation measures must be selected to equal a minimum of six credits.

For land with **Hydrologic Soil Groups* A & B:** The land manager/ applicator must effectively implement measures in the following tables to equal a **minimum of 4 credits.**

For land with **Hydrologic Soil Groups* C & D:** The land manager/ applicator must effectively implement the measures in the following tables to equal a **minimum of 6 credits.**

Mitigation Measures			Credits
Reduce number of applications - Reduced number of applications of Enlist products per year. Applications may be made at any time during crop development but must maintain a minimum 12-day retreatment interval.		3 applications	0
		2 applications	2
		1 application	4
Residue Tillage Management: no-till, strip-till, ridge-till, and mulch-till			4
Vegetative Filter Strips	30 ft off-field vegetative buffer on down slope	HSG A or B	2
		HSG C or D	0
	100 ft off-field vegetative buffer on down slope	HSG A or B	4
		HSG C or D	1
Field border: border with dense vegetative stands with a minimum width of 30 ft.			2
Cover Crop			2
Vegetative Barrier: Permanent strips of dense vegetation along the contours of the field with a minimum width of 3 ft.			2
Contour Buffer Strips or Terrace			2
Grassed Waterway			2
Water and Sediment Basin			1
Contour Farming or Contour Strip Cropping			1

*Hydrologic Soil Group (HSG) definitions: A = Sand, loamy sand, or sandy loam; B = Sandy clay loam; C = Silt loam or loam; D = Clay loam, silty clay loam, sandy clay, silty clay or clay.

Figure 1. *Screenshot of the Enlist One label, which lists mitigation measures that may need to be implemented to reduce runoff risk, depending on the HSG.*

Education & Compliance Challenges

- Can labels & bulletins be effectively communicated to users?
- Can we ensure communication with GUP as well as RUP users?
- How do we determine if target audiences are applicators or land managers?
- How can we explain logic of restrictions on some products but not others *(dicamba, 2,4-D, glyphosate) ?* …2023 Herbicide Strategy ?
- How do we shift the existing mindset of voluntary conservation BMPs (NRCS) to enforceable requirements (EPA)?

Economic Research Service

Economic Information Bulletin Number 147

December 2015

Conservation-Practice Adoption Rates Vary Widely by Crop and Region

Tara Wade, Roger Claassen, and Steven Wallander

In Recent Years, Most Expiring Land in the Conservation Reserve Program Returned to Crop Production

Compliance & Enforcement Challenges

- Is there an expectation of routine label compliance monitoring inspections by SLAs, or just complaint investigation response?

- If complaint response, how do we reconcile that most complaints result from:
  - Alleged human exposure
  - Alleged personal property damage
  - Alleged chemical trespass or anti-pesticide sentiment

- Should routine drift or runoff complaint investigations focus on:
  - Just primary complaint; or
  - Also include ESA mitigation requirements & sites (expanded scope & resource expenditure)

Compliance & Enforcement Challenges

- How do we assign legal compliance responsibility to:
  - Farmer/grower applicator
  - Commercial applicator
  - Crop consultant
  - Land manager
  - Landowner

Compliance & Enforcement Challenges

- Are applicators required to keep proof of visiting website or BLT?
  - If so, for how long?
  - Where is that required?

- Are there provisions for users without internet access?

Compliance & Enforcement Challenges

- How do we determine or document what conservation practice is in place on each field?
  - Visual evidence?
  - NRCS records?
  - Grower/landowner records?

Compliance & Enforcement Challenges

- How do we determine or document the following at the field level during application?
  - Boom height
  - Nozzle type & pressure
  - Wind speed & direction
  - Temperature inversion
  - Rainfall
  - 48 hour forecasted storm event likely to produce runoff
  - Application buffers

Compliance & Enforcement Challenges

- How do we define, determine, or document the following:
  - Intentional appln. area residues vs. drift, runoff, or combination residues?
  - Permanent vs. intermittent streams?
  - Water body boundaries at time of application?
  - Conservation easement boundaries?
  - Wilderness area boundaries?
  - Public land or park boundaries?
  - Reserve boundaries?

- What is an ESA Sec. 7 consultation & how do we document it has occurred?

Summary

- ESA mitigation requirements now moving at blistering pace.
- Conservation practices that have long been voluntary BMPs will become legal requirements.
- Conservation practices that may have been adopted on farm-wide basis will now need to be evaluated field-by-field.
- There is a huge educational task ahead.
- State regulators will need strategies & new investigation tools if true implementation of label requirements is expected.

Vulnerable Species Pilot Project

- Vulnerable Listed (Endangered and Threatened) Species Pilot Project: Proposed Mitigations, Implementation Plan and Possible Expansion
- Draft published…June 22, 2023
- Comments due…August 6, 2023
- 27 species (3 in IN…Rusty patched bumble bee, Mead's milkweed, Rayed bean)
  - Avoidance = no application areas
  - Minimization = mitigation measures required areas

- EPA ESA website
  - https://www.epa.gov/endangered-species/implementing-epas-workplan-protect-endangered-and-threatened-species-pesticides
- Story Maps
  - https://storymaps.arcgis.com/collections/896d140363174c9d8ee78e4c471bd7fd

Herbicide Strategy Framework Document

- Draft Herbicide Strategy Framework to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Herbicides
- Draft published…July 20, 2023
- Comments due…September 20,2023
- 900 listed species & critical habitats
- Early mitigation measures
- Example case studies for some herbicides

Comments or Questions ?

Thank you !

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