


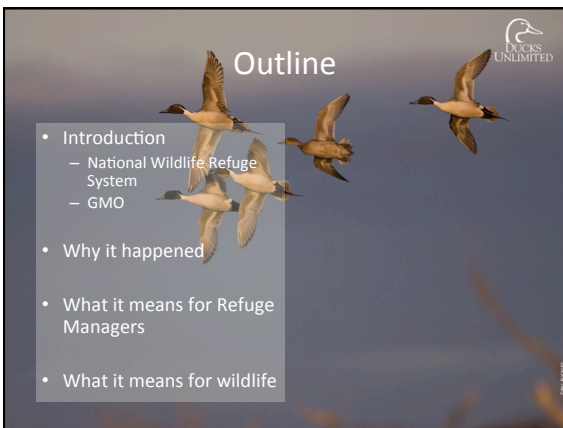
US Fish and Wildlife Service Ban GMOs on all National Wildlife Refuges

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12:20 PM Room 160 PBB




Outline

- Introduction
 - National Wildlife Refuge System
 - GMO
- Why it happened
- What it means for Refuge Managers
- What it means for wildlife



National Wildlife Refuge System

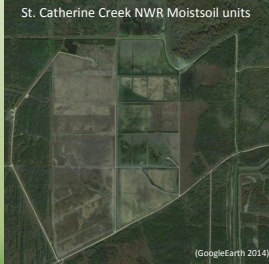
- United States
 - 561 NWR (USFWS 2014)
 - Over 150 million acres managed (USFWS 2014)
- Southeast (Region 4)
 - 129 NWR (USFWS 2013)
 - 4 million acres (USFWS 2013)
 - 1% is farmed (44,000 acres) on 25 NWRs (USFWS 2013)



(Photo Credit: USFWS 2014)

National Wildlife Refuge System

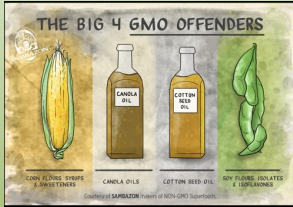
- Crops Planted on NWRs in the SE (USFWS 2014)
 - GMO
 - Corn
 - Soybean
 - Non-GMO
 - Milo or Grain Sorghum
 - Millet
 - Rice
 - Wheat
 - Sunflowers



(GoogleEarth 2014)

Genetically Modified Crops

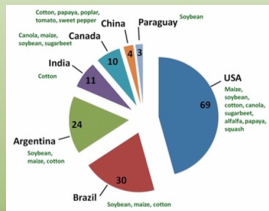
- What is a GMO?
 - Are living organisms (plants, animals, bacteria) into which foreign genes have been introduced (Feldmann et al. 2000)
- 2 main reasons for GMCs
 - Lower farm-level production costs
 - Enhance producer quality (Feldmann et al. 2000)



(Photo Credit: Sambazon 2013)

Genetically Modified Crops

- First used in US on April 24, 1987 in California (Deffino de Souza et al. 2013)
 - Strawberries
- 69% of all GMCs are produced in the US as of 2013 (Deffino de Souza et al. 2013)



Country	Percentage	Commonly Modified Crops
USA	69%	Millet, soybean, cotton, canola, sugarbeet, alfalfa, sorghum, squash
Brazil	30%	Soybean, maize, cotton
Argentina	24%	Soybean, maize, cotton
India	11%	Cotton
Canada	10%	Canola, maize, soybean, vegetable
China	4%	Cotton, papaya, paprika, tomato, sweet pepper
Paraguay	3%	Soybean

(Figure Credit: Deffino de Souza et al. 2013)

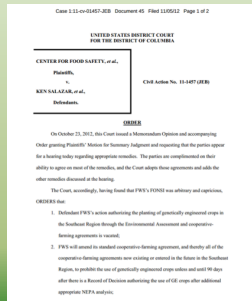
Why it Happened

- Environmentalists sued USFWS 5 times (CFS 2014)
 - Northeast Region (x2)
 - Southeast Region
 - Midwest Region
 - Northwest Region



Why it Happened

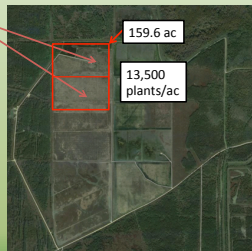
- USFWS Violated 3 separate Acts
 - National Environmental Policy Act (NEPA)
 - The National Wildlife Refuge System Administrative Act of 1966 (“Organic Act”)
 - Administrative Procedures Act (APA)



(USFWS 2014)

The Court Order

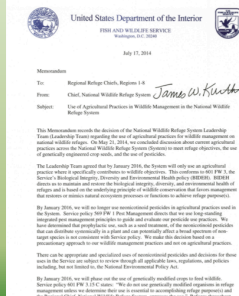
- Reveal where the GMCs were planted
- Numbers planted
 - 159.6 ac planted at 13,500 plants/ac
 - 2,154,600 corn plants
- Type of crop
 - Corn
- Types of pesticides used
 - including the dates and amounts applied
- Conduct field surveys through 2014 to locate any “volunteers” (new GMCs germinating)



(Photo Credit: Google earth 2014)

The Decision

- On May 21st of this year discussions were concluded about banning GMOs and neonicotinoid pesticides on NWRs
- On July 17th the MEMO was sent to all Regional Chiefs



(USEWS 2014)

What it Means for Refuge Managers

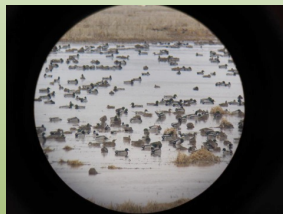
- Phase out- GMCs by January 2016
- Find Non-GMC to plant
- Buy or borrow equipment to plant non-GMCs
- Replace row crops in moist soil areas and promote native vegetation through habitat management techniques
 - Which makes it harder to reach their DED requirements



(Photo Credit: USDA Plant Database 2014)

What it Means for Wildlife

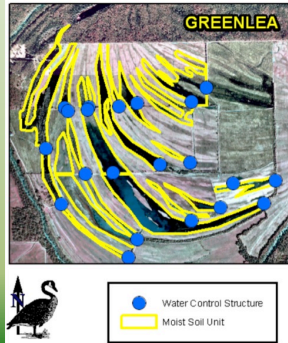
- Less acres of crops to feed on in NWRs
- Less preferred food on the southern end of migration on NWRs
- Less high carb/fat foods for migration on NWRs
- Less cover (loafing, escape, etc...)



(Photo Credit: Eric Ford)

Personal Observations

- Tensas River NWR, LA
- 2012-2013
 - Avg 7,000 dabbling ducks
 - Corn, Milo, and Millet
- 2013-2014
 - Avg 800 dabbling ducks
 - Moist-soil plants



Future Direction for Managers

- Find Farmers that are willing to plant Non-GMCs
 - Possible but not likely
- New Equipment
 - Not in the budget
- Restore Ag areas back to natural vegetation
 - Bottomland hardwoods



(Photo credit: USFWS 2014)

Conclusion

- Harder to meet DED requirements
- Pushes NWRs to restore native vegetation
 - Moist-soil plants
 - Bottomland hardwoods
- Makes a difficult budget worse if crops are necessary
- Could cause less visitation to NWRs



Photo Credits

- Ducks Unlimited: <http://www.ducks.org>
- Epic Fail: <http://jatim.org/funny-event/funny-fat-animals-pictures-and-strange-fat-animals-photos/attachment/fat-duck/>
- Erin Cox
- Google Earth: St. Catherine Creek NWR, Sibley, Mississippi, USA
- Sambazon: <http://sambazon.com/>
- USDA: <http://www.plants.usda.gov/java/>
- USFWS: <http://www.fws.gov>
- The World of Food Science: <http://worldfoodscience.com/volume-16>

Literature Cited

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