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**Climate Change and Voluntary Private Land Conservation:
A Case Study of Working Lands for Wildlife**

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Table of Contents

I.	Abstract.....	3
II.	Introduction.....	4
III.	Methods.....	6
IV.	Literature Review.....	6
V.	The Organization: An Overview of Working Lands for Wildlife.....	10
VI.	The Challenge: The State of Land and Wildlife Conservation.....	13
VII.	The Solution: Learning From Voluntary Private Land Conservation Programs.....	22
VIII.	Recommendations.....	43
IX.	Conclusion.....	51
X.	Bibliography.....	54

Abstract

This case study examines the role, impact, and future of voluntary private land conservation (VPLC) programs, with a particular focus on the U.S. Department of Agriculture's Working Lands for Wildlife (WLFW) initiative. Climate change and population growth pose a significant threat to public land conservation, making alternative methods like WLFW increasingly important. WLFW is a relatively successful and well-received program, but it is still young and comparatively smaller than other VPLC programs operated by the government. Publications by the U.S. Department of Agriculture, WLFW partner organizations, and relevant scholarly articles were utilized in order to assess WLFW's success independently and in comparison with other federal VPLC programs. With additional funding and new strategies for enrolling participants, WLFW may be able to increase its capacity and become a flagship VPLC program. If this initial expansion is successful enough, WLFW leadership may consider further expanding the program to also enroll non-agricultural privately owned land, primarily recreational land used for hunting, fishing, or wildlife watching.

Keywords: private land conservation, wildlife conservation, working lands, U.S. Department of Agriculture, Natural Resources Conservation Service, federal conservation programs.

Climate Change and Voluntary Private Land Conservation: A Case Study of Working Lands for Wildlife

Although not always prioritized, land and wildlife conservation are undoubtedly important. Preserving natural land comes with a wide array of advantages – not only does it provide environmental benefits like clean drinking water and carbon sequestration, access to nature has also been linked to better cognitive functioning and emotional health (Weir, 2020). Wildlife plays an important role in the maintenance of conserved land. Nature is delicately balanced, and the disappearance of even one species can sometimes have catastrophic effects for entire ecosystems. For this reason, protecting both wild land and the animals that reside in it is a goal often shared by both governments and the general population.

However, the future of land conservation is currently on shaky ground. Climate change and population growth are expected to cause a significant increase in the development of land. Over the next several decades, the increased need for agriculture, housing, and resource development and extraction is predicted to seriously reduce the amount of undeveloped land in the United States. Currently, most undeveloped and conserved land is publicly owned by the federal government. Public land conservation has historically been the most popular method of land conservation, and it has also been relatively successful. However, political decisions during the last two presidential administrations have shown that public land conservation may not always be prioritized, and should not be relied upon as the sole way to protect land and wildlife. In order to continue preserving nature, an alternative method of conservation is needed.

One of the most promising alternate methods of land conservation is voluntary private land conservation (VPLC). VPLC has a long history as the preferred conservation strategy of the U.S. Department of Agriculture (USDA). It has been utilized in small-scale programs since the

1930s and now is at the center of several major conservation programs. Since the 1980s, VPLC programs operated by the USDA have been responsible for massive environmental gains, and have been wildly popular among farmers. The largest VPLC program – the Conservation Reserve Program – currently enrolls over half a million farmers.

Among the USDA's VPLC programs is the Working Lands for Wildlife (WLFW) initiative. This program was formally launched in 2012 by the Natural Resources Conservation Service (NRCS), a USDA agency focused specifically on agricultural conservation. WLFW seeks to conserve target species through habitat conservation practices on agricultural lands. It is a fully voluntary program that provides participating farmers with several benefits, including individualized conservation plans, cost-sharing, and regulatory predictability. WLFW operates at both national and state levels and maintains initiatives in almost every state in the country. Since its launch, WLFW has had a measurable impact on the populations of several threatened and endangered species across the country.

However, WLFW is one of the smallest VPLC programs operated by the USDA. The relatively high success rate of this program should allow it to become a flagship program of the NRCS and, potentially, even expand out of the agricultural sector. With the proper funding and resources, WLFW's framework could become one of the leading ways to conserve habitats and native species in the United States. This case study will evaluate the need for a program like WLFW and its place among other VPLC programs. Based on the findings of this paper, conservationists, government officials, and other interested parties will be able to develop a detailed plan for increasing WLFW's scope and capacity. This can be achieved through strengthened non-governmental partnerships and strategic promotion. If this initial expansion is

successful, WLFW may be further altered and expanded to develop additional initiatives that target recreational privately owned lands.

Methods

WLFW was selected as the focus of this case study as it is a relatively young and small program. Many other VPLC programs have been around for several decades, and have already been through several rounds of expansion. There is therefore a better idea of what these programs can realistically achieve. WLFW is also unique as it is one of the few VPLC programs to focus specifically on wildlife. Because the best way to preserve and protect wildlife is through total habitat restoration, this means that WLFW must take a holistic approach to conservation. It therefore offers farmers the opportunity to participate in a wide array of conservation practices, making it more wide-reaching than other VPLC programs. WLFW also offers several other key advantages, such as its strong partnerships with public, private, and nonprofit organizations, its grassroots focus, and its goal to keep agricultural land productive.

A combination of qualitative and quantitative analysis was used during this case study. Qualitative analysis was supported mainly by information from blogs and press releases related to the topic, whereas quantitative analysis was supported by status reports, financial information, and other data-based releases. The majority of information used was released directly by the government, although some also came from independent researchers and WLFW partner organizations. The analysis in this case study was also supported by research articles and scholarly journals focusing on several key topics, including urbanization, public conservation, private conservation, and land policy in the United States.

Literature Review

Challenges Facing Conservation

Urbanization and land development will have a negative impact on conservation efforts, particularly those related to the preservation of natural habitats and biodiversity. These impacts will be felt in both publicly and privately owned lands, although more research has been conducted on public land impacts. According to Nowak and Walton (2005), urban land will account for about 8% of total land use in the United States by 2050. This will naturally lead to a significant decrease in the amount of natural, undeveloped land in the United States. It is therefore predicted that greater effort will need to be put into the management and protection of remaining undeveloped land in order to protect its resources. The loss of this natural land will also have a serious negative impact on diversity. Simkin et al. (2022) state that habitat loss caused by urbanization is correlated with population decreases in about a third of species. These authors also recommend the introduction of novel strategies over the next several decades in order to protect biodiversity.

There has not yet been enough research to determine the full extent of the impact that urbanization will have on species. McDonald et al. (2019) believe that indirect urbanization – the development of land in order to support urban areas, for example, agricultural land – will actually occur on a greater scale than direct urbanization. Despite this, there has been little research on how indirect urbanization impacts biodiversity. It is therefore unclear how much land used for agriculture and resource development and extraction will influence the populations of native species. However, research does suggest that any sort of development has a negative impact on species populations, especially those that are already at risk. The impacts of urbanization on biodiversity may therefore be more drastic than is currently predicted.

The Need for Private Land Conservation

Private land conservation is already associated with positive outcomes for at-risk species. Pavlacky Jr. et al. (2021) state that, in certain regions, private land conservation can fill in when public land conservation is not doing enough to protect native species. This is particularly true in the West and Midwest, which have a much higher amount of cropland and rangeland than the East. Private land conservation also has the unique capability to protect species that depend on access to large swaths of land in order to survive – for example, migratory species like elk and bison (Tack et al., 2019). Although private land conservation is primarily restricted to agricultural land at this time, some scholars such as Macaulay (2016) argue that it can and should be extended to other types of working lands, primarily those used for wildlife-associated recreation.

Some more novel methods of conducting and supporting private land conservation are still relatively under-studied. One of these methods is the coproduction of science, which is a central aspect of WLFW's approach to conservation. According to Naugle et al. (2020), the coproduction of science is a vital way for multiple organizations to assess the impacts of conservation efforts on private lands. Because WLFW partners with multiple parties – including private landowners, nonprofits, and independent researchers – coproduction is a natural part of its operations. However, this is still considered to be a new and uncommon way of conducting research, and it is likely that it will continue to be developed and refined in the coming years.

Attitudes Towards Private Land Conservation

Private land conservation is typically positively received by farmers. Research by Thakur and Hurley (2022) suggests that the most important factor in creating a successful VPLC program is the ease and accessibility of conservation practices. The majority of farmers will participate in conservation practices if they are easy enough, even if they receive no additional

incentives for doing so. In fact, it is theorized that intrinsic motivation plays an important role in private conservation. Choosing to partake in it independently makes it more desirable, and therefore creates a better experience for participating landowners. This means that the voluntary nature of WLFW and the free technical assistance offered by WLFW agents and partners inherently set the program up for success. However, this article also suggests that private land conservation alone cannot create enough habitat to preserve most species.

Although WLFW initiatives deal primarily with small species that pose little risk to crops or livestock, wildlife focused VPLC can be successful even when target species do not meet this criteria. According to Huggins et al. (2021), VPLC programs that seek to conserve large predators have proved successful in Mexico and Montana. These programs do not ask very much of participating farmers; they simply financially compensate farmers for proof that target species are granted undisturbed access to their lands. This is still a small pilot program in the United States, but it could have positive implications for the conservation of threatened predators like mountain lions, brown bears, and wolves on agricultural lands. As ranchers have historically negative relationships with these animals, the success of a program that necessitates peaceful cohabitation shows how promising VPLC programs are.

Discussion

Research clearly indicates current methods of land and species conservation in the United States are at risk, and new methods must be implemented. Although VPLC programs alone may not be capable of fully supporting threatened and endangered species, they still make a significant positive contribution to conservation efforts and are proven to support the populations of native species. VPLC programs are also popular among farmers, making their expansion

easier and more worthwhile. Relevant literature clearly supports the potential expansion of wildlife focused VPLC programs like WLFW.

The Organization: An Overview of Working Lands for Wildlife

History and Approach

The Working Lands for Wildlife (WLFW) program is a voluntary conservation program sponsored by the United States Department of Agriculture (USDA). This program is directly overseen and administered by the Natural Resources Conservation Services (NRCS), a USDA agency that provides assistance to farmers, ranchers, and other private landowners. Through WLFW, the NRCS aims to conserve wildlife, habitats, and natural resources via voluntary incentive-based programs. The collaborative model used by WLFW was first launched in 2010 as a variety of small-scale initiatives focusing on target species and biomes in the Midwest and West. In 2012, the initiative was expanded into a fully-fledged federal program that focused on the conservation of eight target species across the United States. In 2018, WLFW was codified by the Farm Bill. Additional target species were added in 2017, 2018, and 2023, therefore broadening WLFW's impact. As of today, WLFW operates 16 state-based and eight national programs. It has active programs in 48 states and boasts nearly 10,000 farmer participants.

The WLFW initiative is based on the idea that private landowners and conservationists must work together to achieve conservation goals, and that collaboration is best achieved through voluntary, mutually beneficial programs. Agricultural producers who own or lease land that serves as an appropriate habitat for a WLFW target species can apply with the NRCS to join the program. If accepted, NRCS employees work directly with producers to create a conservation plan that improves their land for both the farmer and the target species.

The NRCS also provides technical and financial resources to carry out the conservation plan, and producers are directly compensated for any work that is directly related to the plan's completion. Another notable benefit of the WLFW program is the provision of regulatory predictability under the Endangered Species Act. Regulatory predictability essentially serves as a form of "insurance" for farmers; it guarantees that any harm done to the target species or its habitat as a result of normal agricultural practices will not result in a fine or other prosecution. It also guarantees that landowners will not have to take on any additional conservation practices (outside of those that are part of their WLFW contract) for up to 30 years, regardless of any potential changes to the federal status of the target species.

Although the USDA and NRCS operate several other voluntary conservation programs for agricultural producers, WLFW is unique as it does not require farmers to limit or even significantly alter their usage of land. The structure of WLFW allows agricultural land to remain productive while still preserving important natural habitats. However, WLFW also does not pay producers for habitat restoration; they are reimbursed for resources and labor, but they do not receive rental payments for any land that is restored as part of the program. WLFW may therefore offer fewer obvious benefits to farmers, potentially decreasing interest in the program.

WLFW's approach to conservation is based on science and community involvement. The initiative uses a unique conservation model comprised of five core values: trust and credibility, shared vision, strategic approach, accountability, and leverage (Natural Resources Conservation Service, 2021). Each of these values are reflected in a specific aspect of WLFW's approach. Trust and credibility refers to the utilization of a grassroots approach, aided through the establishment of strong relationships and an overall sense of community. Shared vision is the creation of goals that benefit both conservationists and agricultural producers. WLFW utilizes a

strategic approach by using (and sharing) the most up-to-date technology and information in order to invest resources in the most beneficial way possible. Accountability refers to WLFW's "scientific backbone" (Natural Resources Conservation Service, 2021), which quantifiably measures outcomes to determine rates of success. Finally, WLFW gains leverage by partnering with local, state, and federal organizations to maximize resources. WLFW relies on these values in order to consistently center the needs of producers, conservationists, and scientists throughout its various projects.

Structure, Management, and Funding

WLFW's focus on collaborative, science-based conservation is reflected in its structure and leadership. The initiative has a relatively flat hierarchy; there is minimal central leadership and the most work is carried out by regional teams. Currently, WLFW is led by a national coordinator as well as a Western and Eastern lead. WLFW also directly employs several scientists and other specialists. WLFW itself is not an independent agency, and many of its functions are therefore carried out by NRCS employees or through local partnerships. In fact, the WLFW process exclusively begins in NRCS offices, as this is where producers are sent to assess their eligibility for the program. Additionally, some executive and administrative duties (for example, outcomes and communications) are handled by NRCS employees who may work on several different initiatives concurrently.

Successful, lasting partnerships are crucial to WLFW's functioning. WLFW has a wide range of partnerships that provide technical, financial, and practical support. WLFW's most essential partnerships are with private landowners and the NRCS, but the initiative is also supported by federal, state, and local government agencies, conservation organizations, university research teams, and even private corporations. WLFW is a relatively small program,

but its work is geographically widespread and requires a wide variety of expertise and skills. The additional labor and resources supplied from these partnerships therefore allow WLFW to significantly increase its capacity.

As WLFW is managed by the NRCS, it receives a portion of the NRCS's annual funding. NRCS funding is provided by the USDA and through Title 2 of the Farm Bill, which determines the amount of money to be spent on agricultural conservation programs. The NRCS receives a relatively small amount of funding; In fiscal year 2024, the NRCS had a budget of about \$8 billion, which is about 2% of the USDA's total budget (U.S. Department of Agriculture, 2023). Nearly half of the NRCS's budget goes towards voluntary conservation programs. In 2024, roughly \$5 million was set aside to be invested exclusively into WLFW initiatives and operations (U.S. Department of Agriculture, 2023). However, WLFW initiatives are financially bolstered by additional funding from other NRCS programs such as the Environmental Quality Incentives Program and the Agricultural Conservation Easement Program. WLFW initiatives also receive additional funding through partnerships and grants. In 2023, the USDA set aside an additional \$30 million to be distributed to WLFW over the course of five years (Stemler, 2023). This money will primarily be used to increase capacity for science, coordination, and hiring.

The Challenge: The State of Land and Wildlife Conservation

Land conservation in the United States faces an uncertain future. Climate change and population growth are likely to have significant impacts on land usage, potentially decreasing the amount of land that is currently set aside for conservation. Public land conservation – historically, the preferred method of conservation – also faces many challenges that may make it unreliable. However, many wild species depend on conserved, maintained natural habitats for survival. Without new methods of conservation, both land and wildlife will be at great risk.

Human Geography and Population Growth

Although difficult to predict precisely, it is likely that climate change will have a drastic impact on human geography across the world. This is not limited to developing countries; in fact, in the United States, many population centers are already at risk. According to the U.S. Global Change Research Program, coastal communities account for over one-third of the U.S.'s total population. However, these areas are also highly susceptible to climate-change related threats, including severe weather events, flooding, and rising sea levels (USGCRP, 2018). Cities are also susceptible to the urban heat island (UHI) effect, which results in warmer temperatures in metropolitan areas as compared to their surroundings. UHI impacts will be particularly harmful in southwestern cities, which are already projected to be faced with dangerously high temperatures and drought. It is worth noting that of the 10 most populated cities in the United States, all but two are located either in a coastal region or in the southwest and Texas. Over 10% of the country's population resides in one of these 10 cities.

Additionally, the United States' population is projected to continue growing over the next three decades. According to the Congressional Budget Office's 2024 Demographic Outlook, at least 40 million people will be added to the populace by 2054. Most of this increase is projected to result from immigration; in fact, by 2040, immigration will be responsible for all population growth in the United States (Congressional Budget Office, 2024). However, immigration estimates made by the Congressional Budget Office are based primarily off of historical data and current information from the Census Bureau and Department of Homeland Security. Potential future factors – such as famine, extreme weather, and political unrest due to climate change – are not taken into account, regardless of how likely they may be. It therefore seems reasonable that future immigration rates may be higher than what is currently projected. While exact

immigration rates (and immigration policies) cannot be predicted, a potential influx of climate refugees should be accounted for when considering the impacts of climate change on the United States' population.

Ultimately, climate change and natural population growth will lead to a larger, more condensed population. This will likely encourage urban growth and urban sprawl. Over the next three decades, metropolitan areas are projected to increase in both population and land mass. Research suggests that by 2050, urban land will account for about 8% of total land in the United States (Nowak & Walton, 2005), and about 89% of the country's population will reside in urban areas (Center for Sustainable Systems, 2023). Four states – Connecticut, New Jersey, Massachusetts, and Rhode Island – will be constituted of at least one-half urban land (Nowak & Walton, 2005). Although urban land may be more densely populated than suburban or rural areas – hypothetically leading to overall lower land usage – urban growth is by no means conducive to conservation.

Urban Land and Conservation

Urban growth has both direct and indirect impacts of biodiversity and habitat loss. Direct impacts refer to undeveloped land that is converted into urban land, whereas indirect impacts refer to land that is developed in order to support urban land – for example, land that is used for food or energy production. The ramifications of both types of development are significant. Globally, over 290,000 km² of previously undeveloped land is expected to be converted to urban land use between 2000 and 2030 (McDonald et al., 2019). Loss of natural land is predicted to be especially severe in the United States, which will be one of only four countries to add more than 10,000 km² of urban land by 2030 (McDonald et al., 2019). Although the indirect impacts of urban growth are less researched and more difficult to measure, existing research suggests that

they may pose an even greater threat to natural habitats and biodiversity than direct impacts. This is in part because the development of resources needed to support a population often requires more space than the population itself. One of the most striking examples of this is agriculture – according to statistics from the United Nations Population Division, it takes, on average, 36 km² of agricultural land to support 1 km² of urban land (McDonald et al., 2019). Based on these numbers, the United States may lose up to 50,000 km² of natural habitat by 2030 to urban and agricultural growth alone.

Consequences of Deprioritizing Conservation

Land development can have catastrophic effects on native flora and fauna, primarily due to the loss of crucial habitat. Although some species are able to thrive in highly developed areas, the survival of many others depends entirely on the preservation of their natural habitats. Habitat loss decreases the amount of resources available to a population, therefore reducing the population's carrying capacity (Hanski, 2011). Populations that are unable to adapt or migrate may eventually die out. Additionally, habitat loss creates fragmented, isolated populations with low genetic diversity, which in turn increases vulnerability to mutations and disease (Hanski, 2011). Research has shown that urbanization and development can lead to a significant reduction in species richness (variety of species present) and species abundance (number of individuals from a particular species present). In highly developed urban areas, species richness decreases by 50%, and species abundance (population size) decreases by 62% (McDonald et al., 2019). Habitat preservation is therefore one of the most vital ways to protect at-risk species and maintain biodiversity.

The threat of climate change, projected increases to the United States' population and urban areas, and political decisions related to natural habitat preservation prove that alternatives

to public land conservation must be taken seriously. Although the conservation of public land should continue to be prioritized, it cannot be viewed as the only way to protect and preserve native flora and fauna. Traditional private land conservation can also be unreliable; as was stated earlier, only 1% of privately owned land is used for conservation purposes exclusively. The voluntary conservation of working land provides an opportunity to maintain natural habitats while still providing for the needs of a growing and changing population. Voluntary conservation of agricultural land can be particularly valuable. Almost half of all land in the United States is used for agricultural purposes; combined cropland and grazing land account for about 46% of total land use, both public and private (Bigelow & Borchers, 2017). Additionally, agricultural land – particularly grazing and range land – has a relatively small impact on wildlife. In minimal use developed areas – for example, managed green spaces, rural towns, and farms – species diversity decreases by only 4%, and species abundance decreases by 17% (McDonald et al., 2019). Less developed lands therefore have a unique potential for use in conservation efforts.

Management of Public Lands

Historically, the American government has relied on public land conservation to limit over-development of natural land and resources. The majority of land in the United States – about 60% – is privately owned, but only 1% of this land has been set aside for permanent conservation (Lee-Ashley, 2019). Conversely, the federal government has intentionally conserved about 12% of the nation's land – this accounts for nearly one-half of their total land ownership (Lee-Ashley, 2019). Land is conserved and managed at the local, state, and federal level; however, the majority of conserved lands in the United States are publicly owned and managed by federal agencies. Four agencies are primarily responsible for federal land management: the Forest Service (FS), which belongs to the U.S. Department of Agriculture, and

the National Parks Service (NPS), Bureau of Land Management (BLM), and Fish and Wildlife Service (FWS), which belong to the U.S. Department of the Interior. The vast majority of federally owned land – about 96% – is managed by the FS, BLM, NPS, or FWS (Congressional Research Service, 2017). However, although all of these agencies are involved in conservation efforts, not all of the land managed by them is actually conserved.

The most crucial difference between land management agencies is their approach to commercial leases and natural resource extraction on their lands. As is seen in Table 1, the NPS has the strictest approach and allows no commercial leases or resource extraction on any of their lands. Most other agencies allow for some degree of resource extraction, and only the BLM and FS allow for commercial leases on their land. Land usage also is also somewhat dependent on designation, which can overlap. For example, a national wilderness area may exist within a national forest. In this case, commercial leases and resource extraction are prohibited within the wilderness area, though they may occur in the surrounding national forest.

Table 1

Federal Public Land Designations

Land Designation	Administering Agency	Leased for Commercial Use	Resource Extraction Allowed
<i>National recreation area</i>	BLM, FS, NPS	No	In certain locations, for personal use only
<i>National forest</i>	FS	Yes	Yes
<i>National park</i>	NPS	No	No
<i>National conservation lands</i>	BLM	Yes	Yes
<i>Wilderness area</i>	BLM, FS, FWS, NPS	No	No
<i>National wildlife refuge</i>	FWS	No	In certain locations, for personal use only

Note: Adapted from “Federal Land Designations: A Brief Guide” by Congressional Research Service, 2023, p. 6. Copyright 2023 by Congressional Research Service.

Public lands are leased out for a variety of uses. The most common by far is livestock grazing, which occurs primarily on BLM managed lands (Bureau of Land Management, 2021). However, energy production and natural resource extraction are also common. FS lands are often leased by timber companies, whereas BLM lands are often leased by mining, oil, gas, and geothermal companies. While profitable, these practices can be extremely harmful to the environment. Oil and gas leases are particularly damaging, as both drilling for and utilizing these resources can cause serious environmental disruptions. Although President Biden has discussed limiting or entirely stopping new oil and gas leases, this has not yet occurred. Despite its lack of action in this area, the Biden administration has also approved a new rule that allows the BLM to approve conservation leases – essentially allowing public land to be conserved and restored by private organizations (Brown, 2024). While a step in the right direction, it is still unclear how popular these leases will be, and if they will be enough to make up for the harm caused by oil and gas leases.

Acquiring Public Land (Land and Water Conservation Fund)

The Land and Water Conservation Fund (LWCF) is a trust fund maintained and operated by the USDOJ. Founded by the bipartisan Land Water Conservation Fund Act in 1964, money from the LWCF allows federal and state governments to purchase privately owned land for the purpose of conservation, preservation, and recreation. Each year, the LWCF is supplied with \$900 million to be spent on land acquisition and maintenance. This funding comes entirely from

offshore oil and gas leases made on public land, though it has historically been supplemented by recreational fees and taxes (Vincent, 2006). In order for these funds to be used, Congress must appropriate them to a government agency (most often the FS, BLM, NPS, or FWS). Funds are formally requested in the annual budgets of these agencies, with each request detailing the specific purpose the funds will be used for. These requests are individually evaluated and approved (or denied) by Congress. The LWCF also provides state governments with grants that may be used for the development or maintenance of outdoor public recreation sites.

The appropriation of LWCF funds is the most common way in which public land acquisitions are funded. The vast majority of land purchases made by the federal government with LWCF funds are complete and irrevocable. However, some money from the LWCF is used to support voluntary partnerships with private landowners, including working landowners and agricultural producers. Since its creation, about eight million acres of land have been acquired by the federal government with the use of LWCF funds (Walls, 2020). These lands have been used to expand or establish national parks, refuges, forests, and other conservation areas. Additionally, the LWCF's stateside program has provided over 42,000 grants to state and local parks programs and has provided financial assistance to conservation and recreation areas in every county in the United States.

Challenges Facing Public Land Conservation

Land conservation has not been consistently prioritized by the federal government. During the Trump presidency, the DOI rolled back protections for endangered and at-risk species, prioritized the leasing of public lands to oil and gas companies, and censored information related to climate change from department communications (Bloomer et al., 2020). However, Trump was also responsible for the passage of the Great American Outdoors Act,

which made significant increases to the funding of the National Parks Service and the Land and Water Conservation Fund. The Biden administration also called for positive environmental change through the America the Beautiful initiative. This plan was released less than a month into Biden's tenure as president and aims to conserve 30% of the country's land and water by 2030. Despite his expressed interest in land conservation – and a promise during his campaign to prevent new oil and gas leases on federal land – Biden approved the Willow oil project in 2023. This oil drilling project is expected to generate millions of tons of greenhouse gasses and cause significant environmental degradation to the otherwise undisturbed National Petroleum Reserve in Alaska (Bohrer et al., 2023). While the specific actions and decisions of politicians can be difficult to predict, these two cases make it clear that continued conservation of public land is not guaranteed.

Additionally, population growth is expected to lead to a decrease in the amount of government-preserved land over the next few decades. By 2060, federal and state park land will decrease by 32%, and specially designated federal lands (lands designated as part of the National Wilderness Preservation System, National Park Service, and National Recreation Areas) are also expected to decrease by 32% (Cordell et al., 2013). Agriculture and raw resource production are projected to account for the majority of land loss, although some land will also likely be used for urban development. Land loss is likely to be exacerbated by issues faced by the LWCF. Currently, the LWCF's annual budget is capped at \$900 million; this amount was set in 1977 and has not been altered since (Walls, 2020). As the cost of land acquisition and development continues to rise, it seems likely that, without adjustments for inflation, the scale of what can be accomplished with LWCF funds will greatly decrease. The LWCF's budget is put at further risk by its dependence on revenue from oil and gas leases. If the federal government begins to pursue

green energy as a solution to climate change, this source of funding may eventually begin to dry up.

Public land conservation faces a variety of other challenges, including increased cases of wildfires and natural disasters, a lack of funding for land management agencies, and a push to transfer federal public lands back to the states. These issues, combined with the larger threats detailed above, make it clear that the future of public land may be on shaky ground. Although still vitally important to conservation, public lands alone cannot be relied upon to protect threatened species and environments. While not exempt from all of these challenges, private land – particularly agricultural land – has an ensured future in the United States. Private land conservation programs such as Working Lands for Wildlife offer a way to fill in the gaps and create a more holistic approach to conservation.

The Solution: Learning From Voluntary Private Land Conservation Programs

Wildlife across the country is at clear risk, and many species will find it increasingly difficult to survive as the impacts of climate change become more pronounced. Habitat preservation is essential to protecting these animals, but public land conservation alone cannot provide enough habitat for every species. Expanding WLFW into a larger program may be one of the best ways to protect America's native species. A possible expansion can be developed and evaluated by analyzing the successes and shortcomings of WLFW's various initiatives, as well as the strengths and weaknesses of other federal VPLC programs.

WLFW Current Programs: An Analysis

WLFW is a relatively young, small, and inexpensive initiative. However, it has already had a positive impact on conservation efforts, particularly those related to its target species and biomes. WLFW does not use general metrics of success or key performance indicators. Instead,

the success of each program is evaluated independently based on individual criteria. Some of this evaluation is carried out by WLFW or NRCS employees, but conservation organizations and outside researchers also provide important information and analyses. Overall WLFW success can be measured through funding increases and program expansion. However, because WLFW consists of a variety of different initiatives, each with different budgets, ranges, and conservation strategies, success is best determined on a program-to-program basis. Program success can be determined by measuring a variety of factors, including target species growth, acres conserved, and continued participation and program growth.

National Initiatives: Progress and Results

In order to guarantee the highest possible returns, WLFW primarily focuses its resources on the protection of eight national focal species and 16 state-identified projects. These species are selected due to their status (endangered and at-risk species are more likely to be selected) and their role in their biome. Focal species are typically highly dependent on the overall health of their habitat and require safe access to native plants, animals, and natural resources in order to survive. The strategies taken to protect these species will therefore usually benefit many other nearby native species. The success of national WLFW initiatives is all measured similarly, though some initiatives – particularly those that are older and those with higher budgets – tend to have more specific information regarding their growth and use of funds. Information on state-level initiatives is sparse, and analysis of them will therefore be excluded from this section of the paper. In this section, the scale and success of WLFW initiatives will be evaluated by assessing each initiative's funding, rate of growth, and rate of efficiency in completing its conservation goals.

Original Initiatives

Of these projects, the Sage Grouse Initiative (SGI) is the oldest, largest, and most well-researched. It is also the most well-funded – as of fiscal year 2022, NRCS invested a total of over \$620 million in SGI (Natural Resources Conservation Service, 2022b). SGI operates using the WLFW framework and aims to remove specific threats to their target species – the greater and Gunnison sage grouse – from rangelands. Rates of success are determined by measuring the number of acres from which these threats have been removed. Between 2015 and 2022, SGI successfully began conservation efforts on roughly 5.4 million acres of greater sage grouse habitat (Natural Resources Conservation Service, 2022b). In addition to this, over 1.5 million feet of livestock fences were marked or removed (sage grouse are often injured or killed by flying into fences). During these years, NRCS had been contracted to conserve about 5.5 million acres as part of SGI. This means that conservation efforts for nearly all contracted land were either completed or in progress by 2022. Despite SGI's efficiency in this area, the initiative has experienced a minor decrease in the rate of contract additions. Between 2010 and 2014, SGI added 1,129 contracts (225.8 contracts per year); however, between 2015 and 2022, SGI added 1,684 contracts (210.5 contracts per year) (Natural Resources Conservation Service, 2022b). Overall, however, it seems that SGI has been successful in meeting its conservation goals.

The second oldest WLFW initiative is the Lesser Prairie-Chicken Initiative (LPCI). LPCI was launched alongside SGI in 2010; however, it is a much smaller program. LPCI operates in five states (as compared to SGI's 11) and has received a total investment of \$47 million from the NRCS (Natural Resources Conservation Service, 2022c). As of 2022, they have entered into a total of 948 contracts. Between 2015 and 2022, LPCI has been contracted to conserve 473,754 acres and has fully or partially conserved 425,860 of these acres (Natural Resources Conservation Service, 2022c). This means that LPCI has been slightly less productive than SGI;

LPCI has only conserved 90% of their contracted lands, whereas SGI has conserved 98% of their contracted lands. LPCI has also seen a significant decrease in participation from agricultural producers. Between 2010 and 2014, LPCI entered into 821 contracts. However, LPCI entered into only 127 contracts from 2015 to 2022 (Natural Resources Conservation Service, 2022c). Although LPCI is still a fairly efficient and successful initiative, the apparent lack of interest from agricultural producers makes its future uncertain.

2012 Initiatives

Five additional initiatives were added when WLFW fully launched in 2012. Out of these programs, the gopher tortoise initiative is the largest and most well-funded, eclipsing even LPCI in terms of budget and scale. As of 2019, the NRCS had invested nearly \$56 million in the gopher tortoise program, with an additional total of \$17 million expected to be invested between 2020 and 2024 (Natural Resources Conservation Service, 2022a). The initiative has also successfully enhanced about 1.4 million acres of gopher tortoise habitat, despite contracts only encompassing about 866,364 acres (Natural Resources Conservation Service, 2022a). This is likely due to multiple forms of habitat enhancement occurring on the same acres of land, therefore causing acres to be counted multiple times. As with SGI and LPCI, contract growth for the gopher tortoise initiative has slowed. Contracts were added at a rate of 445 contracts per year between 2012 and 2019, but this rate decreased to 346 contracts per year between 2020 and 2022 (Natural Resources Conservation Service, 2022a). Overall, however, the gopher tortoise initiative is a highly successful program with a conservation efficiency rate of over 100%.

The golden-winged warbler initiative is a smaller but still highly successful program. As of 2022, about \$18 million had been invested into this program by the NRCS (Natural Resources Conservation Service, 2023a). Over 46,000 acres had been contracted for conservation, and

WLFW had entered into a total of 771 contracts (Natural Resources Conservation Service, 2023a). Unlike other programs, the warbler initiative is still growing at a fast pace; during the first ten years of the initiative, 670 contracts were created, but 101 contracts began in 2022 alone. Additionally, the warbler initiative has an efficiency rate of over 100% – conservation efforts for over 71,000 acres of habitat are either complete or in progress (Natural Resources Conservation Service, 2023a). This makes the warbler initiative potentially even more successful than the gopher tortoise initiative, despite its smaller budget and range.

The smallest of the 2012 programs is the southwestern willow flycatcher initiative. As of 2022, the flycatcher initiative had received a total investment of \$9.3 million from the NRCS (Natural Resources Conservation Service, 2022d). Only 119 contracts have been entered into as part of this initiative (Natural Resources Conservation Service, 2022d). However, there is no data on the years in which these contracts began, making it impossible to determine the program's rate of growth. Nearly 48,000 acres have been contracted for conservation as part of this initiative, but as of 2022, conservation efforts have only occurred on 8,792 (about 18%) of these acres (Natural Resources Conservation Service, 2022d). It is not immediately apparent why this initiative has been so unsuccessful, especially given the fact that the southwestern willow flycatcher is one of only two national target species that are classified as endangered by the U.S. Fish and Wildlife Service (the other being the southern population of lesser prairie-chickens).

Also added in 2012 were the New England cottontail rabbit initiative and the bog turtle initiative. The New England cottontail initiative was highly successful and will be explored in greater detail later in this section. Very little information has been released by NRCS and WLFW regarding the bog turtle initiative. This initiative operates in the Northeast and has reportedly conserved about 200 acres of wetland habitat since 2012. However, information on the NRCS's

financial investment in the initiative, number of contracts created, and number of acres contracted is not available. This is presumably due to the program's size – it is the smallest national initiative by far and is eclipsed even by some state initiatives. For this reason, the bog turtle initiative will not be included in any analyses.

Recent Initiatives

WLFW has two more recent initiatives: the monarch butterfly landscape conservation initiative and the migratory big game initiative. The monarch butterfly initiative is a fairly traditional and moderately successful WLFW program. It was adopted by WLFW in 2017 and has since had over \$15 million invested into by the NRCS (Natural Resources Conservation Service, 2023b). Since its launch, 1,021 contracts have been entered into, and conservation efforts have begun on over 500,000 acres across 10 states. Information is not available regarding the initiative's rate of contract growth or efficiency rate. The migratory big game initiative is an even younger program with a unique approach to conservation. Unlike other WLFW programs, which tend to focus on general habitat improvement for one target species, the migratory big game initiative has one specific goal – the creation of wildlife-friendly fences in migration corridors. This program is meant to benefit all migratory big game, including moose, elk, and deer. The big game initiative was founded in 2022 and underwent a major expansion in 2024. For this reason, specific data on its progress is sparse. However, the initiative's recent expansion likely means that it is doing well.

Initiatives: Other Successes

Apart from the metrics outlined above, the success of WLFW initiatives can also be measured through biome improvement and target species growth. As WLFW's ultimate goal is to conserve endangered and threatened species, successes in these areas are especially important.

However, conservation can be a slow, time-consuming process; it often takes years or even decades to begin seeing meaningful change. For this reason, several WLFW target species have not yet seen substantial improvements. Some older initiatives, however, have been extremely successful at meeting their conservation goals and have created marked improvements regarding the well-being of their target species and target biome.

One of the best ways to measure the overall health and stability of a North American species is its status under the Endangered Species Act (ESA). Under the ESA, species with low populations may be classified as endangered (at risk of becoming extinct) or threatened (at risk of becoming endangered). These classifications entitle species to certain legal protections. At the time of their introduction into the program, the majority of WLFW target species were either already listed under the ESA or were under evaluation for a potential listing. However, participation in WLFW has consistently had a positive impact on species' ESA classification. This is the case for both the greater sage grouse and gopher tortoise. Both of these species were considered candidates for listing as a threatened species at the time of their WLFW initiatives' launch. However, significant population growth – credited in both cases to habitat enhancement from WLFW – led to the removal of their candidate status. This occurred in 2015 for the greater sage grouse (Naugle, 2020) and 2022 for the gopher tortoise (Wilent, 2023). Although both species still require dedicated conservation efforts, the positive impacts of WLFW on their overall welfare is clear.

Even without legal recognition, there is still clear evidence of WLFW's positive impacts on target species. Research on golden-winged warblers reveals that habitat enhancement from WLFW has increased breeding populations both in and near WLFW sites. Between 2015 and 2017, scientists in the Appalachian region monitored the populations of golden-winged warblers

and compared their prevalence to studies conducted in the years just before WLFW's warbler initiative began. Although golden-winged warbler populations had increased somewhat on WLFW sites, their presence on nearby public lands had had a much more dramatic increase – their occupancy rate had nearly doubled (Litvaitis et al., 2021). This shows that WLFW habitat enhancement has a positive impact not just on working lands, but on entire environments.

Another highly significant WLFW success story is the case of the New England cottontail rabbit. The New England cottontail initiative launched in 2012 alongside the gopher tortoise, golden-winged warbler, and southwestern willow flycatcher initiatives. At the beginning of the initiative, the USFWS was in the process of evaluating the New England cottontail for potential listing under the ESA. However, WLFW's conservation efforts were so successful that, in 2015, it was determined that the cottontails did not meet the listing criteria and were not in need of federal ESA protections (McNiff, 2021). By 2021, cottontail populations had recovered so much that WLFW leaders made the decision to transition species conservation efforts from a national initiative to a state-level initiative (McNiff, 2021). This distinction meant that state and local level WLFW and NRCS employees were capable of meeting cottontail conservation needs without national support. New England cottontails are currently the only species to have been delisted as a national target species, making them a uniquely successful case.

Factors for Success

The overall success of WLFW national initiatives can be determined by evaluating the initiative's conservation efficiency rate and impact on its target species. Apart from the New England cottontail initiative, the most successful WLFW initiatives based on these metrics are the gopher tortoise initiative, golden-winged warbler initiative, and SGI. Out of these three, the gopher tortoise initiative is arguably the most successful as it has a conservation efficiency rate

of 161% and has had a clear positive impact on gopher tortoise populations (as is evidenced by their removal of their ESA candidate status). The least successful WLFW program is the Southwestern willow flycatcher initiative, which has an efficiency rate of only 18% and has had no measurable impact on flycatcher populations.

Cost and Scale

Cost seems to play a minimal role in the success of WLFW programs, as is seen in Table 2. The gopher tortoise and golden-winged warbler initiatives have the lowest costs per contract, potentially implying that a low cost per contract is actually correlated with a higher efficiency rate. However, the greater sage grouse initiative has the third-highest efficiency rate despite having the highest cost per contract by far. Success also cannot be explained by cost per acre contracted, as the Southwestern willow flycatcher initiative has the second-highest cost per acre contracted despite being the least successful program. Scale (in terms of acres contracted) also does not seem to be a relevant factor, as both the largest and smallest programs are both highly successful.

Region and Biome

Instead, WLFW initiative success seems to be highly correlated with each initiative's region and target biome. Based on the information in Table 3, it is clear that WLFW tends to be the most successful when operating in the Northeast and when conserving grassland and forest biomes. The Southwestern willow flycatcher initiative's relative weakness may be explained by the fact that it is an outlier in both region and biome type. Out of all WLFW initiatives at both the state and national level, only the flycatcher initiative operates in the Southwest and has a desert target biome. Although this bodes well for the success of newer initiatives (both monarch butterflies and migratory big game live in grassland biomes), WLFW leadership must determine

how to find success in different biomes if the program is to continue growing and improving. Southwestern deserts make up much of the country's rangeland, but they are also highly susceptible to harm from climate change and invasive species (Holchek et al., 2020). This may make WLFW efforts in this biome especially important in coming years.

Landowner Benefits

The most universal benefit for landowners who participate in WLFW is regulatory predictability. As was mentioned earlier, regulatory predictability ensures that producers and landowners who carry out WLFW sanctioned conservation practices will not have to take any additional conservation measures should the status of their target species change. It also protects farmers from repercussions for any harm that occurs to target species as a result of normal agricultural practices. However, each WLFW initiative also provides unique benefits to producers based on the conservation practices that are undertaken.

Financial and Material Benefits

Many of the conservation practices promoted by WLFW initiatives can provide valuable, concrete benefits to farmers and other landowners. One of the best examples of this is the migratory big game initiative's fence replacement program. Barbed wire fences, which are often used by ranchers to contain cattle, can cause serious injury to big game. In order to combat this, WLFW encourages ranchers in migration corridors to replace their barbed wire fences with wildlife-friendly ones and reimburses them for part of the cost. According to the NRCS, many producers in this area operate older ranches that have been in their families for generations (Randall, 2022). As a result, many amenities on the ranches – including fences – are in need of replacement or repair. WLFW's cost-sharing program makes replacing fences far less expensive, therefore giving ranchers a strong incentive to participate in the initiative. This has made the

initiative extremely popular and led to the replacement or modification of hundreds of miles of fencing in Wyoming alone.

Several Western initiatives, such as SGI, LPCI, and the southwestern willow flycatcher initiative all help ranchers to improve their grazing operations through habitat restoration. Both SGI and LPCI seek to remove trees and other woody species from grasslands in order to provide better nesting habitat for their target species. For ranchers, tree removal has the additional benefit of expanding rangeland and improving undergrowth, which creates better grazing materials for cattle (Randall, 2021a). The restoration of riparian areas – the preferred habitat of southwestern willow flycatchers – also improves grazing conditions by increasing drought resiliency. It is worth noting that while the flycatcher initiative is beneficial to farmers, these benefits primarily result from complete habitat restoration. Unlike SGI and LPCI, there are few benefits from the conservation practices themselves. Although the practices are not difficult to carry out and still make ranchers eligible for cost-sharing and regulatory predictability, this lack of immediate benefits may explain the program's lack of success.

For Northeastern species, initiative benefits differ slightly. Because the Northeast has fewer farms, catering to other industries – for example, logging and timber – is crucial. This strategy has been particularly embraced in the golden-winged warbler, New England cottontail, and monarch butterfly initiatives. All three of these species reside primarily in successional (young) forest habitats. In order to restore these habitats, WLFW encourages the planting of new trees and other native plant species. These young, biodiverse forests are more economically valuable than the single-species old-growth forests that have overtaken the region as a result of overlogging. This means that loggers directly benefit from successional forest restoration and are therefore incentivized to participate in relevant programs. Although unregulated logging can

have negative environmental impacts, responsible logging actually helps to maintain successional forest ecosystems – as long as new, diverse trees are planted to replace the ones that were cut down. The monarch butterfly initiative is doubly beneficial to landowners, as pollinators play a key role in the life cycle of domestic and wild plants.

Other Benefits

In addition to material and financial benefits, participation in WLFW programs also gives landowners the opportunity to connect with others and create positive environmental change. For many participants, these emotional benefits are an equally important incentive. Social connection in particular plays a key role in the gopher tortoise initiative. The main conservation practice for this initiative is prescribed burns – deliberate, controlled fires that replicate natural wildfires. These fires burn up leaf litter and play a vital role in the life cycle of the longleaf pine. They also make actual wildfires – which are often unpredictable and much harder to control – less likely. For landowners in longleaf country, carrying out prescribed burns has become a way to bond with neighbors (Pollard, 2023). A safe, effective burn requires many participants to keep the fire from getting out of hand. Although it is hard (and sometimes dangerous) work, participation in these burns is viewed as a positive social event and is often celebrated communally afterwards.

Many producers have also described feelings of satisfaction and happiness as a result of participating in WLFW. These feelings are especially common when the direct results of habitat restoration can be seen on a landowner's property, either by the addition of new animals and behaviors (such as nesting) or the absence of negative incidents (such as big game being trapped in fences). One WLFW participant – a landowner who aided in prairie-chicken restoration – positively described his reaction to the birds using his land for breeding: “it just makes a person feel good that you contributed to this project – that maybe you're doing something good for

Table 2*Scale, Cost and Efficiency of WLFW National Initiatives*

Initiative	Total Acres Contracted	Cost per Contract	Cost per Acre Contracted	Conservation Efficiency Rate
<i>Greater Sage Grouse</i>	9,700,864	\$220,645	\$63.98	98%
<i>Lesser Prairie-Chicken</i>	1,877,335	\$49,382	\$24.93	90%
<i>Gopher Tortoise</i>	866,364	\$15,856	\$84.19	161%
<i>Golden-Winged Warbler</i>	46,269	\$23,477	\$391.22	154%
<i>Southwestern Willow Flycatcher</i>	47,688	\$78,690	\$196.36	18%

Note: Cost per contract and cost per acre contracted were determined by dividing each initiative's total NRCS investment by the initiative's total contracts and total acres contracted respectively. These numbers are averages and are not exact. The data for Great Sage Grouse is from *Greater Sage Grouse 2022 Progress Report*, by Natural Resources Conservation Service, 2022. Copyright 2022 by NRCS. The data for Lesser Prairie-Chicken is from *Lesser Prairie-Chicken 2022 Progress Report* by Natural Resources Conservation Service, 2022. Copyright 2022 by NRCS. The data for Gopher Tortoise is from *Gopher Tortoise 2022 Scorecard* by Natural Resources Conservation Service, 2022. Copyright 2022 by NRCS. The data for Golden-Winged Warbler is from *Golden-Winged Warbler 2022 Progress Report* by Natural Resources Conservation Service, 2023. Copyright 2023 by NRCS. The data for Southwestern Willow Flycatcher is from *Southwestern Willow Flycatcher 2022 Progress Report* by Natural Resources Conservation Service, 2022. Copyright 2022 by NRCS.

Table 3*Region and Biome Type of WLFW Initiatives*

Initiative	Region	Biome Type	Conservation Efficiency Rate
<i>Greater Sage Grouse</i>	West	Grasslands (sagebrush)	98%
<i>Lesser Prairie-Chicken</i>	Midwest & West	Grasslands (prairie)	90%
<i>Gopher Tortoise</i>	Southeast	Forests (pine)	161%
<i>Golden-Winged Warbler</i>	Northeast	Forests (successional)	154%
<i>Southwestern Willow Flycatcher</i>	Southwest	Deserts (riparian zones)	18%
<i>New England Cottontail</i>	Northeast	Forests (successional)	No data; project complete

Note: The data for Great Sage Grouse is from *Greater Sage Grouse 2022 Progress Report*, by Natural Resources Conservation Service, 2022. Copyright 2022 by NRCS. The data for Lesser Prairie-Chicken is from *Lesser Prairie-Chicken 2022 Progress Report* by Natural Resources Conservation Service, 2022. Copyright 2022 by NRCS. The data for Gopher Tortoise is from *Gopher Tortoise 2022 Scorecard* by Natural Resources Conservation Service, 2022. Copyright 2022 by NRCS. The data for Golden-Winged Warbler is from *Golden-Winged Warbler 2022 Progress Report* by Natural Resources Conservation Service, 2023. Copyright 2023 by NRCS. The data for Southwestern Willow Flycatcher is from *Southwestern Willow Flycatcher 2022 Progress Report* by Natural Resources Conservation Service, 2022. Copyright 2022 by NRCS. The data for New England Cottontail is from *Thanks to Farmers and Forest Landowners, Peter Rabbit Makes a Comeback* by N. McNiff, 2021. Copyright Farmers.Gov, 2021.

them,” (Blum, 2021 p. 18). Many producers view participation in WLFW as a way to connect with nature and give back to the land that supports their livelihood. Although this is not always enough of a benefit to independently drive participation in the program, it is certainly appreciated by a good number of farmers and ranchers.

VPLC in the Federal Government: An Analysis

Although WLFW is relatively new, voluntary private land conservation itself has a long history in the United States. The first voluntary conservation programs were started by the U.S. Department of Agriculture in the 1930s. These programs were primarily operated on a small-scale, short-term basis and involved the temporary retirement of cropland. During the latter half of the twentieth century, new, significantly larger VPLC programs were created, and several early programs were greatly expanded. Today, the majority of VPLC programs are still operated by the USDA. While these programs share many qualities with WLFW, there are several key differences in both their operations and approaches to conservation.

Conservation Reserve Program

Overview of Program

The Conservation Reserve Program (CRP) is a traditional VPLC program operated by the USDA and administered by the Farm Service Agency (FSA). CRP was founded by the 1985 Food Security Act and, at the time, was intended to address erosion and soil nutrient depletion through the temporary retirement of at-risk cropland. Today, CRP is also focused on improving water quality, protecting wildlife, and restoring natural habitats. Agricultural producers interested in participating in CRP may submit an application with their local FSA office, and will then have their lands evaluated by an FSA agent. Similarly to WLFW, enrollment in CRP is fully voluntary but not necessarily guaranteed; agricultural producers are only selected if their land

meets CRP's enrollment criteria. Selected producers will be offered a ten-to-fifteen-year contract to retire a portion of their farmland in exchange for a yearly rental payment from the government.

Unlike WLFW, enrollment in CRP is not always guaranteed, even if an interested producer's land meets all the requirements. Producers may choose to enroll in one of several programs. General Signup has the laxest eligibility standards, but it is also the most competitive. General Signup applications are accepted for a period of about six weeks every year. All applications are evaluated and ranked according to the Environmental Benefits Index (EBI), which assigns all pieces of land a point score based on various environmental factors (Farm Service Agency, 2023a). Each year, a new point threshold is determined by the Secretary of Agriculture, and offers are made to all applicants with land that meets or exceeds this threshold. Continuous Enrollment takes an opposite approach; applications are open year-round and all applicants that meet the eligibility standards are accepted. However, eligibility standards are much stricter. Land must be suitable for one of 24 specific conservation practices, and these practices must be carried out on the land if it is accepted (Farm Service Agency, 2024). In contrast, producers accepted under General Signup are only required to retire their farmland; however, they are offered additional economic incentives if they choose to carry out further conservation efforts on their land.

A third enrollment option, Grassland CRP, combines elements of both General Signup and Continuous Enrollment. However, this program has a specific focus on the conservation of grasslands. Both cropland and grazing land are eligible for CRP; this is in contrast to both General Signup and Continuous Enrollment, for which only cropland is eligible. Like General Signup, Grassland CRP accepts applications for a limited time each year and does not approve

every application. Land is evaluated based on a variety of environmental factors (including the land's EBI score), and applications with most beneficial land are accepted into the program (Farm Service Agency, 2023b). Accepted applicants are then expected to carry out conservation plans on their land in order to protect and maintain natural grassland habitat. Unlike General Signup and Continuous Enrollment, land retirement is not required; both grazing and crop production can continue to occur as long as the conservation plan is adhered to. In this way, Grassland CRP is the most similar program to WLFW.

In order to encourage the use of productive farmland and avoid competition with local farmland markets, the government intentionally sets CRP rental rates to be slightly lower than the average rate in the county they are renting from. For General Signup, rental rates are not to exceed 85% of the county average, and for Continuous Enrollment, rental rates are not to exceed 90% of the county average (Myers, 2021). This means that farmers will only seek to apply with land that has low economic or agricultural value, ensuring that the most productive farmland stays in use. This provides a “best of both worlds” scenario for producers and the government – producers can make a stable, ensured profit off their least productive lands and the government can meet conservation goals with only a marginal impact on food production.

Impacts and Future

CRP has been hugely successful in creating positive environmental impacts over the past 38 years. According to the FSA, CRP has succeeded in preventing the erosion of over nine billion tons of soil, made significant reductions to nitrogen and phosphorus runoff, and restored over three million acres of natural wetland habitat (“CRP 35-Year Anniversary”, n.d.). Additionally, habitat restorations sponsored by CRP are responsible for the sequestering of about 49 million tons of greenhouse gasses annually (“CRP 35-Year Anniversary”, n.d.). These

impacts are made possible by CRP's high enrollment numbers. In 2023, CRP boasted a total enrollment of over 667,000 agricultural producers ("USDA's Conservation Reserve", 2023). As there are estimated to be about two million farmers in the United States (U.S. Department of Agriculture, 2024), this means that nearly a third of all farmers in the nation participate in CRP.

Despite its successes, CRP has been faced with serious challenges over the past several years. Since 2011, CRP has experienced a steady decline in enrollment (Barbarika and Farm Service Agency, 2021). Although the reason for this is unknown, some officials theorize that it could be due to the increased prices of food and other commodities (Myers, 2021). Rising crop prices may make it more economically beneficial for farmers to use their land for crop production rather than retiring it as part of CRP. CRP has also been negatively impacted by recent global events, most notably Russia's invasion of Ukraine ("USDA to Allow", 2022). As Ukraine is a major producer of agricultural staples, the invasion led to a global food supply shortage. In order to address this, the USDA allowed producers in the last year of their CRP contract to voluntarily terminate the contract and resume agricultural production on formerly retired land.

These two instances show that CRP is highly susceptible to global and national events, such as inflation, international conflict, and food supply shortages. Due to this, it likely cannot be relied upon as a primary method of conservation should climate change and population growth continue to place stress on the global food supply chain. Because most CRP enrollment options require a full retirement of cropland, it seems likely that significant threats to food security could cause CRP to be scaled back or even halted entirely. Conservation programs that allow for the continued use of agricultural land may fare better under these circumstances. However, it is also worth noting that partial conservation programs do not necessarily offer the same environmental

benefits as CRP, particularly in regards to soil erosion and nutrient depletion. Ultimately, while the future of CRP is still uncertain, its current state and approach to global challenges place the program on shaky ground.

Other NRCS Programs

In addition to WLFW, the NRCS also operates a wide array of voluntary conservation programs and initiatives. Three of the most significant programs are the Environmental Quality Incentives Program (EQIP), the Conservation Stewardship Program (CSP), and the Agricultural Conservation Easement Program (ACEP).

Environmental Quality Incentives Program

EQIP was created by the 1996 Farm Bill as a way to promote conservation practices among farmers through technical assistance and cost-sharing. Farmers who are accepted into the program work directly with NRCS employees to develop conservation plans that both address issues on the farmer's land and further one of NRCS's four conservation initiatives. Typically, farmers receive at least a partial reimbursement for any labor and resources used when carrying out these conservation plans. Like WLFW (and unlike CRP), farmers are able to continue using their lands for production while involved in EQIP. EQIP is a "parent" program for WLFW; WLFW's structure and strategies are primarily based on those of EQIP, although the programs ultimately differ in operations and incentives offered to farmers.

Like CRP, EQIP is a competitive program that accepts only a limited number of applicants. Interested farmers may apply for one of EQIP's four initiatives: the High Tunnel Initiative, Organic Initiative, Air Quality Initiative, or On-Farm Energy Initiative. Each of these initiatives centers around a different NRCS conservation goal and approaches this goal using different practices. For example, the Air Quality Initiative seeks to improve air quality through

the replacement of orchard heaters, whereas the High Tunnel Initiative encourages farmers to build high tunnels (a type of greenhouse) to extend their growing season while reducing the usage of pesticides, water, and energy. Once farmers have submitted an application, their operations are evaluated using the Conservation Assessment Ranking Tool (CART). CART ranks applications based on their cost-effectiveness, ability to effectively address one or more national conservation priorities, and magnitude of benefits for the farmer's local environment and community (Natural Resources Conservation Service, 2022e). In 2023, 25.4% of applicants were accepted into the program (Happ, 2024). Once accepted, producers can enter into a contract with the NRCS; the durations of these contracts vary, but they usually last no longer than 10 years.

EQIP is a highly popular program that has seen consistent growth over the past few years. In 2022, EQIP received a total of 121,954 applicants (Happ, 2024). Of these applicants, 31,856 farmers were accepted for an acceptance rate of 25.9%. The Inflation Reduction Act, passed in 2022, allocated more money for NRCS programs and allowed the acceptance of more applicants. This was immediately reflected in 2023, during which 34,222 applications were accepted. However, because the number of total applications also increased to 134,450, EQIP's acceptance rate for this year decreased slightly to 25.4%. This shows that, despite its growth and increased budget, EQIP's ability to address the conservation needs of farmers has actually decreased. For conservation programs, a low acceptance rate is not a positive sign; instead, it shows that there is a high demand for the program that is not being met. It is likely that significant changes must be made to EQIP's budget in order for the program to meet its full potential. This would likely include both a budget increase through the upcoming Farm Bill or an act of Congress as well as a lower cap on payments per contract.

Conservation Stewardship Program

CSP takes a different approach to incentivizing conservation projects on agricultural lands. Unlike other programs, CSP works directly with farmers who have already begun conservation work on their land and are interested in expanding their capabilities in this area. Although some conservation practices undertaken as part of CSP will also have agricultural benefits, CSP has a unique conservation-first focus. Farmers who participate in CSP do so primarily for the sake of improving conservation efforts on their land. Apart from this, the benefits of the programs are similar – the NRCS provides farmers who are involved with CSP with an individualized conservation plan, and these farmers are also aided in carrying out the plan through technical assistance and cost-sharing. Like EQIP, CSP is a competitive program that accepts a limited number of applications.

However, CSP also faces similar challenges to EQIP. Due to its unique focus, CSP receives a much lower number of applications than EQIP – about 35,683 farmers applied in 2023 (Happ, 2024). Despite this, acceptance rates are relatively similar. CSP is able to accept a slightly higher proportion of applicants; in 2023, about 11 thousand applicants were accepted for a total acceptance rate of 31%. Although this is still a low acceptance rate, it is a marked improvement over 2022; in this year, despite having only 32,122 applicants, less than 25% of farmers were accepted into the program. In the case of CSP, it is clear that the Inflation Reduction Act has had a positive impact on the program's capacity.

Agricultural Conservation Easement Program

In addition to the above programs, the NRCS also offers conservation easements through the ACEP. This program helps to protect both agricultural land and natural habitats by limiting what activities can occur on enrolled land. Landowners are financially compensated for their

participation in the program. Depending on the specific initiative that a landowner chooses to enroll in, permitted activities may differ; for example, the Agricultural Land Easement limits only non-agricultural activities, whereas Wetland Reserve Easements disallow all activities, including agriculture. Landowners can enroll in this program for 10 years, 30 years, or permanently. Benefits differ depending on contract length; the longer a contract is, the more money a landowner will receive. For example, landowners with permanent contracts will be paid for 100% of the value of their land, whereas landowners with 30-year contracts are only paid 50%-75% of their land's value (U.S. Department of Agriculture, 2021). Landowners are also reimbursed for any conservation practices that they carry out on enrolled land.

Like EQIP, CSP, and CRP, ACEP is a competitive program. Applications are ranked using CART, and only those that rank highly enough will be invited to enroll. However, unlike these programs, ACEP has recently received a financial lifeline through the Inflation Reduction Act. Through this act, ACEP was given an additional \$1.4 billion in funding over the next five years. This new funding has allowed the NRCS to expand its priority areas, which should increase its impact and allow more landowners to be accepted into the program. The NRCS has also recently begun the process of streamlining ACEP to make it more effective and accessible. These changes will help to grow ACEP even more, potentially making it into one of NRCS's most significant conservation programs.

Recommendations

Among VPLC programs, WLFW is unique in its dedication to land and habitat conservation above all else. Whereas other programs focus on conserving certain aspects of the environment – for example soil, air quality, or water quality – the species-centric approach of WLFW necessitates that all of these issues are addressed. WLFW therefore encourages

conservation practices that can restore entire ecosystems. WLFW's focus on comprehensive habitat restoration puts it on par with many public land conservation programs, particularly those that allow for commercial land use. However, unlike these programs, WLFW guarantees that the lands involved are used for beneficial and practical purposes (as opposed to fracking and oil drilling). Due to this, it seems highly possible, WLFW could become one of the USDA's flagship conservation programs under the right conditions. If WLFW continues to grow and meet its conservation goals, the program could even be expanded to support conservation on lands used for non-agricultural industries.

Initial Expansion

Expanding WLFW to match the scale of CRP – or even EQIP – would take significant time and resources. WLFW is still a relatively small program – even the largest initiatives boast only a few thousand contracts. Its small size allows it to avoid many of the challenges faced by larger programs like CRP, EQIP, and CSP. At this time, WLFW is able to accept virtually all applications that meet its criteria despite the highly detailed and individualized nature of the program. This is because the resources allocated to WLFW match the current level of producer interest. Maintaining this balance is key, but it has not been achieved by any other major VPLC program. CRP, for example, maintained an open admissions system for the first several years of its operation, but was forced to switch to competitive enrollment when interest began to outpace funding (Hellerstein, 2017). Although an implementation of competitive enrollment is certainly not the worst possible outcome for WLFW – after all, it would mean that the program had grown significantly – it ideally should be avoided.

Funding

In order to avoid a mismatch between resources and interest, WLFW's budget must be increased. Any added funding would primarily come from the Farm Bill and, potentially, a significant budget increase to the NRCS. WLFW is codified in the Farm Bill, making this funding technically attainable. Additionally, recent increases to the EQIP, CSP, and WLFW budgets show that there is government interest in increasing the scale of these programs. However, because the Farm Bill is only updated every five years, program expansion is generally a slow process. Most VPLC programs have been gradually expanded over several decades, and it is likely that WLFW's growth would occur in the same way.

Farm Bill funding is also heavily dependent on the political makeup of Congress and the presidential administration. If there is little political interest in conservation during the passage of a Farm Bill, it is unlikely that WLFW and the NRCS will see much of an increase in their funding. For this reason, WLFW should continue building strong partnerships with non-government organizations. Since its inception, WLFW partners have assisted in financial responsibilities like cost-sharing and have staffed scientists that work on WLFW's initiatives. One nonprofit organization – Pheasants Forever – accepts donations that go directly towards funding its work with WLFW. Although these partnerships should not be depended upon as a primary source of funding, they may provide support for WLFW if funding lags between Farm Bills.

Program Promotion

Another challenge to WLFW's expansion is further promotion of and participation in the program. This is an issue that WLFW is already struggling to cope with – nearly half of all national initiatives have seen a slowed rate of growth within several years of their launch. WLFW is a more difficult program to promote because, in many cases, the benefits offered are

less immediate. Regulatory predictability is a unique advantage to participation, but it on its own may not be desirable enough to encourage farmers to apply and partake in the program. This incentive is further weakened as regulatory predictability will only activate if certain criteria are met – in this case, if the federal status of the initiative’s target species is changed to endangered. This is never guaranteed to happen, and farmers may prefer to implement conservation practices only if a species’ status changes, rather than doing so proactively. As was discussed earlier, WLFW’s other benefits may also not be immediate. This means that, unlike other VPLC programs, farmers are less likely to participate if they do not have independent interest in conservation.

WLFW leadership can also make strategic choices in order to further promote the program and expand its scope. Although WLFW relies on landowner interest in conservation, many farmers and ranchers do have this interest. Research suggests that, even with no financial incentives, 50.2% of farmers will choose to engage in simple conservation activities if given the resources to do so (Thakur and Hurley, 2022). Additionally, some producers see participation in WLFW as a way to create recognition for the environmental stewardship that they are already carrying out. In a video uploaded by the Arizona NRCS, Pat Browning, a rancher participating in the Southwestern willow flycatcher initiative, states that “we wanted to... establish the fact that cattle were an asset, not a detriment, to native species, including the willow flycatcher,” (Arizona USDA Natural Resources Conservation Service, 2015). Browning then encourages other ranchers to participate in the program, stating that it is a way to show the outside world that they are responsibly managing the ecosystems they work in.

As it seems that there is already a high potential for producers to be interested in the program if they are familiar with it, the main goal of WLFW leadership should therefore be to

raise awareness. One easy way to do this may be to target landowners who have already worked with larger VPLC programs, such as CRP or EQIP. Participation in WLFW may be offered either alongside enrollment in one of these programs or as a way to continue conservation after a landowner's contract has ended. Participation may also be offered as an alternative to landowners who were not accepted into CRP or EQIP. Because applicants' lands will have already been evaluated, WLFW staff can reach out directly to producers whose land meets the requirements for a particular initiative. As CRP is handled by the FSA, this will require some collaboration between FSA and NRCS employees; however, since these are both USDA agencies, this should be achieved fairly easily.

Although not formalized, a transition from CRP to NRCS programs has already proved successful for some landowners. One notable case is that of Rex Schmidt, a farmer and rancher in Kansas. Schmidt enrolled over one thousand acres of land in CRP, temporarily retiring it from crop production (Randall, 2021b). When his contract expired, Schmidt utilized WLFW and EQIP to transition this land to permanent grazing pasture. Maintaining pasture is easier and less expensive than maintaining cropland and, because it is full of native grasses, it is far better for wildlife and the environment. In cases like these, a smooth transition between VPLC programs is ideal for all participants; however, it is entirely the burden of the landowner to make that transition happen. WLFW can increase participation and achieve conservation goals more efficiently by reaching out directly to CRP and EQIP participants and gauging their interest in the program.

Other Issues

Operations at a larger scale may be difficult due to WLFW's nature. WLFW, like other NRCS programs, offers both monetary and technical assistance. Conservation plans are

individually designed by NRCS agents and are monitored throughout their implementation. This is in contrast to programs like CRP, which are purely monetary and require little involvement from FSA agents after land is evaluated and accepted. While the absence of rental payments means that WLFW may be less expensive to fund, it is more individualized and time-consuming and likely requires a greater amount of employee labor. Any significant increases in capacity therefore must be accompanied by the hiring of new NRCS employees. Although this will require additional funding, it is essential to ensure that WLFW remains effective. NRCS agents must be able to devote sufficient time to each conservation plan and form positive relationships with landowners and other local partners.

Fortunately, the challenges of other major VPLC programs – particularly CRP – are not directly applicable to WLFW. Because WLFW does not require the retirement of involved farmland, the program is largely unimpacted by economic disturbances and disruptions to food security. In fact, conservation practices that are carried out as part of WLFW typically boost productivity. This means that unlike other VPLC programs, WLFW will not be threatened by increased agricultural or land development needs. So long as WLFW's capacity increases along with these factors, climate change has the potential to actually increase the program's growth.

Secondary Expansion

Because WLFW focuses primarily on habitat restoration, it also has a unique capability to be applied to sectors other than agriculture. As WLFW is a USDA program, this may seem counterintuitive. However, this can be achieved by strategically targeting private lands that are used for wildlife-associated recreation – for example, hunting, fishing, and wildlife watching. Expansion to these industries could be extremely valuable for conservation; according to Macaulay (2016), nearly a third of all private land in the United States is used for wildlife-

associated recreation. Although a transition away from agricultural land may be difficult, successes in partnering with the Northeastern logging and timber industries prove that WLFW can realistically expand its scope to non-agricultural working lands.

Integrating non-agricultural lands into WLFW would pose a number of challenges. WLFW is structured to support agricultural producers, so landowners in other industries would reap fewer benefits from participation in the program. These landowners may be eligible for cost-sharing when implementing conservation practices, but would not benefit from the agricultural improvements offered by WLFW. Depending on what the land is used for, they may also not be eligible for regulatory predictability. Although this will likely make participation in the program less enticing, there are several ways that this can be combated.

First, WLFW and the NRCS must find new ways to encourage landowner participation in the program. Theoretically, this should not be difficult as these landowners will likely already have an independent interest in conservation. The proper management of natural habitats is essential to all wildlife-associated recreation – without proper access to food, water, and safe places to breed and rear young, the population of local species will inevitably decline. However, it will still be worthwhile for the NRCS to launch a public education campaign focused on the benefits of habitat restoration and reach out directly to recreational landowners. NRCS leadership can model their strategies after those that were used to encourage landowner participation in CRP and EQIP when these programs were first launched.

If landowners need further incentives to become involved in the program, additional financial benefits may be offered. One potential system may be a small yearly payment. This system would function similarly to CRP – landowners who participate in the program may receive an annual stipend from the government based on the estimated market value of their land.

As landowners would still be using and profiting from their lands, the stipend would have to be significantly lower than those offered by CRP. However, offering this sort of incentive would require additional funding, which may make it hard to maintain if interest in the program grows. Depending on how popular the program is – and how valuable landowners find the stipend to be – the program may have to begin a competitive enrollment process fairly early on.

An alternative method may be the implementation of use-value property tax policies. These policies allow land to be evaluated and taxed based on its current value, rather than its market value. This reduces the tax burdens of eligible landowners. Currently, use-property tax policies only apply to agricultural land, and would have to be expanded to apply to recreational land as well. Some conservationists have already called for this expansion (Macaulay 2016), but making it a political reality is likely still a long way off. Additionally, this sort of benefit could be highly complex to implement, and would likely require direct collaboration between the NRCS and U.S. Department of the Treasury agencies. Although working this sort of financial benefit into the program would be time consuming, it is likely one of the most promising alternative benefits to regulatory predictability.

Because WLFW is a USDA program that is funded by the Farm Bill, it is possible that direct expansion to non-agricultural lands may not be feasible. In this case, WLFW's framework may be applied to a new program within a different government department or agency. One of the most promising agencies is the FWS, as WLFW already has a close partnership with this agency. FWS is responsible for the management and protection of threatened and endangered species, and therefore already has the resources and experience necessary to manage conservation efforts on private lands. Other DOI agencies, such as the BLM, may also be considered. Currently, the DOI has no VPLC programs. This would make any expansion of

WLFW into the DOI completely novel, and it is therefore likely to be a slow process. However, if it is successful, it could encourage the creation of more VPLC programs in the DOI and, potentially, in other federal departments.

Conclusion

As climate change and population growth alter the ways that land is used in the United States, new methods of conservation will become vital. These methods must focus not just on conserving the land itself, but also on protecting the native plants and animals that live there. Currently, most conserved land is owned and maintained by the federal government. This has been a relatively successful method of conservation, and federally owned lands have provided a variety of services to both the government and the American people. However, public land conservation faces an uncertain future. The amount of publicly owned conserved land is projected to decrease over the next several decades, and even land that is still technically conserved may be increasingly leased out for oil drilling, mining, or other damaging forms of resource extraction. Even a federal switch to green energy may prove problematic for land conservation, as land acquisitions by the FS, FWS, NPS, and BLM are all funded by oil drilling and natural gas leases on federal land.

VPLC programs offer a way to protect land, plants, and animals without relying on public land conservation. Although they are still reliant on congressional funding and are therefore susceptible to political attitudes and changes, the fact that they support and are popular with agricultural producers makes them less likely to be defunded or scaled down. Among VPLC programs, initiatives like EQIP, CSP, and WLFW have a particularly promising future. This is because they do not require farmers to take any of their land out of production; in fact, the technical and financial assistance provided by these programs often allows producers to improve

their farms and increase their capacity for production. WLFW's holistic approach to habitat restoration makes it an especially important program. However, it is also one of the USDA's smallest VPLC programs. This means that there is strong potential to expand WLFW into a flagship program for the NRCS, and, ideally, the USDA as a whole. In order to do so, NRCS leadership must address and overcome several challenges faced by both WLFW and other VPLC programs.

In order to make sure that interest in the program does not significantly outpace WLFW's actual resources and capacity, funding must be increased. This will be a slow process that will likely be achieved through the passage of several Farm Bills. In the meantime, WLFW can rely on its partnerships with non-governmental organizations. WLFW leadership can also seek to increase interest in the program by reaching out directly to farmers who have already participated or expressed interest in other VPLC programs. These farmers already have an interest in conservation, and WLFW may be able to assess their applicability for the program without having them go through another formal application process. Creating a formalized way to transition farmers between VPLC programs can help WLFW find and enroll agricultural producers more efficiently.

If WLFW's initial expansion is successful, it may be able to be further expanded to target non-agricultural lands, primarily those used for wildlife-associated recreation. WLFW can increase interest from these landowners by offering new benefits such as annual stipends or use-value property tax policies. Expanding WLFW out of the agricultural sector would be an admittedly complicated process, and may in fact be impossible without involving a different government department such as the DOI. However, if this transition is handled smoothly and

successfully, this could lead to the creation of a new VPLC pilot program outside of the USDA, which would have massive implications for the future of private land conservation.

Ultimately, while the future of WLFW is promising, it cannot be precisely predicted. Its potential for growth is clearly recognized by the USDA, as is made evident by WLFW's codification in the 2018 Farm Bill and the additional funding assigned to it in 2023. Based on this, it seems inevitable that the program will be expanded to some degree. However, the success of this expansion, as well as the political attitudes of Congress and future presidential administrations, will have an impact on the program's ultimate future. Whether or not it will be expanded out of the agricultural sector remains to be seen. Despite this uncertainty, it is clear that WLFW is a strong program that will continue making positive impacts on land, plants, and animals for years to come.

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