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Oversight Hearing on the Renewable Fuel Standard

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Chairman Whitfield, Ranking Member Rush, Members of the Committee:

Thank you for the opportunity to testify before you today. My name is Collin O'Mara, and I serve as President and Chief Executive Officer of the National Wildlife Federation, the nation's largest conservation organization with more than 6 million members and supporters and fifty state and territorial affiliates, representing hunters and anglers, birders and gardeners, and outdoor enthusiasts from across America. Our mission is to unite all Americans to ensure wildlife thrive in a rapidly changing world—and we work collaboratively to conserve habitat and waterways, promote our outdoor heritage, and connect the next generation with nature.

In 2007, Congress passed the Renewable Fuel Standard with good intentions: reducing dependence on fossil fuels, accelerating development of sustainable biofuels, and reducing greenhouse gas emissions.

Unfortunately, nine years later, there have been severe unintended consequences—large-scale loss of wildlife habitat (especially native grasslands) and degradation of water quality—and wildlife has borne the brunt of these impacts. These unintended consequences threaten some of our most beloved and rare wildlife species, including sage grouse, meadowlarks, longspurs, swift fox, and the monarch butterfly, as well as a range of fish and other aquatic life.

We applaud this Committee for evaluating the unintended consequences of this policy and whether it is time for changes.

From a wildlife perspective, the impacts of the current policy have been devastating. Everyone who hunts or goes birding to watch ducks, geese, or pheasants is alarmed at the loss of millions of acres of wetlands and attendant grasslands in the Prairie Pothole Region, where more than 60 percent of America's waterfowl breed and rear their young.[1]

Anyone who fishes for bass, walleye, trout, or any number of other species or who swims in water bodies fed by agricultural watersheds should be appalled by the decreased flows in some western streams from increased irrigation demands and the worsening water conditions and growing algal blooms caused by increases in farm runoff and the excess nutrients it carries. For example, harmful algal blooms have become an epidemic in Lake Erie – which was once the poster child for smart conservation due to environmental rebirth after being declared "dead" in the 1950's – forcing Toledo, Ohio, in 2014 to declare a drinking water emergency due to toxic algae overwhelming the city's water treatment capacity.[2]

And anyone who cares about iconic grassland species like the sage grouse, eastern and western meadowlark, swift fox, and the monarch butterfly should be alarmed that this energy policy has helped accelerate the destruction of our last remaining native prairies and the conversion of other important grasslands throughout farm country.

Recently, U.S. Geological Survey biologists announced that grassland birds and other species in the Northern Great Plains are reaching a "tipping point," because of the significant acreage of grasslands lost to production. According to the report, between 2006 and 2011, North Dakota, South Dakota, Nebraska, Minnesota and Iowa lost more than 2,000 square miles of grassland – "a habitat loss rate

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[1] Doherty, K. E., Ryba, A. J., Stemler, C. L., Niemuth, N. D. & Meeks, W. A. Conservation planning in an era of change: state of the US Prairie Pothole Region. Wildlife Society Bulletin 37, 546-563 (2013).

[2] National Oceanic and Atmospheric Administration, *Experimental Lake Erie Harmful Algal Bloom Bulletin.* November, 2015. http://www.glerl.noaa.gov/res/HABs_and_Hypoxia/lakeErieHABArchive/bulletin_2015-027.pdf

equal to that of high-profile deforestation rates in Brazil and Malaysia"[34] Further, "the McCown's longspur, a bird once found throughout most of North Dakota, is now known only on a single 640-acre piece of land in the state's southwest," and pointed to steep declines as well in amphibians and pollinators.[5]

The RFS Has Unquestionably Accelerated Land Conversion and Habitat Loss

Unfortunately, most policy debate regarding the Renewable Fuels Standard does not take into account the wildlife and water consequences. With so many other issues related to the policy (many of which are being discussed here today)–fuel performance and efficiency, consumer choice and demand, national security, greenhouse gas emissions, and the competition between food and fuel crops, to name a few – it is easy to overlook the fact that numerous species and types of wildlife and the terrestrial and aquatic habitats and resources they depend on are being impacted. These impacts were foreseen, and more action could have been taken to avoid or mitigate them.

As the members of this committee well know, the vast majority of renewable fuel produced and blended to comply with the RFS to date (more than 97 percent) has been corn-based ethanol.[6] American farmers responded to the government-created market demand for corn in a big way. In 2007, the year Congress passed the Energy Independence and Security Act (EISA) that expanded the RFS, farmers reported to the U.S. Department of Agriculture (USDA) that they planted 91.1 million acres of corn. Five years later, as the number of ethanol plants continued to grow throughout rural America, farmers had increased their corn plantings to 94.1 million acres.[7] The portion of the U.S. corn crop devoted to

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[3] Schuessler. Ryan. 2016. "The Enormous Threat to America's Last Grasslands" Washington Post. June 16, 2016.
[4] Wright, C. K. & Wimberly, M. C. Recent land use change in the Western Corn Belt threatens grasslands and wetlands. *Proceedings of the National Academy of Sciences* **110**, 4134-4139 (2013).
[5] IBID
[6] Food and Agricultural Policy Research Institute. US Baseline Briefing Book: Projections for Agricultural and Biofuel Markets. (University of Missouri Columbia, MO, USA, 2015).
[7] USDA Farm Service Agency, Crop Acreage Data. https://www.fsa.usda.gov/news-room/efoia/electronic-reading-room/frequently-requested-information/crop-acreage-data/index

ethanol instead of other uses like food and animal feed rose from nine percent before the RFS, to about 40 percent.[8] In addition, soybeans, which often accompany corn in rotational planting and are also used to produce biodiesel (classified as an Advanced Biofuel under the RFS), increased even more dramatically, rising from 62.9 million acres in 2007 to 75.9 million acres in 2012. The growth in these two biofuel crops drove a rise in overall crop acreage among the major commodity crops of 8.1 million acres during the first five years of the RFS2.

These new acres of corn and soybean plantings came with a heavy price to wildlife habitats. Millions of acres of grassland habitat, one of the most endangered habitats in the world, was plowed under to make way for new fuel crops, or for other crops like wheat, which had been displaced by corn and soybeans elsewhere.

In the first comprehensive, nationwide assessment of land use change following implementation of the RFS, researchers at the University of Wisconsin looked at geospatial as well as crop and farm level data to paint a clear picture of the dramatic changes to the makeup of the rural landscape. They found that 7.3 million acres of land had been converted from non-cropland into crops between 2008 and 2012.[9] This is likely a significant underestimate of the total, since the study only included parcels of land 15 acres or larger. Adding in all the additional buffer strips, wind breaks, and roadsides that were plowed under to maximize production would bring that number very close to the 8 million acre increase reported to USDA for commodity crop plantings. Factoring in the 4.4 million acres that were abandoned during the study timeframe for various reasons, the overall net expansion totaled 2.9 million acres. This

[8] USDA Economic Research Service, Corn Use Data. http://www.ers.usda.gov/media/866543/cornusetable.html
[9] Lark, T. J., Salmon, J. M. & Gibbs, H. K. Cropland expansion outpaces agricultural and biofuel policies in the United States. *Environmental Research Letters* **10**, 044003 (2015).

number mirrors previous USDA estimates, including the Census of Agriculture 2007-2012, the National Agricultural Statistics Service survey, and the Natural Resources Inventory.[10]

The study identified agricultural conversion across the country, but pointed to certain hotspots, including the Dakotas, along the Iowa-Missouri border, and in western Kansas, Oklahoma, and the Texas panhandle. Non-traditional regions for agriculture represented a so-called "new frontier" in places like the western Plains from South Dakota to New Mexico, the edge of the forests in Minnesota and Wisconsin, and in the Appalachian piedmont. Disturbingly, the majority (67%) of new cropland was on lands considered marginal or unsuited for cultivation by the Natural Resources Conservation Service, and these new croplands were twice as likely as existing croplands to be on the poorest quality land. The expansions is also pushing cropping into more arid lands requiring heavy irrigation, while ethanol refineries consume very large volumes of water, adding additional stress to areas already burdened with declining aquifers and water storage and insufficient in stream flows.

Grasslands were the source of the vast majority of these newly converted lands, accounting for 77 percent of the total. This category included pasture and grazing land, grasslands coming out of the federal Conservation Reserve Program, and unutilized mixed grasses. More than a quarter of these grasslands, fully 1.6 million acres – an area the size of the state of Delaware -- came from grasslands that had not been plowed or developed for at least 20 years, many of them constituting native prairie that had never been disturbed before. The direct carbon release from these conversions alone is likely close to 87 MMT CO2e—equivalent to one year's emissions from 23 coal-fired power plants or an additional 14 million cars on the road. Native prairie ecosystems are hot beds of biodiversity, huge sinks of carbon storage underground, and also rapidly disappearing.[11] Grasslands are perhaps our nation's most

[10] U.S. Department of Agriculture. Summary Report: 2010 National Resources Inventory (2013). http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1167354.pdf

[11] Samson, F. B., Knopf, F. L. & Ostlie, W. R. Great Plains ecosystems: past, present, and future. *Wildlife Society Bulletin* **32**, 6-15 (2004).

endangered ecosystems, even prior to the RFS era, with less than one percent of historic tall-grass prairies and 30 percent of mixed-grass prairies remaining.[12] With such precious little undisturbed prairie remaining, even small losses to agriculture have an outsized importance in terms of biodiversity and carbon release.

Grasslands, however, were not the only habitats converted to agriculture during this time. The Wisconsin study found forest lands accounting for three percent of the conversions, occurring largely in Minnesota, western Appalachia, and in Georgia. Wetland losses, accounting for an additional 2 percent of the conversion were centered in the Dakotas and Minnesota.

The Wisconsin study builds on previous studies and anecdotal evidence to paint a portrait of land conversion that touches every region of the country, but is concentrated in the heartland, and that disproportionately impacted our most imperiled grassland ecosystems. At the same time, the researchers looked at the results of this conversion to assign "responsibility" for the land use change. Since corn was the dominant crop planted on newly converted land, and it was the largest indirect contributor to change through its displacement of other crops, it was ascribed the majority (52 percent) of the responsibility for the conversion.

A study published just this year by researchers at USDA's Economic Research Service more explicitly linked agricultural expansion to ethanol production. That study, published in February, showed that additional ethanol refinery capacity in a given location led to meaningful increases in both planted corn acreage and total agricultural acreage within 100 km of that location. The greatest impact was seen in areas with little previously existing agriculture, meaning that ethanol production was directly tied to the conversion of non-agricultural land.[13]

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[12] Dahl, T.E. 2014. Status and trends of prairie wetlands in the United States 1997 to 2009. U.S. Department of the Interior; Fish and Wildlife Service, Ecological Services, Washington, D.C.

[13] Motamed, M., McPhail, L. & Williams, R. Corn Area Response to Local Ethanol Markets in the United States: A Grid Cell Level Analysis. American Journal of Agricultural Economics, aav095 (2016).

Land Use Change and Agricultural Expansion Have Enormous Impacts on Water

These vast changes to the landscape have dramatic impacts even beyond terrestrial ecosystems and the wildlife species that depend on them. It is well documented that farm runoff constitutes a major challenge to achieving water quality goals, particularly in places like the Chesapeake Bay, the Gulf of Mexico, and, increasingly, in the Great Lakes.[14] [15]

Corn, in particular, requires high nutrient inputs in the form of chemical or manure fertilizers, and these nutrients, without proper conservation measures, readily run off during spring rains and flow into waterways. Compared to other biofuel crops, including soybeans and perennial grasses, corn has the highest level of application of nutrients (fertilizer and pesticides), resulting in higher runoff from fields.[16] Scientific modeling has predicted that switching from other crops to corn, as we have seen happen extensively in the wake of the RFS, results in 42 percent more sediment outflow from farm fields, and switching from pasture to corn increases sediment loads by up to 127 percent.[17]

As farmers have taken land out of conservation and removed grass and forest buffer strips, planting ever closer to waterways in order to maximize their production, our waters have lost much of the natural filtration capacity that would help keep sediment, nutrients, and other pollutants out of streams, rivers, and lakes. The effects of a changing climate have exacerbated the problem by producing more intense rain storms, particularly in the spring when farmers are applying nutrients for the coming growing season. These storms wash the fertilizer away along with the topsoil.

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[14] Donner, S. D. & Kucharik, C. J. Corn-based ethanol production compromises goal of reducing nitrogen export by the Mississippi River. *Proceedings of the National Academy of Sciences* **105**, 4513-4518 (2008).
[15] Chesapeake Bay Program. http://www.chesapeakebay.net/issues/issue/agriculture#inline
[16] National Research Council & Committee on Economic and Environmental Impacts of Increasing Biofuels Production. *Renewable fuel standard: potential economic and environmental effects of US biofuel policy*. (National Academies Press, 2011).
[17] Shao, Y., Lunetta, R. S., Macpherson, A. J., Luo, J. & Chen, G. Assessing sediment yield for selected watersheds in the Laurentian great lakes basin under future agricultural scenarios. Environmental management 51, 59-69 (2013).

Lake Erie has become the unfortunate poster child for what intensifying agricultural production can do to degrade our waters. Toxic algal blooms have exploded in the western and central parts of the lake since 2007, with last year's being the largest on record. This uncontrolled algae growth is fed by the nutrients running off of farm fields, flowing from municipal water treatment plants, and being deposited from the air in greater amounts thanks to airborne pollution made worse by climate change.

These harmful algal blooms are not only unpleasant to look at; they are an environmental, economic, and public health disaster. Deprived of oxygen due to decaying algae, other marine life must migrate to other waters or suffocate. As a result, Lake Erie's thriving tourism industry and angling community have been hit extremely hard, losing unrecoverable income during the height of the summer fishing and recreation season. What's more, these blooms have produced the dangerous microsystis algae that produce a toxin that makes water dangerous for drinking, swimming, and bathing. In 2014, Toledo ordered its citizens not to use municipal water at all for three days due to levels 1,000 times the safe amount. At this level, the toxins in the water would cause illness affecting the liver, nervous system and skin. In response to this rising green tide, Ohio last year implemented a new law placing modest restrictions on the application of manure and chemical fertilizers to fields in order to control the flow of nutrients. Notably, this law was supported by both the Ohio Farm Bureau and Ohio Farmer's Union.[18] It will not be sufficient, however, to address the problem of nutrient pollution.

And it's not just the Great Lakes. States across the country have had to develop protocols and procedures for how to track and issue advisories when there is the presence of toxins from harmful algal blooms for drinking water and also for recreational contact with HAB-contaminated waters. Swimming, skiing, tubing and other water activities pose significant risk when there is a harmful algal bloom. Breathing aerosolized water droplets (misting) of contaminated waters is a health risk affecting all of the boating industry.

[18] http://www.farmanddairy.com/news/house-approves-new-rules-applying-manure-ohio/228086.html

The National Wildlife Federation has long been a strong supporter of voluntary conservation programs to help farmers better manage nutrient and sediment losses, improve soil health and profitability, decrease drought risk, and create and maintain wildlife habitat. It is unfortunate that a federal energy mandate has not only exacerbated the underlying problems which these voluntary programs were created to address, but also has contributed to additional layers of regulation placed on farmers and ranchers.

This Was Not Supposed to Happen

When the RFS was expanded in EISA in 2007, the National Wildlife Federation and others who were worried about what the drive for more corn would mean on the landscape persuaded the law's authors here in Congress to include a provision aimed at preventing the widespread conversion of non-agricultural land in order to meet the mandate. To address this concern, the new law defined acceptable biofuels for use under the mandate as those coming from crops grown only on land in agricultural production before 2007. Thus, ethanol produced from corn or biodiesel produced from soybeans grown on land converted into agricultural production after 2007 should not be able to meet an obligated party's blending requirements under the law.

Unfortunately, the EPA has failed to implement the law as written, implementing this provision in such a way as to make it utterly meaningless. Because tracking the flow of corn from individual farms to ethanol refineries would be difficult, the EPA chose to take what it has termed an "aggregate compliance" approach. The agency worked with USDA to identify a baseline number of agricultural acres across the country. This number, problematically, includes all of the land enrolled in the Conservation Reserve Program – even though this is land set aside for conservation benefits, much of it is not prime agricultural land, and some of it has not been farmed for 20 or more years – some grazing lands, and other land not in crop production as of 2007. The EPA then compares annual cropland against this

baseline to see if it has been exceeded, in which case the agency would implement stricter tracking and reporting requirements.

The aggregate compliance approach has been an abject failure in preventing the conversion of lands to meet the biofuel mandate, to say nothing of the indirect expansion that happened as corn displaced crops like wheat from existing agricultural lands. The aggregate approach does not account for agricultural land that is lost each year to development, nor does it account for regional and local variations. Clearly, the intent of Congress in placing a conversion prohibition in the law has not been realized, and sensitive ecosystems, beloved wildlife, and nourishing water bodies are all paying a price as a result.

Where do we go from here?

As this Committee, this Congress, and both the outgoing and eventually the incoming Administrations grapple with the unintended consequences of this far-reaching policy, there are important choices to be made. No major law is ever perfect in its construction or in its implementation. In many ways, the damage to the landscape that has already been fueled in part by the RFS cannot be undone. Native grassland areas will never be restored to their full diversity, even if taken out of agricultural production. Species that rely on these habitats, like the beloved and imperiled Monarch butterfly, may continue to decline. Forest parcels chopped down in the mania to grow corn will take generations to regrow.

But looking to the future, there are improvements that can be made, and mistakes that should not be repeated. In looking at the first eight years of the RFS2, we would like to offer some thoughts on the program's future.

First, Congress must demand the information required of EPA on the law's effects on our environment and natural resources. The EISA calls on the agency to report on these impacts every three years. EPA's First Triennial Report to Congress was not finalized until December of 2011, a full year later than

expected. It has been 4.5 years since that report, yet EPA has given no indication of when it will release its next report. At an absolute minimum, EPA must comply with the law.

The First Triennial produced a very thorough look at many of the issues discussed and brought to light in this testimony. It proclaimed, based on information largely gathered in 2009 and early 2010, that the expansion and intensification of corn agriculture had led to small but negative impacts on the landscape due to land conversion and water pollution.[19] It also warned that these impacts would likely intensify as the demand for corn ethanol grew in subsequent years. Repeating such a thorough assessment in the wake of higher ethanol demand and greater land conversion would paint the picture needed for Congress and the agency to fully understand the law's unintended consequences.

Second, EPA should use its annual rulemakings on volumetric obligations to lower the amount of conventional corn ethanol biofuels. The agency has finally started down that path with its obligation for the current year, set 500 million gallons below the statutory level of 15 million gallons. For 2017, however, EPA's proposed rule would call for an increase to 14.8 billion gallons. In setting the level below the statutory level for these two years, EPA invokes its general waiver authority under the law, which allows for reductions when the agency determines "that implementation of the statutory volumes would severely harm the economy or environment of a State, region, or the United States, or if there is inadequate domestic supply [emphasis added]."[20]

EPA justifies the slight reduction in the total volume requirement in the 2016 final rule and the 2017 proposed rule on the inability of the fuel supply to absorb higher levels of ethanol through greater overall fuel consumption or greater demand for higher ethanol blends such as E85. Neither rule considers the environmental impacts of such high levels of corn production to produce the required

[19] U.S. Environmental Protection Agency. 2011. Biofuels and the Environment: First Triennial Report to Congress. Office of Research and Development, National Center for Environmental Assessment, Washington, DC; EPA/600/R-10/183F.

[20] Clean Air Act §211(o)(7)(A)

renewable fuel volumes. An accurate assessment of the environmental impacts (habitat loss, impaired waters, etc.) warrants a reduction in next year's required volumes, not an increase. Already, this year's corn crop is predicted to be the largest since 2013, making it the third largest since 1944.[21] Additional signals that EPA intends to further raise the demand for corn will only increase the incentive for farmers to expand production beyond lands already under cultivation and set new records. Instead, EPA should reduce next year's required volumes below the "blend wall" to ameliorate the environmental damage being caused on the landscape by sending a market signal that the demand for corn ethanol is declining.

Rather than continue its reliance on first generation corn ethanol and soy biodiesel, EPA should take advantage of the volumetric restrictions imposed by the "blend wall" to favor increases in the advanced and cellulosic biofuels that have greater potential for greenhouse gas emission reductions while at the same time requiring fewer fertilizer and pesticide applications. These next generation feedstocks represent the future of the RFS, one envisioned by the law's Congressional authors. The inability of the market to develop these next generation fuels calls for greater support within the law compared to the already mature conventional biofuel industry.

That said, the RFS envisions as many as 21 billion gallons of these next generation fuels being produced by 2022, while only a tiny fraction of this amount is being produced today. Meeting the law's lofty ambitions – assuming that level of production could be assimilated into the fuel supply – would likely bring about the potential for another wave of agricultural expansion to grow new fuel crops such as switchgrass or miscanthus. The EPA must not allow this second wave to spread unchecked by continuing its aggregate compliance approach. Rather, it must recognize that the time has come to follow the law's intent and begin verifying that biofuels are not being produced from crops grown on land not in production prior to 2007. If major companies can identify the specific farms from which coffee beans in every bag they sell originated, or from which forests originated the lumber they sell in their stores or

[21] USDA Prospective Plantings. http://www.usda.gov/nass/PUBS/TODAYRPT/pspl0316.pdf

that comprise their buildings, surely USDA and EPA can work together to track crops destined for ethanol refineries. If national level tracking is, in fact, too difficult, then intermediary approaches could be developed, such as focusing only on land in the most at-risk states or counties, or lands within a certain radius of ethanol plants. At a bare minimum, it should be easy to track the next generation of feedstocks since there is no other real market for crops like switchgrass that could muddy the chain of custody.

Finally, we encourage Congress to consider the full scope of the law and its impacts when evaluating proposed reforms. When the law was passed it was intended to diversify our fuel supply, stimulate next generation technology, transform struggling rural economies, and help combat climate change. Whether the law has achieved these results is now being questioned. What is unquestioned is the massive and devastating unintended consequences this law has had for wildlife and water. It is now time to honestly appraise what the law has achieved and where it has failed. What price have we paid for any benefits the law has bestowed?

Given EPA's failure to enforce the law, Congress should consider wildlife-friendly improvements to the RFS, including strengthening provisions intended to prevent the conversion of non-agricultural lands (including eliminating EPA's ability to use an "aggregate compliance" approach), requiring more accurate and more frequent assessment of wildlife and water impacts, and reducing volumetric requirements below the "blend wall." Further, Congress should restore funding for effective habitat conservation programs, like the Conservation Reserve Program, the North American Wetland Conservation Act, and other agricultural conservation programs, as well as revisit other policies that distort markets at the expense of wildlife and water. Coupling reforms with increased investments in conservation programs will keep farmers profitable and not penalize them for rationally responding to the market-distorting government policies passed by Congress.

We are confident that we can secure both a bright future for wildlife and have a thriving agricultural industry in America, but it will take smart, forward looking policies. This starts with acknowledging the massive unintended consequences for wildlife and water. Monarch butterflies, in order to recover from their precipitous decline, need milkweed and nectar plants found in native grasslands. If McCowan's Longspur is to return to habitat beyond its tiny remaining patch in North Dakota and if we are to keep other grassland bird species from hitting the tipping point from habitat loss, we need to stem further habitat losses and begin to recover some grassland habitats. And if we are going to turn back the green tide choking Lake Erie and other water bodies around the country, we need smarter agriculture and energy policies. Continuing to ignore these environmental impacts of the RFS in subservience to energy and agricultural purposes will doom the policy to failure. The National Wildlife Federation, its millions of hunters, anglers, birders, and outdoor enthusiasts, stand ready to assist in any way to find long-term solutions that will mean success for all of these goals, and for our shared wildlife and other natural resources.