

Landscape Conservation Design: Strategic Co-Governance in Creating and Managing an Ecologically Connected Landscape

By Rob Campellone, NWRS Landscape Conservation Design Policy Advisor

The first list of native fish and wildlife threatened with extinction was developed in 1967 under the *Endangered Species Preservation Act*. It consisted of 78 species. That same year, Robert MacArthur and E.O. Wilson published *The Theory of Island Biogeography* – a seminal book that found immigration and extinction to be factors effecting species richness in isolated communities; a principle commonly observed by conservation practitioners witnessing habitat loss and fragmentation effects on wildlife.

Island Biogeography provided the foundation for a 1975 paper written by Jared Diamond that included “*Design Principles to Minimize Extinction Rates in Nature Reserves*”, and in the decade and a half that followed, the creation of interdisciplinary sciences like conservation biology and landscape ecology. These “crisis disciplines” – as renowned biologist Michael Soule’ calls them – advanced the science and art of ‘reserve design’: determining the appropriate size, configuration, and diversity of habitats needed to support immigration and reduce extinction across a matrix of human-natural landscapes.

Despite these achievements, landscape-scale reserve design has struggled in the United States; and institutionalized site-specific planning has generally fostered the development and management of our nation’s conservation estate: islands of habitat that support biodiversity – including some 1,500 threatened and endangered species, and the ecosystem services that society depends on.

Natural resources issues like immigration and extinction are more challenging today than they were in the past because of the ever-increasing complexity of interactions between human-

natural systems and uncertainty surrounding climate change. These challenges will only become more taxing as those systems evolve with time: a belief that is motivating the global community to question old planning and policy paradigms and develop innovative approaches that strengthen resilience during a time of change.

Although the majority of federal resources have historically gone towards climate science and mitigation, adaptation is now driving much of the conversation around development of a global response strategy. One goal of adaptation, to protect ecological systems through the development and management of robust protected area networks, is particularly relevant to the U.S. Fish and Wildlife Service. In 2003, the Vth World Parks Congress identified the need for systematic, science-based approaches that assess climate change and develop protected area networks consisting of core areas, buffer zones, and corridors. That goal was reiterated in 2012, when the *National Fish, Wildlife, and Plants Climate Adaptation Strategy* – a multi-jurisdictional “call to action” co-chaired by USFWS – identified development and management of an ecologically connected network of conservation areas as a priority.

A key tenet of adaption is co-governance: that the diversity of legal authorities, expertise, and management capability needed to achieve landscape-scale conservation goals are found – not within any single agency or organization – but across the diversity of stakeholders within a landscape. To achieve it, conservation activities at the landscape-scale including design, delivery, monitoring, and research must be strategic and well-coordinated: a fundamental shift from the traditional “stove-piped” planning and implementation approach of the past to an innovative “integrated” design approach that defines conservation’s future. “Stakeholder engagement is absolutely essential” exclaims Andy French, Refuge Manager at Silvio O. Conte National Fish and Wildlife Refuge. Andy is participating in the North Atlantic LCC’s

Connecticut River Watershed Landscape Conservation Design and sees how that collaborative process can help the Refuge. “Engagement helps stakeholders, like the NWRS and other landscape stewards, understand and visualize how their past conservation actions could combine with new strategies to contribute to a broader landscape vision that is well informed and supports a sensible balance between resilient conservation outcomes, quality recreation, and sustainable economic activities” says French.

The USFWS’s *Conserving the Future* – a 21st century strategic vision for the National Wildlife Refuge System – outlines an adaptive, collaborative, and science-based approach for achieving its mission. It relies, in part, on LCC partnerships’ and *Landscape Conservation Design (LCD)* – an element of the Service’s *Strategic Habitat Conservation* adaptive management framework. LCD is a stakeholder-driven process that integrates societal values and multi-sector interests with the best-available science to assess spatial and temporal patterns, risks, vulnerabilities, and opportunities that result in spatially explicit products including coordinated multi-jurisdictional strategies to protect biodiversity and ecosystem services, and increase ecological resilience and sustainability for future generations. The goal of LCD is to co-produce knowledge and strategies that support sustainable populations of fish and wildlife that are of interest to landscape stakeholders. “As Refuge Managers, we need to be thinking 50 years into the future: assessing threats to refuge resources that are developing outside refuge boundaries and finding opportunities to work with others to address those threats while we still can” says Mike Spindler, Refuge Manager of Kanuti NWR. Mike is actively engaged in the Northwest Boreal LCC. “The LCC is a great forum to bring stakeholders with divergent ideas together to discuss them.”

The future will be significantly different from the epoch that fostered the emergence and prosperity of society. The global community is exploring creative ways to learn about and respond to change so human-natural systems are sustained for future generations. Landscape conservation holds hope for the future of America's wildlife despite uncertainty and change. Implementation will require the commitment of landscape stakeholders. The National Wildlife Refuge System stands committed to working with a diversity of partners to further America's conservation legacy, in part, through the application of Landscape Conservation Design.