The Endangered Species Act, Family Farms, and our Environment







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What Species are Impacted?

•Enlist Duo applications are	nlist Duo applications are prohibited in 11 Georgia counties	
Reticulated Flatwoods Salamander	Baker, Calhoun, Early, Lee, Miller	
Frosted Flatwoods Salamander	Berrien, Brooks, Burke, Irwin, Screven, Worth	



Required In-Field Buffer

Total field size = 63 acres
310' downwind buffer =

• 310' downwind buffer = 16 acres

• 57' omnidirectional buffer = 8 acres

Within this field, <u>38% of</u> productive acreage is within the "in-field buffer".

Endangered Species Act (ESA)

•ESA implemented in 1973

Provides framework to conserve & protect endangered & threatened species <u>& their habitats</u>!

Total of ~1800 species + 900 critical habitats!!!



When you think of Endangered Species.....



Black-footed Ferret



Grizzly Bear



Grey Wolf



Key Deer



Riparian Brush Rabbit



Wood Bison

When you think of Endangered Species.....









Construction projects, building highways, damming rivers....???

What you Probably Don't Think About....



Production agriculture & the practical use of pesticides to control troublesome pests

Pesticides, US EPA, The Services

•EPA regulates pesticides

-Registration/reregistration

~1,200 registered active ingredients in the US

•When endangered/threatened species are potentially harmed by a pesticide, law requires consultation with the services



US EPA

REAL PROPERTY OF THE INTERNAL





National Marine Fisheries Service

Endangered Species Act and Pesticides

- Challenge meeting ESA obligation:
 - -Limited resources, etc. = *large backlog*

• Approximately 95% of pesticides are currently vulnerable!







The Current Dilemma



What has Changed?

Court-enforceable deadlines imposed on EPA. Glyphosate

EPA Withdraws Glyphosate Interim Decision

Released on September 23, 2022

Feb 3: EPA published glyphosate interim decision

March 20: decision challenged in U.S. Court of Appeals Ninth Circuit

June 17: Ninth Circuit vacated the human health portion and brought ESA into the discussion

Oct 1: Deadline to address to issue new ecological assessment



ESA Enlist Duo Application Restrictions







Baker Berrien **Brooks** Burke Calhoun Early Irwin Lee Miller Screven Worth

ESA Dicamba In-Field Buffers Impacts*

Buffer 310 downwind; 57 omni directional





*Calculation assumes west wind.

Bartow, Burke, Decatur, Floyd, Gordon, Mitchell, Walker, Worth, and Seminole Counties



Buffer Area Impact

- Total field size = 63 acres
- 310' *downwind* buffer = 16 acres
- 57' omnidirectional buffer
 = 8 acres

Within this field, <u>38% of</u> productive acreage is within the "in-field buffer".

Listed Species of Concern = Cooley's Meadowrue <u>30 min away</u>

Top 15 States with Greatest Number of Threatened and Endangered Species

Rank	State	# Species	
1.	Hawaii	484	
2.	California	287	
3.	Alabama	152	
4.	Florida	134	
5.	Tennessee	132	
6.	Texas	112	
7.	Georgia	79	
8.	Virginia	78	

Rank	State	# Species
9.	Arizona	75
10.	North Carolina	73
11.	New Mexico	60
12.	Mississippi	53
13.	Kentucky	49
14.	Nevada	49
15.	Oregon	47

Mississippi Counties with Threatened and Endangered Species



Counties with threatened/endangered species highlighted in grey.

> 82 out of 82 counties have threatened/ endangered species

Plants:	Invertebrates:		
6 species	21 species		
Birds:	Reptiles:		
6 species	10 species		
Fish:	Mammals:		
4 species	4 species		
Amphibians:	Insects:		
1 species 1 species			
Total: 53 species			

Source: U.S. Fish & Wildlife Service Environmental Conservation Online System (ECOS). https://ecos.fws.gov/ecp/ *Remember, it's the species AND its habitat

More Challenges for our Farmers!







EPA's Vulnerable Species Pilot Project EPA's Herbicide Strategy

Implementing EPA's Workplan to Protect Endangered and Threatened Species from Pesticides: Pilot Projects



Services = U.S. Fish and Wildlife Service (FWS) & National Marine Fisheries Services (NMFS)

Slide provided by Tony Burd

syngenta

Understanding/Surviving the Complexity



Mapping Objectives

> Define exactly where species are located

> Define exactly where farm fields are located

Endangered Species Act & Georgia Pilot Program



Increase the quantity and quality of information available to the U.S. EPA and the Services, so they can make better-informed decisions

In cooperation with



















Acres of Cotton, Corn, and Soybean Impacted by the Loss of Enlist Duo



Step 1

2017-2021 Cropland - Corn - Cotton - Soybean

> <u>951,557 acres</u> = 100% restricted from Enlist Duo applications



Impact Maps - Historical Data



69,167 acres OR <u>7% of total acres</u> restricted from Enlist Duo applications

Creating NEW Species Maps

- Learn about the species habitat

 Habitat consists of specific forest
 wetland composition
 - -Occupied wetlands appear on landscape in clumped fashion



Step 3

We have thoroughly enjoyed working with FWS to understand habitats!



Longleaf pines flatwoods/savanna ecosystem (adult)



Acidic, tannin-stained ephemeral wetlands (breeding)

Impact Maps - New Habitat Maps



Step 3

<u>3,526 acres</u> OR <u>0.37% of total</u> <u>acres</u> restricted from Enlist Duo applications

Fields Influenced By Salamander Habitat



Location of

Species and Habitat

> 7% Leesburg hburn Albany 404 ft



County Wide Restriction 951,557 GA acres Historical Habitat 69,167 GA Acres

2023 Newly Defined Habitat 3,526 GA acres

Spurious Pixels – A Serious Concern



Step 4

What percentage of spurious pixels are truly erroneous?

SAMPLE and VERIFY within GA counties

Contended Service And Service



These "farm fields" overlap with the Salamanders Habitat

Understanding the Complexity of the Process



Practical Use Rates and Application Patterns



Vulnerable Listed (Endangered and Threatened) Species Pilot Project: Proposed Mitigations, Implementation Plan, and Possible Expansion

Draft Plan

Pesticide Single max rate (Ib/A) used to estimate exposures		
Acephate	4	
Methamidophos*	3.1	
Carbaryl	12	
Malathion	5.1	
Diazinon	3	
Fipronil	1.8	
Imidacloprid	0.5	
Permethrin	0.007	
Methomyl	0.9	
Azoxystrobin	0.33	
Propiconazole	1.8	
Chlorothalonil	2.1	
2,4-D	4	
Atrazine	4	
Bromacil	6.4	
Diuron	6.4	
Glyphosate	8	
Linuron	3	
Metolachlor	2.8	
Halauxifen	0.0091	

¹ These rates were determined to be most representative considering the range of available use sites most relevant to overlap with vulnerable species ranges/CHs *Degradate of acephate

Pesticide Label Reform Desperately Needed



(GROUND AND SURFACE WATER CONCERNS) FOR RETAIL SLAF TO AND USE ON Y BY CERTIFIED APPLICATORS OF PRROAM LINDER THEIR DRECT SUPERIOR MOD DAY TOR THEOR USES CONCERNS OF THE CERTIFIED APPLICATORS OF PRROAM LINDER THEIR DRECT SUPERIOR THIS PRODUCT IS A RESTRICTED-USE HERBICIDE DUE TO GROWND AND SUBFACE WATER CONCERNS. USERS MUST READ AND FOLLOW ALL PRECAUTIONARY STATEMENTS AND INSTRUCTIONS FOR USE IN ORDER TO MINIMIZE POTENTIAL FOR ATRIAZINE TO REACH GROUND AND SURFACE WATER. ale, use, and distribution of this product in Nassau and Suffolk Counties in the State of New York is pro GROUP 5 HERBICIDE AAtrex⁴L syngenta Herbicide For season-long weed control in corn, sorghum, and certain other crops Active Ingredients: Atrazine: 2-chloro-4-ethylamino-6-isopropylamino-s-triazin 42.6% Related Compounds . 0.9% 56.5% 100.0% AAtrex 4L contains 4 lbs. active ingrecients per gallor Shake well before using. KEEP OUT OF REACH OF CHILDREN. CAUTION See additional precautionary statements and directions for use inside bookle EPA Reg. No. 100-497 EPA Est. 100-LA-001 SCP 497A-L38TT 1112 2.5 gallons



EPA Rag, No. 524-659

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IN CASE OF AN ENERGENCY INVOLVING THIS HERBICIDE PRODUCT, OR FOR MEDICAL ASSISTANCE, CALL COLLECT, DAY OR NIGHT, 1-800-834-7577.

FPA Fot S2516.7

US30653528C 200317Cx3 11/20

Restrictions Driven by Endangered Species Sensitivity

COOLEY'S MEADOWRUE

Thalictrum cooleyi Ahles Synonyms: none Family: Ranunculaceae (buttercup) FNAI Ranks: G1/S1 Legal Status: US–Endangered FL–Endangered Wetland Status: US–FACW+ FL–FACW







The predictions on sensitivity of meadowrue to dicamba are essentially based on that of soybean?

Understanding the Complexity of the Process



Understanding the Complexity of the Process



Apalachicola rosemary, Vivian Negrón-Ortiz / Torreya State Park, FL (obtained from FWS) https://ecosphere-documents-productionpublic.s3,amazonaws.com/sams/public_docs/species_nonpublish/3667.pdf

Proposed Framework Overall Process



U.S. EPA Slide From Herbicide Strategy

6

Spray Drift Mitigation

- Establish a spray drift buffer (as needed) based on application equipment, droplet sizes, and level of impact to listed species
- Buffers no larger than:
 - 200 300 ft (aerial applications)
 - 100 200 ft (ground applications)
 - 100 ft (airblast applications)
- Options to reduce any identified buffer include:
 - Hooded sprayers
 - Windbreaks



• EPA continues to refine the mitigation options for spray drift.

10

Potential Impact From In-Field Buffers

0

Field Area 574.35 ec

240' Buffer Avea 187.48

240-ft Downwind Buffer*



Worst case = lose 32.6% Best case = lose 20.4% *Calculation assumes west wind.

Decetar County, GA West Wind

248 Foot Downwind Buff

110-ft Downwind Buffer



Best case = lose 10%



Worst case = lose 15%

*Calculation assumes west wind.

Hoping for Change in Spray Drift Mitigation

>Education credit??

- >Credit for ultra-coarse droplets??
- Layby rig and hooded sprayer credit??
- >Windbreaks more options/credit??
- Pesticide application number credit??



EXTENSION



Table 1. Survey of Extension agents to determine the use of ultra coarse droplets when applying herbicides in Georgia's row crop agriculture.

County	Cotton, corn, peanut, and soybean acres per county ¹	Herbicide applications (%) made in cotton, corn, peanut, and soybean with ultra course droplets	Acres in cotton, corn, peanut, and soybean treated with ultra coarse droplets
Appling	47676	72	34326.72
Ben Hill	22608	70	15825.6
Berrien	57011	70	39907.7
Bleckley	28026	90	25223.4
Brooks	61694	95	58609.3
Bulloch	75168	35	26308.8
Burke	71600	25	17900
Candler	18053	70	12637.1
Coffee	69639	70	48747.3
Cook	32498	95	30873.1
Colquitt	85046	60	51027.6
Crisp	45852	70	32096.4
Dodge	28510	20	5702
Dooly	111800	55	61490
Echols	2000	25	500
Emanuel	30450	75	22837.5
Evans	6687	70	4680.9
Grady	41158	75	30868.5
Irwin	63172	50	31586
Jeff Davis	31068	50	15534
Jefferson	45700	50	22850
Mitchell	108610	40	43444
Morgan	5296	100	5296
Oconee	413	100	413
Peach	4338	30	1301.4
Pierce	33215	45	14946.75
Pulaski	37900	75	28425
Seminole	57916	40	23166.4
Taylor	5100	30	1530
Terrell	54479	75	40859.25
Tift	41114	70	28779.8
Toombs	19046	70	13332.2
Wilcox	46235	45	20805.75
Worth	95811	75	71858.25
All Counties	1,484,889	61.38235294	911459.8068

¹Values arrived from the University of Georgia 2021 Farm Gate Value Report. https://caed.uga.edu/content/dam/caes-subsite/caed/publications/annual-reports-farm-gate-value-reports/2021 GeorgiaFGVReportDec2022%20(1).pdf



Image Credit: Lynn Betts / U.S. Department of Agriculture, Natural Resources Conservation Service https://commons.wikimedia.org/wiki/File:Runoff of soil & fertilizer.jpg

Runoff/Erosion Mitigation

- Evaluated efficacy from available literature presented in the Technical Document
 - Points assigned to each mitigation measure based on efficacy in reducing runoff/erosion of pesticides from a treated field
 - High efficacy 3 points
 - Medium efficacy 2 points
 - Low efficacy 1 point
- Menu of mitigation measures provides flexibility to growers
- Number of points would depend on the level of impact, which may range from no mitigation and up to 9 points
 - When the level of impact indicates that 9 points are not adequate to reduce impacts, additional mitigation may be identified

Runoff/Erosion Mitigation Menu

- Field Management
 - Contour farming (2 points)
 - Cover crop (1 point)
 - Grassed waterway (1 point)
 - In-field vegetative filter strip (3 points)
 - Irrigation water management (1 point)
 - Mulching with natural materials (3 points)
 - Residue tillage management (2 points)
 - Terrace farming (2 points)
- Field Characteristics (1 point each)
 - Application to sand, loamy sand, or sandy loam soil without a restrictive layer
 - Flat or nearly flat field (<2% slope)
 - Fields in western farmland

- Application Parameters



- Rate reduction (points based on percent reduction in application rate)
- Soil incorporation (2 points)
- Adjacent to the Field or In-between field and Habitat
 - 30-ft vegetative filter strip (2 points)
 - Riparian area (3 points)
 - Vegetated ditch (1 point)
- Other Mitigations
 - Water retention system (2 points)
 - Both on-field and adjacent to the field mitigation utilized (1 point)

U.S. EPA Slide From Herbicide Strategy; Culpepper Added Stars

Other Serious Regulatory Challenges Right Now!



Availability of economically effective pesticides is essential

Preserving old chemistry or getting new chemistry more complex than ever

Applicators must ensure every application goes on target and stays there



Science, Cooperation, & Communication







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