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Submitted via email

Dear Ms. Selbo,

Defenders would like to commend the U.S. Fish and Wildlife Service (Service) for issuing a draft policy for review on strategic growth of the National Wildlife Refuge System (79 Fed. Reg. 4952, January 30, 2014). This policy is sorely needed and long overdue. As the Service points out in the release of the draft policy, the complex conservation challenges of the 21st and the limited budgetary resources for conservation require the Service to be strategic in all facets of conservation, particularly when making long-term investments like land protection. We agree that the refuge system needs to make focused investments at meaningful scales.

Climate change in particular requires the Service to reevaluate its approach to land protection policies. The National Fish, Wildlife and Plants Climate Adaptation Strategy (Wildlife Adaptation Strategy), co-developed by the Service, states this new challenge well:

> Increasing the number, quality, and size of conservation areas can increase the opportunities for individual species to adapt to climate change, and also make it more likely that native biodiversity will be conserved. Some species' habitat under climate change may be well outside their current or historic range. Healthy and biologically diverse ecosystems are likely to better withstand or adjust to the impacts of climate change. Increasing the number (redundancy) and distribution of protected fish, wildlife, and plant populations is important for the same reason. Establishing larger and more hospitable conservation areas for species to transition to will also increase opportunities for species to create new assemblages of species that are better able to persist in a dynamic climate.
>
> Another challenge will be providing corridors between conservation areas so that species can freely move to new locations with suitable habitat. Protecting and restoring large blocks of habitat and using linkages and corridors to develop networks for movement will facilitate connectivity. Riparian corridors, such as floodplains, are useful as a conduit for migratory

species and for providing access to water. In addition, appropriate transitory or "stopover" habitat for migratory species can promote biological connectivity between non-physically connected areas.

The first goal of the Wildlife Adaptation Strategy emphasizes the need for identifying and conserving areas for an "ecologically-connected network" of public and private terrestrial, freshwater, coastal, and marine "conservation areas that are likely to be resilient to climate change and to support a broad range of species under changed conditions." In addition, the Wildlife Adaptation Strategy calls for the conservation and restoration of "ecological connections among conservation areas to facilitate fish, wildlife, and plant migration, range shifts, and other transitions caused by climate change." This goal was recently adopted by all the Landscape Conservation Cooperative Coordinators: "LCCs support the creation of an ecologically connected network of landscapes, as defined in the National Fish, Wildlife and Plants Climate Adaptation Strategy."[1] This should be the overarching goal of the Service's Strategic Growth Policy, identifying the refuge system's specific role in achieving this goal across the nation with partners.

In addition, this policy should be used to facilitate implementation of Secretarial Order 3330's commitment to landscape-scale mitigation in order to "identify and facilitate investment in key conservation priorities in a region" and "ensur[e] the durability of mitigation measures over time."

Below are a set of overarching comments, followed by section-by-section comments we believe would help improve the draft policy.

The "trust species/resources" approach embedded in the policy is too narrow for the National Wildlife Refuge System

Section 5.8 of the policy, perhaps the most important section, identifies recovering threatened and endangered species, implementing the North American Waterfowl Management Plan and conserving migratory birds of conservation concern as the sole focus of acquiring interests in habitat protection. The Service generally refers to this suite of species as its "trust species", with notable exclusions of certain marine mammals and inter-jurisdictional fish species that are also regularly included in this term of art employed by the Service. We understand the attraction of limiting the focus of refuge system management and land protection to "trust species" or "trust resources." It allows the Service to better align all of its programs, many of which are indeed legislatively focused on a certain subset of biodiversity, from migratory birds, to endangered species, to wetlands.

However, as outlined extensively in Fischman and Adamcik (2010)[2], this focus has no basis in National Wildlife Refuge System law. In fact, the National Wildlife Refuge System Improvement Act of 1997 quite specifically does not limit the biological focus of the refuge system, rather it does

[1] See Gulf Coastal Plains and Ozarks Landscape Conservation Cooperative Newsletter, available at http://gcpolcc.org/profiles/blogs/an-ecologically-connected-network-of-landscapes

[2] Fischman, Robert and Adamcik, Robert, Beyond Trust Species: The Conservation Potential of the National Wildlife Refuge System in the Wake of Climate Change (2010). Natural Resources Journal, Vol. 51, p. 1, 2011; Indiana Legal Studies Research Paper No. 159. Available at SSRN: http://ssrn.com/abstract=1561948

the opposite. The legislative mission of the refuge system is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." This mission does not single out which species or habitats the refuge system is for. Additionally, the Improvement Act requires the Secretary of the Interior (acting through the Director of the Service) to "ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans."

Finally, and perhaps most importantly in the context of this policy, the Improvement Act calls upon the Service to "plan and direct the continued growth of the System in a manner that is best designed to accomplish the mission of the System, to contribute to the conservation of the ecosystems of the United States, to complement efforts of States and other Federal agencies to conserve fish and wildlife and their habitats, and to increase support for the System and participation from conservation partners and the public." We find it disappointing the draft policy excluded the highlighted portions of this provision. These mandates provide critical direction directly relevant to this draft policy, and should be incorporated and implemented in the final policy statement. Importantly, this provision, in its entirety, provides the legislative authorization for the refuge system to support the ecologically-connected network of conservation areas identified in the Wildlife Adaptation Strategy. In our view, this important provision of law guides the Service to assess the entire "conservation estate" (the existing mix of federal, state, tribal, local, and private conservation lands and waters) and build upon it, focusing on those ecosystems that are not sufficiently protected by our existing conservation network.

The Strategic Growth Policy should include considerations for maintaining and restoring ecological integrity, resiliency and biodiversity

We recommend that the final Strategic Growth Policy include a "coarse filter" to identify areas whose protection will contribute to high ecological integrity and a "fine filter" to identify areas important for the recovery of at-risk species. It should prioritize parcels that would add representative, redundant, and irreplaceable conservation targets to the refuge system where they are not adequately protected within the existing conservation estate. Land acquisition projects should not be expected to conserve a static suite of species over the long term, particularly in an era of rapid climate change. Therefore, the strategic growth framework should be designed to evaluate the long-term viability of specific conservation targets for a given acquisition project and consider the climate risks of individual projects, and build connectivity across the landscape.

Service policy defines biological diversity as "[t]he variety of life and its processes, including the variety of living organisms, the genetic differences among them, and communities and ecosystems in which they occur," and biological integrity as "[b]iotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms, and communities." The U.S. Forest Service's

(USFS's) 2012 National Forest Management Act Planning Rule,[3] with its adoption of ecological integrity as the agency's management objective at the ecosystem scale, provides a useful example for capturing these terms in Refuge system policy. In adopting this framework, the USFS acknowledges two important points: 1) that ecological integrity is well understood and defined within the scientific literature[4] and 2) that the concept is also employed by the National Park Service and Bureau of Land Management within the Department of the Interior, stating that "aligning approaches across the broader landscape will facilitate an all-lands approach to ecological sustainability." This is a critical point. To date, agencies, in particular the Service, have developed their own approaches to landscape-, ecosystem-, and ecoregional-scale assessment, planning, and management. The only way to effectively and efficiently conserve biodiversity facing rapid ecological change is for conservation partners across jurisdictions to share a common approach to addressing these complex threats, recognizing the unique mission, roles, capacity and mandates of each partner.

Under the USFS planning rule, ecological integrity is to be evaluated and monitored by assessing the departure of key ecosystem characteristics from historic (or future expected) natural ranges of variation, and resiliency is reflected in the ecosystem's ability to return to this range in the face of natural or human-induced perturbations. According to the USFS, managing for ecological integrity at the ecosystem or community scale is expected to provide ecological conditions in support of 80-90% of species within the planning area. This degree of conservation coverage from the "coarse-filter" approach is generally accepted and widely applied in conservation planning.

For the purposes of strategically growing the refuge system, we recommend that the Service work with the conservation science community, as well as other land management agencies[5] and non-governmental conservation organizations, to develop standardized methods for identifying areas of high ecological integrity and strategic areas for restoring ecological integrity. High priorities should include parcels whose acquisition (either through purchase or transfer of management authority) will contribute to landscape-scale structure, function, composition, and connectivity. While no single acquisition parcel can secure the ecological integrity of a given landscape, the goal is to develop a rational process for acquiring a set of lands that in total will increase landscape-level integrity and resiliency.

The refuge system's strategic growth framework should prioritize opportunities to enhance ecological conditions at the landscape scale for the purposes of sustaining and recovering native

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[3] See http://www.fs.usda.gov/planningrule.

[4] The planning rule defines "ecological integrity" as: "The quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence."

[5] In particular, the Service should work with the Bureau of Land Management (BLM); the BLM is currently engaged in an agency wide process to identify lands for avoidance and compensatory, offsite mitigation on our public lands. It will be critical to the success of the BLM's effort that the two agencies work collaboratively to identify lands and management actions that can be taken to achieve a true "landscape-scale approach" consistent with Secretarial Order 3330.

biodiversity, including imperiled species. However, an ecosystem conservation approach to strategic growth must be coupled with a "fine filter" species-level approach to ensure that at-risk elements of biodiversity are not ignored, and in fact are prioritized, in conservation planning.

In addition to targeting high-integrity areas that will contribute to landscape-level conservation (i.e., those lands able to support 80%-90% of native biodiversity), refuge system strategic growth policy should develop a companion strategy to identify parcels for acquisition at the species-level of biological organization. Such a companion strategy would specifically target habitats that support species unlikely to be conserved via landscape-level conservation approaches.

The refuge system should be the cornerstone of a coordinated ecosystem-level approach to imperiled species protection and the catalyst for related conservation efforts by other federal, state, local, and private entities. Elements of this recommended approach appear in the draft policy. The policy seeks to enhance "ecological resilience", manage for "functional landscapes" and "landscape sustainability", safeguard "ecological processes", and "complement the resiliency of other conservation areas." The conservation features identified in the draft policy (section 5.8) would be considered "fine filter" type of identification and prioritization. Yet, as described in further detail in our section-by-section comments, these concepts need to be better defined and operationalized.

SECTION-BY-SECTION COMMENTS

5.1 What is the purpose of this chapter?

We recommend that this section include the entire "growth" provision of the Refuge System Improvement Act as follows:

> The National Wildlife Refuge System Administration Act of 1966 (Administration Act) as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd-668ee), directs the Secretary of the Interior to "plan and direct the continued growth of the System in a manner that is best designed to accomplish the mission of the System, to contribute to the conservation of the ecosystems of the United States, to complement efforts of States and other Federal agencies to conserve fish and wildlife and their habitats, and to increase support for the System and participation from conservation partners and the public."

5.2 What are the objectives of this chapter?

Overall, many of the provisions in this section overlap, are redundant, conflated, or confusing and conflicting.

Subsection B suffers from poor construction and poor definition. It states that one objective of the draft policy is to:

> Further the development of a comprehensive, logically dispersed, and efficient network of lands and waters to achieve our mission through strategic implementation of Conservation Design. Conservation Design is defined as "the application of scientific information, expert opinion, and spatial data that helps us to establish estimates of where and how to achieve our mission through landscape sustainability."

This objective introduces at least three terms that are not defined (underlined), which makes the objective difficult to understand or evaluate. What is a "logically dispersed" "efficient" network of lands and waters, and what is "landscape sustainability"? For example, does "efficient" mean least cost? least area? or some other consideration?

Rather than introducing new terms, we recommend this objective support and contribute to the habitat conservation strategy found within the National Fish, Wildlife and Plants Climate Adaptation Strategy which is to "secure appropriate conservation status… to complete an ecologically-connected network of public and private conservation areas that are likely to be resilient to climate change and to support a broad range of species under changed conditions." If this recommendation is adopted, subsection F could be deleted since it also addresses enhancing ecological resilience to cope with climate change.

Subsections C and G should be collapsed into one provision. The intent of this provision should be to grow the Refuge system in the context of the greater conservation estate, regardless of land ownership or management. Subsection C is unnecessarily narrow with its focus on states. As quoted in our comments on Section 5.1 above, the Improvement Act specifically calls on the Refuge system to complement the conservation efforts of States *and other Federal agencies.*

Subsection D. contains a structural error. The subsection ensures the achievement of measureable conservation targets, "such as ensuring population objectives *are developed* in cooperation..." It should read, if this is its intent, "such as population objectives [that have been] developed in cooperation…" This subsection should be amended to accommodate a wider range of conservation features that we recommend throughout our comments. The objective should be:

> Ensure that existing refuges, new refuges, and refuge expansions achieve measurable contributions to the conservation of priority conservation features.

5.3. What is the scope of this chapter?

We support the application of this policy to both new and expanded refuge acquisition projects, and projects within existing refuge boundaries. This allows the Service to ensure that all land acquisition is supporting the goals of the policy, and not be tied to legacy projects that may no longer help reach these goals.

5.5 What is the overall policy?

This section should be constructed similar to previous refuge system policies, like compatible uses (Service Manual 603 FW 2) and refuge planning (Service Manual 602 FW 1), which state clearly what

the Service will do in response to the policy in terms derived from legislative authority. Similarly, this section should affirm the refuge system growth provision of the Refuge System Improvement Act as the overarching policy of the Fish and Wildlife Service with regard to land acquisition. A new subsection A would thus read:

> The U.S. Fish and Wildlife Service will plan and direct the continued growth of the System in a manner that is best designed to accomplish the mission of the System, to contribute to the conservation of the ecosystems of the United States, to complement efforts of States and other Federal agencies to conserve fish and wildlife and their habitats, and to increase support for the System and participation from conservation partners and the public.

If the Service intends to further clarify the overarching policy on strategic growth of the refuge system with similar subsections as appear in the draft policy, we recommend they be improved and be written as policy statements. This section as currently written is constructed more like Section 5.2 Objectives. Neither subsection A or C are prescriptive, as a policy statement should be. Subsection A is just a statement of challenges and opportunities the Service faces. Subsection C states that the Service must ensure that refuge acquisition "reflects our transition toward" various criteria. We recommend "reflects our transition toward" be replaced with clearer, more prescriptive language to better communicate the intent of the policy.

Subsection C adds another undefined term of art, "managing for functional landscapes," as a goal of the draft policy. We recommend either defining "functional landscapes" or replacing it with a similar term like "ecological resilience" or "landscape sustainability" (both of which are also in the draft policy), or with "ecological integrity." We discuss this more in Section 5.6.

5.6 What terms do you need to know to understand this chapter?

Overall, many terms of art introduced into the policy are lacking definitions. This leads to confusion and will impede implementation. The following key terms are undefined in the draft policy:

- functional landscapes
- ecological resilience
- landscape sustainability

These terms are in provisions that state that at least one of the objectives and purposes of this policy is to manage for or achieve them, so it is critical to define them and operationalize the concepts into refuge management and land acquisition priorities. In addition, these terms appear to be conflated and used in similar ways. If the Service intends these to mean different things, then they should be defined separately. If the Service intend these to mean the same thing, then a single term should be defined and used throughout the draft policy to avoid confusion. As we stated in the beginning of this letter, we believe the Service should incorporate a "coarse filter" approach to identifying potential new refuge acquisitions to contribute to ecological integrity, functional landscapes, ecological resilience and landscape sustainability, so defining and using one or more of these terms is essential.

F. Priority Conservation Features: It is unclear why the policy invents a new term of art, "priority conservation features," when in fact the way the policy uses this term is strictly focused on trust species. If the policy retains its singular focus on certain species, then the term should simply be "priority conservation species." We recommend, however, that a broader view be built into the policy and that "priority conservation features" be defined in terms of multiple levels of biologically important "features", including populations, species, habitats, ecosystems, processes and geophysical settings that support biodiversity. Redefining the term this way would necessitate revisions wherever the term is used, since the term is currently referring to species and other provisions would not make sense in their current form. Priority conservation features should be those features that are under-protected, nationally significant and nationally imperiled (see our comments on defining and focusing on "nationally significant" populations, species, habitats, and ecosystems in section 5.8).

5.7 Who in the Service is responsible for the Refuge System's strategic growth policy?

It is unclear to us throughout this section why the state fish and wildlife agencies are the only entities that the policy requires coordination with. While we recognize the important role of states in planning for and managing fish and wildlife populations, state fish and wildlife agencies administer relatively little land compared with the overall conservation estate. The Service needs to coordinate and collaborate with as many conservation partners as possible to adequately achieve the intent of this policy. In addition, as we discuss in these comments, populations of individual species (which the states have a role in) are not the only consideration for refuge acquisition planning, which should include supporting ecological integrity and resilience. This broader view requires the Service to expand its concept of priority partnerships. Finally, as we have stated, the Refuge System Improvement Act specifically directs the Service to complement the efforts of states and other federal agencies to conserve fish and wildlife and their habitat.

Subsection B.4. states that the Chief of the Refuge System is responsible for "[w]orking with Regional Directors and staff to ensure that [refuge acquisitions] are consistent with priority conservation features." The way this provision is worded is unclear. How can a refuge acquisition be consistent with a priority conservation feature, which has been defined as those species requiring focused conservation attention? Does consistent mean simply the presence of those species? And why is this the only aspect of the policy that the Chief of the Refuge System is responsible for overseeing? All other employees identified in the policy are responsible for ensuring that refuge acquisitions support and are consistent with the overall strategic growth policy. We recommend similar wording for the Chief of the Refuge System's responsibilities as well.

Subsection C.2. seems to add yet another objective for refuge acquisitions, to "ensure that strategic growth of the Refuge System contributes to the plans, goals, and objectives of other Service programs." If this is indeed an objective of the policy, then it needs to be better integrated throughout, not just rest on the shoulders of the Regional Directors to figure out.

5.8 What are the priority conservation features for the strategic growth of the Refuge System?

Subsection A. Recovery of threatened and endangered species: We support refuge acquisition projects contributing to the recovery of threatened and endangered species. However, this section needs to be expanded to include candidate species as well. Candidate species are those that have been found by the Service to be "warranted" for listing under the ESA, and are species vulnerable to extinction. Given how many federal, state and private resources have been devoted to certain recent high profile candidate species, we believe it behooves the Service to consider candidate species in prioritizing refuge land acquisition projects.

In addition, though we support relying on updated threatened and endangered species recovery plans, where available and current, for prioritizing land acquisitions, and we seek to ensure all listed species have robust recovery plans developed, not all currently do and there are other relevant plans and information sources that should not be excluded from the policy for considering a land acquisition project's contribution to the recovery of listed species. The policy should be amended to include "and/or identified in other relevant documents."[6] This language should also be carried into section 5.9 as well.

B. Implementing the North American Waterfowl Management Plan: We support the conservation of waterfowl species. However, it is unclear to us why waterfowl are not grouped with other migratory birds. Having two provisions pertain to migratory birds (5.8 B and C) gives the appearance that the policy is particularly concerned with and prioritizes this singular taxa of species. There is no doubt about the importance of the refuge system to waterfowl and other migratory birds, or about the importance of migratory birds in the establishment of the refuge system. However, the refuge system conserves tremendous representation and redundancy of waterfowl species and populations.[7] It is a tenet of conservation biology to conserve the representation of diversity, and represent that diversity in multiple conservation areas (redundancy), and to ensure conservation areas are resilient to ecological change. Given these criteria, waterfowl populations are likely the best conserved group of species in North America.

In addition, waterfowl and other migratory birds receive dedicated funding through the Migratory Bird Conservation Fund, and will continue to receive refuge acquisition projects targeted towards their conservation.

We are not arguing for the deletion of waterfowl as a conservation target of the refuge system. Rather, we recommend that waterfowl be included with other migratory birds (i.e. combine section 5.8 B and C), and refuge acquisitions focus on migratory birds that are of conservation concern.

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[6] A potentially significant source of information is BLM's implementation of Departmental and agency mitigation policy. The BLM is developing regional mitigation strategies and plans, which will identify lands and actions for durable protection for conservation purposes, including designation and management. The Service should be looking at this closely to see where coordination, even the transfer of management authority to FWS, would be most strategic.

[7] Pidgorna, AB (2007) Representation, redundancy, and resilience: waterfowl and the National Wildlife Refuge System. PhD Dissertation, University of Idaho, Moscow.

This section, in tandem with a revised definition of "conservation features" in section 5.6, should include "coarse filter" conservation features including ecosystem structure, function, composition, and connectivity that contribute to ecological integrity. Identifying and conserving these broader ecological attributes will contribute to the maintenance and recovery of most species across a landscape, and will provide the stage for species to adapt to climate change and other landscape-scale stressors. The Service is already proposing to use "surrogate species" to fill a similar role as we are proposing here. Surrogate species should be embedded in a more holistic, ecological approach to conservation developed in partnership with states, other federal agencies, and other conservation partners.

National Wildlife Refuges should have a distinct national role and conserve "nationally significant" conservation features

National wildlife refuges should protect "nationally significant" populations, species, habitats, and ecosystems. The final policy should define what types of conservation features are considered nationally significant. The National Park Service, for example, has defined national significance of historic and cultural resources that guide their historic preservation programs, and other agencies here and abroad have similarly defined national significance for many other sectors. The Service has an impressive record over the course of its history in identifying wildlife refuges that are truly nationally significant; refuges like Izembek refuge in Alaska that protect virtually entire population of Pacific Black Brant, or the many refuges in California's Central Valley that support the vast majority of the entire Pacific Flyway, or places like Ash Meadows refuge in Nevada, home to one of the highest concentrations of locally endemic species of any protected area in the country. Given the pace of human population growth and development, these types of "superlative" places important for biodiversity are becoming increasingly rare. A distinct national role may include *contributing* to the achievement of nationally significant biological goals and objectives, rather than achieving these goals all within a refuge boundary.

The Service's 1996 land acquisition policy,[8] which is still in the *Service Manual*, attempts to do just this. Though lacking additional details on defining nationally significant fish, wildlife, and plant resources, the following language from that policy is instructive:

> **C. Nationally Significant Wildlife Habitat.** Projects in this category prevent permanent loss of nationally significant fish, wildlife, and plant resources. This includes all Service wildlife management actions related to essential habitat for these species and ensures the perpetuation of habitat important to fish and wildlife species. Criteria have been established to qualify projects for protection and an extensive national effort has been made by States and other outside consultants to identify such ecosystems and alternate means of protecting them. Candidate areas for protection cover an extremely wide range of projects with respect to habitat, cost, and size. Proposed sites must contain a concentration of different species or a variety of species of a magnitude that sets them apart from similar sites around the country.

[8] *Service Manual* 341 FW 1, available at http://www.fws.gov/policy/341fw1.html

F. Significant Biodiversity. The objective is to protect representative examples of nationally significant native ecological communities. Sites contain or provide potential for restoring nationally significant elements of our Nation's heritage. Biodiversity refers to the variety and variability among native organisms, communities, and the ecological complexes in which they occur.

(1) Biodiversity may be viewed at many levels, ranging from landscape complexes and complete ecosystems to the chemical structures that are the molecular basis of heredity. The term biodiversity, therefore, encompasses the numbers and relative abundance of different ecosystems, species, and genes native to any particular area of interest.

(2) Biodiversity acquisitions are those that contain all, or most, of their naturally occurring biotic components and functions. Emphasis is placed upon the native aspects of the biota. The native species are those that occur as a result of natural succession and are not the result of humans or their commensals. The objective of protecting biodiversity is to capture, protect, and, where possible, restore the native characteristics of the landscape, not to strive for areas of great numbers of species.

5.9 What science-based criteria must a project proposal meet for the Director to consider an addition to the Refuge System?

We strongly support the Service's emphasis on basing land acquisition prioritizations on a strong science foundation. For too long, refuge acquisition priorities have been based on sound professional judgment and other non-biological (including political) considerations. That approach, by itself, simply will not achieve the conservation imperatives of the Service or the refuge system given today's conservation challenges.

Subsection B: We recommend this subsection be amended to reflect the broader conservation features we have identified as follows:

> Explain how a project or combination of projects will achieve measurable contributions to the conservation of priority conservation features

Subsection C. Identify priority conservation areas.

This subsection is critical to ensuring projects are science-based and meet the mandates of the Refuge Improvement Act to grow the "System in a manner best designed to accomplish the mission of the System, contribute to the conservation of the ecosystems of the United States, and to complement the efforts of states and other federal agencies to conserve fish, wildlife and their habitat." Though the draft provision is strong, we recommend amending the last sentence to consistently apply the habitat conservation strategy of the Wildlife Adaptation Strategy we have encouraged throughout our comments:

> The project proposal must incorporate elements of conservation design to ensure projects contribute to building an ecologically-connected network of public and private conservation

areas that are likely to be resilient to climate change and to support priority conservation features and a broad range of species under changed conditions.

This section would be strengthened by including consideration of the ecological connectivity of the project and the larger landscape. While one could argue habitat connectivity is embedded in some of the landscape considerations in the policy, connectivity is never explicitly stated as a goal of refuge land acquisition. Connectivity is critical to the future of conservation, for meeting basic biological needs and ecosystem functions, but to also allow species to shift their ranges in response to climate change. In some landscapes that have existing protected areas, connectivity may be the most important ingredient for conservation and should be a potential purpose of refuge land protection policy. Habitat connectivity could be a good candidate for conservation easements and other less-than-fee-title interests depending on the landscape context and species needs.

Subsection D. Identify vulnerability and resiliency.

We firmly support the identification of vulnerability and resiliency related to climate change and other large-scale stressors to ensure a project's long-term viability. This section, as with many sections, lacks important details. The section appears to require land acquisition planners to identify the vulnerability of a project and the adaptive steps planned to alleviate any vulnerabilities. This is important. However, there is the equally important consideration of the overall, landscape-scale (or range-wide-scale) vulnerability of the priority conservation features to climate change and other stressors.

The Refuge System will likely not be able to conserve the same species and habitats over the long-term in the same places they are today. As the first step for incorporating climate change into the growth of the Refuge System, the Service should evaluate whether the conservation features or targets (i.e., species or habitats) of a particular land protection project are viable over the course of several decades based on climate change projections in the geographical setting being analyzed. If not, the conservation features or targets for that project need to be reevaluated. This evaluation needs to happen over larger spatial and temporal scales than have traditionally been used in the refuge system. This could be included in the landscape-level planning that projects are required to tier to in section 5.9 B or C, however, this is not made explicit.

In addition to identifying climate change vulnerabilities, the final policy should also include identification and protection of climate "refugia" and geophysical settings that are the drivers of biodiversity. This may best be accomplished in Section 5.9 B or C, as this should be done in concert with partners across large scales.

Not all places on the landscape and in the country will be equally affected by climate change. There are many small- and large-scale factors that affect the local climate relevant to biodiversity. For example, varied topography causes micro-climates like north-facing slopes to remain cooler than other areas of the landscape. Deeper lakes will persist longer and have cooler water. Northern

edges of biomes may experience fewer changes than southern edges.[9] These types of places, or refugia, should be prioritized for conservation because they represent opportunities for long-term conservation under a changing climate.

As climate change forces species out of the habitats they have historically relied upon, no land acquisition project can be assumed to conserve a static range of wildlife. Instead, the refuge system should look to protect key elements that are likely to support new species assemblages. Certain elements of the underlying geophysical settings of the landscape drive species diversity.[10] Among the adaptation actions included in the Wildlife Climate Adaptation Strategy is the conservation of "areas representing the range of geophysical settings, including various bedrock geology, soils, topography, and projected climate, in order to maximize future biodiversity." By identifying and protecting the underlying geophysical elements that correlate to the current diversity of species in a region, conservation practitioners can ensure this "stage" is available for species to adapt and evolve as the climate changes.

Climate change requires that the Service and conservation partners develop a new paradigm for conserving the nation's fish and wildlife:

> As the climate changes, the species composition of communities on NWRS lands may become quite different from those present when the refuge was established... Rather than managing in order to retain species currently on refuges, the refuge system will need to manage to provide species with sufficient opportunity, in terms of well distributed, well connected, and replicate habitats, to respond to and to evolve in response to emerging selective forces.[11]

Additional guidance should be provided in the final Strategic Growth Policy to assist land protection planners in adjusting to this new paradigm.

5.11 How does the Service coordinate with the States in strategic growth of the Refuge System?

Again, we remind the Service that its responsibilities to coordinate with conservation partners are not limited to state fish and wildlife agencies.

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[9] See M.B. Ashcroft, Identifying refugia from climate change, 37 Journal of Biogeography, 1407–1413 (2010).
[10] See M.G. Anderson and C.E. Ferree, Conserving the Stage: Climate Change and the Geophysical Underpinnings of Species Diversity, 5(7) PLoS ONE e11554. doi:10.1371/journal.pone.0011554 (2010); E.T. Game, et al., Incorporating Climate Change Adaptation into National Conservation Assessments, 17 Global Change Biology 3150-3160 (2011).
[11] Giffith, B. et al. 2009. Climate Change Adaptation for the US National Wildlife Refuge System. Environmental Management, V. 44.

ADDITIONAL CONSIDERATIONS

Recommendations to further focus and prioritize land protection decisions

Again, we appreciate the Service's need and intent to focus limited conservation dollars and understand that our recommendations in this comment letter would lead to consideration of additional conservation features, targets, or criteria for land protection investment. Here we provide a set of recommendations to allow the Service to focus and prioritize projects given this expanded scope.

Target investments geographically

Biodiversity is not spread uniformly across the country, neither are conservation threats nor existing protected areas and other conservation efforts.[12] The Service should develop a science-based set of criteria to better focus efforts towards the most biologically important, least protected and most threatened landscapes in the country.

Target investments temporally

With limited conservation dollars to employ, spreading funding around to scores of projects each year, and not committing to reach scale at projects once started, limits the effectiveness of the Service's conservation investments. The Service should consider establishing a national 5-year land acquisition priority strategic plan that identifies a set of projects that the Service commits to concentrated investment over a number of years in order to reach the minimum scales needed to support the objectives of each project. In the past, refuges have been established and then left to wither with little investment. With more certainty of investment, projects would have a better chance of identifying willing sellers and working with conservation partners.

The Service has done this informally in the past. New Secretaries often identify their high priority projects or landscapes for investments which receive budget requests for a number of years. But the informal nature of these initiatives starve projects of needed funding certainty.

LAPS should be updated and integrated into this policy

Strategic growth requires a method for prioritizing acquisition opportunities. Every year since 1987, FWS has turned to the Land Acquisition Priority System (LAPS) to rank acquisition projects. Although projects are evaluated on their biological merits, the criteria and scoring structure used thus far overlook several important project elements. The Service must address these shortcomings to ensure that LAPS accurately captures those projects that best meet the goals, objectives and criteria set forth in the final Strategic Growth Policy.

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[12] Aycrigg, J.L. et al. 2013. Representation of Ecological Systems within the Protected Areas Network of the Continental United States. PLOS One. V. 8.

In addition, LAPS needs to be used up front as a planning tool for identifying new additions to the refuge system, not just for prioritizing parcels for appropriations. Currently, LAPS, with all of its transparent criteria to identify habitats important to the refuge system, is not integrated into the identification of new acquisitions, only on scoring additions identified through other processes. LAPS should be used throughout the land protection planning process to assist planners and decision makers in identifying the best contributions to the refuge system. This recommendation was affirmed by the steering committee on Strategic Growth that developed a draft whitepaper[13] for the Conservation in Action summit celebrating the refuge system centennial. The final Strategic Growth Policy should articulate how LAPS is to be used in identifying and prioritizing habitats for land acquisition.

Public participation opportunities in land protection decisions should be identified

The draft policy states that growth of the refuge system must reflect "our transition toward… involving… the American people," yet the policy fails to articulate any meaningful process to involve the public to participate in land acquisition decisions.

Conclusion

Conservation of America's natural heritage faces increasingly complex challenges. Land protection remains a critical tool to conserve species and ecosystems in response to rapid ecological change. We strongly support the Service targeting limited conservation dollars to the most strategic investments for conserving America's wildlife in the face of these large-scale threats. We believe the draft policy provides a solid foundation to achieve this goal, and hope the Service finds our comments helpful in building on this foundation by providing greater clarity and consistency throughout the policy.

We look forward to working with the Service to build the refuge system of the future.

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[13] Fish and Wildlife Service 2004. Strategic Growth of the National Wildlife Refuge System; U.S. Fish and Wildlife Service White Paper for the Conservation in Action Summit. Available at http://www.fws.gov/refuges/ConservationSummit/StrategicGrowthTeam/