The Importance of Maintaining Carnivores in Wildlands

(transcription)

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I'd like to talk a little bit about another important disturbance regime in much of the western United States and Mexico. We've talked some about the importance of fire. Another one is the importance of natural hydrological cycles. But an often-overlooked important ecological disturbance regime is predation. Research around the world and in many habitats has found the importance of large carnivores in top-down regulation of ecosystems.

Jim Estes, studying sea otters off the coast of California some 20 years ago, found that when the sea otters had been trapped out over 100 years ago, their habitat, the kelp forest, often called "the redwood forest of the Pacific Ocean," disappeared. The reason for this was that, without the sea otter to control the sea urchin, sea urchin populations exploded and grazed away the kelp forest, losing not only the kelp forest but also the many other species dependent on it. Since California sea otters have been reintroduced in the Pacific Ocean, the kelp forest and other species have been coming back.

Yellowstone National Park lost all wolves and mountain lions in 1930. The park service trapped and shot them out. Elk populations in Yellowstone National Park grew very large. But even more importantly, elk behavior changed. The elk became lazy, lying in large herds in the meadows near the rivers, chewing their cuds, overgrazing. The area looked like one of the worst cow pastures around in some places. So bad was the elk overgrazing and overbrowsing that beavers could not reestablish themselves in Yellowstone National Park—the elk had browsed away the willows. But when wolves were reintroduced into Yellowstone less than ten years ago, suddenly the elk behavior changed radically. They were no longer big, fat, lazy "meadow potatoes." They were elk again. They were up running around, looking over their shoulders at the wolves. While the wolves have not caused the elk population to decrease, they have radically changed elk behavior. Now the overgrazed meadows are coming back. Willows are growing back up in streams and researchers believe that beavers are going to be able to recolonize streams in Yellowstone National Park.

The last example I want to give occurred in west Texas where coyotes had been experimentally trapped out of an area that had six species of burrowing rodents. After the coyotes were trapped out, kangaroo rats were able to outcompete the other five species of burrowing rodents. This displacement is called competitive exclusion. Without the predation pressure of the coyotes on the kangaroo rats, the other species could not compete with the kangaroo rats.

Those are just a few examples from around the world of the importance of top-down regulation of ecosystems by large carnivores, how these ecosystems begin to unravel when large carnivores are removed, and how these ecosystems begin to regain integrity when the large carnivores are reintroduced.

Another importance of large carnivores for conservation is their umbrella effect. If you protect habitat adequate for a viable population of large carnivores, you are going to protect habitat for many other species as well, certainly not for all species, but for many. And a final important reason for protecting large carnivores is their effect on our behavior and on our attitudes. If there is anything human beings have too much of, it's arrogance. There is nothing quite like large carnivores to teach us humility.

I'd like to show how the Wildlands Project and other groups such as Sky Island Alliance and Naturalia are using these ideas of top-down regulation and conservation in this area on the U.S.–Mexico borderlands that we call the Sky Islands, the area that is the overlap between the Rocky Mountains and the Sierra Madre, between the Sonoran Desert and the Chihuahuan Desert. Michael Soule and Reed Moss, two of the leading conservation biologists in the world, propose a scientific conservation approach called "rewilding." Based on the important role of large carnivores in regulating ecosystems and on the need of large carnivores for large, secure habitat areas and the fact that in much of the world today there are no longer large-enough single protected areas, "rewilding" means we have to look at landscape linkages, or connectivity, between protected areas and other habitat.

Requirements for survival represent factors important to maintaining ecological health. Among these focal species are keystone species. Keystone species, like large carnivores, have a disproportionate effect on the ecosystem and other species relative to their actual numbers. Here in the Sky Islands region (Figure 1), the Mexican

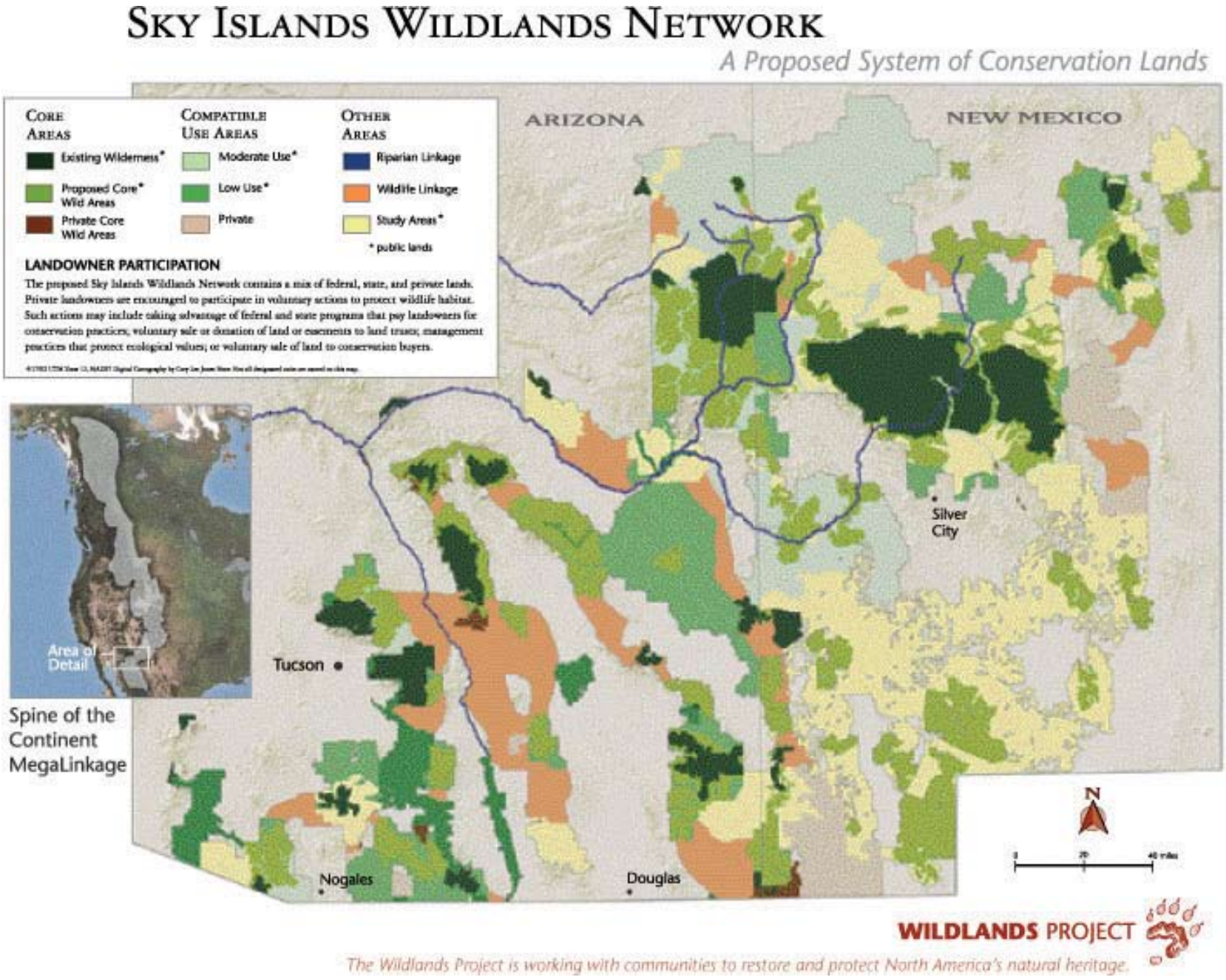

Figure 1. The Sky Islands Wildlands Network: A proposed system of conservation lands.

wolf was probably the most important keystone species. The loss of the Mexican wolf has caused changes in the landscape. Recently Mexican wolves have been reintroduced in southeastern Arizona and southwestern New Mexico. Carnivores like the Mexican wolf and the jaguar need large core areas and connectivity because they are vulnerable to persecution. The authors of *Continental Conservation*, the state-of-the-art book on science-based conservation, say that protected areas should be roadless or have limited access. This was shown with the reintroduction of Mexican wolves in the Apache-Sitgreaves National Forests. Large core areas can allow for more species, maintain natural disturbance regimes like fire, ensure population viability of sensitive species and enhance wilderness.

The Mexican wolves were originally released in an area of the Apache National Forest in Arizona that had many dirt roads through it. Almost immediately five were shot alongside dirt roads. Two others were run over. What needed to be done was to have reintroduced the Mexican wolf in the Gila wilderness area and the Aldo Leopold wilderness area in New Mexico, almost a million acres of roadless country, much of it ungrazed by domestic livestock. The Mexican wolf and other large carnivores need these roadless protected areas if they are going to survive.

The jaguar once ranged throughout New Mexico, Arizona, Texas, Louisiana, and Arkansas in the United States. It is one of the focal species in the Sky Islands Wildlands Network, and conservationists in the United States and Mexico are studying how we can get jaguar populations to disperse back into Arizona and New Mexico. So we have developed a recommendation for the jaguar as a focal species, conservation recommendations to help jaguars disperse from their northernmost breeding population in Sonora and begin to recolonize suitable areas in Arizona and New Mexico. Jaguar researchers tell us, for example, that among the preferred areas for jaguars in the United States are lower elevation river regions, such as the Blue River in southeastern Arizona. This area has a jeep trail through it, a dirt road through it. For jaguars' security, conservationists, with some support from a few local ranchers, are proposing that some of these dirt roads be closed to provide a larger secure area.

The Gila and the Aldo Leopold wilderness areas are highly isolated. They are island protected areas and are not connected to one another. We know that many species need landscape linkage; they need to move across large areas. This ecosystem connectivity maintains ecosystem flows. It is essential for the population viability of wide-ranging species and it also enhances wilderness. Instead of the old model of isolated national parks, wildlife refuges or other protected areas, Reed Noss and others have proposed a new model where we look at the entire landscape, where we look at protected core areas, wildlife movement linkages between them, and also at compatible-use areas on private and public land around these protected areas, to look at the landscape as a whole and not only for conservation purposes, but also for how people can sustainably make a living on the landscape outside the core protected areas.

We have been finding that to connect areas in Arizona and New Mexico, looking at public lands is not enough. We have to look at well-managed private lands such as Guadalupe Canyon Ranch, owned by my friend Drum Hadley, and other large ranches owned by members of the Malpais Borderlands group, not to tell the landowners what to do with their land, but to acknowledge their exemplary management and to examine how their ranches and their grazing practices fit into larger conservation objectives. So instead of isolated protected areas, we have proposed a system of public and private lands to be managed as a whole, to try to put linkages back into landscape so that jaguars can disperse north into the United States and that ultimately Mexican wolves can disperse south into Sonora and Chihuahua as well (Figure 1). I think that all of us, landowners, ranchers, conservationists, hunters and wildlife biologists are all interested and all need to work out an approach to the entire landscape so that healthy communities, healthy families can coexist with healthy families and communities of jaguars, thick-billed parrots, Mexican wolves, prairie dogs and many other species, so that we truly can create conservation-oriented and sustainable land use for the 21st century.

La Importancia de Mantener Carnívoros en Áreas Silvestres

(resumen)

Dave Foreman ***Proyecto Wildlands***

Según han demostrado estudios realizados alrededor del mundo, los carnívoros de gran tamaño regulan los ecosistemas por medio de su influencia en las cadenas alimenticias. Existen muchos ejemplos de la forma en que los ecosistemas se desequilibran al retirar a los carnívoros de gran tamaño y de cómo recobran su integridad al reintroducirlos.

Hace 100 años las nutrias de mar desaparecieron de la costa de California por caza indiscriminada. Con ellas desapareció también su hábitat: el bosque de algas marinas. Sin las nutrias, que se alimentan de erizos de mar, la población de erizos incrementó muchísimo y acabó con el bosque de algas. Sin embargo, desde que se reintrodujeron las nutrias, el bosque de algas y otras especies han regresado.

El parque nacional de Yellowstone perdió todos los lobos y pumas en 1930. Esto tuvo como resultado que las poblaciones de alce crecieran. En ausencia de sus depredadores naturales, los alces se hicieron perezosos, las praderas empezaron a mostrar los efectos del sobrepastoreo y los sauces del sobreramoneo, lo que afectó incluso a los castores. Cuando se reintrodujeron los lobos hace menos de 10 años, el comportamiento de los alces se revirtió, y lo mismo sucede gradualmente con el entorno natural.

En otro ejemplo, se extrajeron los coyotes de un área del oeste de Texas que contenía seis especies de roedores. Las ratas canguro dominaron y desplazaron a las otras cinco especies. A esto se le llama exclusión competitiva. Sin la presión por depredación de los coyotes sobre las ratas canguro, las otras especies no pudieron competir contra las ratas canguro.

La presencia de carnívoros grandes también es importante para esfuerzos de conservación de hábitats y ecosistemas, en lo que se conoce como "el efecto sombrilla". Si se protege el hábitat de una población de carnívoros grandes, se protege también el hábitat de muchas otras especies. Michael Soule y Reed Noss, dos de los biólogos de conservación más respetados en el mundo, proponen un enfoque científico de conservación que se basa en entender el importante papel que juegan los carnívoros grandes en la regulación de los ecosistemas, en su necesidad de áreas de hábitat grandes y seguras, y en la conectividad entre áreas protegidas y otros hábitats.

Las especies clave, como los carnívoros grandes, tienen fuertes efectos en el ecosistema y en otras especies. La pérdida del lobo mexicano en la región de montañosa del sureste de Arizona y el suroeste de Nuevo México (*Sky Islands*), ha causado cambios en el paisaje (Figura 1). Los carnívoros como el lobo mexicano y el jaguar necesitan grandes áreas núcleo que tengan conectividad entre ellas. Estas áreas núcleo permiten más especies, sustentan regímenes de alteración naturales como los incendios, aseguran la viabilidad poblacional de especies sensibles y realzan la naturaleza. Los autores de *Continental Conservation*, un libro de conservación fundamentada en ciencia, mencionan que las áreas protegidas deben carecer de caminos y tener acceso limitado. Esto se mostró con la reintroducción del lobo mexicano en el Bosque Nacional Apache (ver figuras anexas).

Originalmente se liberaron los lobos mexicanos en un área del Bosque Nacional Apache que tenía muchos caminos. Casi inmediatamente se cazaron cinco a lo largo de estas brechas, y otros dos fueron atropellados. Lo que debió hacerse era liberarlos en el área silvestre de Gila y en el área silvestre Aldo Leopold en Nuevo México, que constituyen casi un millón de acres sin caminos. El lobo mexicano y otros carnívoros grandes necesitan estas áreas protegidas sin caminos para sobrevivir.

El jaguar es una de las especies centrales en la Red Silvestre de las montañas del sudeste de Arizona (*Sky Islands*), y se está estudiando la forma de hacer que se disperse en Arizona y Nuevo México desde Sonora. Esta especie prefiere áreas de ríos de baja elevación como el Río Azul en el sudeste de Arizona. Esta área tiene un camino que la atraviesa. Para seguridad del jaguar, se ha propuesto que algunas de estas brechas se cierren.

Las áreas silvestres de Gila y Aldo Leopold están altamente aisladas. Son áreas protegidas y no están conectadas una con otra. Sabemos que muchas especies necesitan conectividad porque se mueven a través de grandes áreas. Esta conectividad entre ecosistemas mantiene el flujo dentro de los mismos, y es esencial para la viabilidad poblacional de especies de amplio movimiento. El nuevo modelo, propuesto por Reed

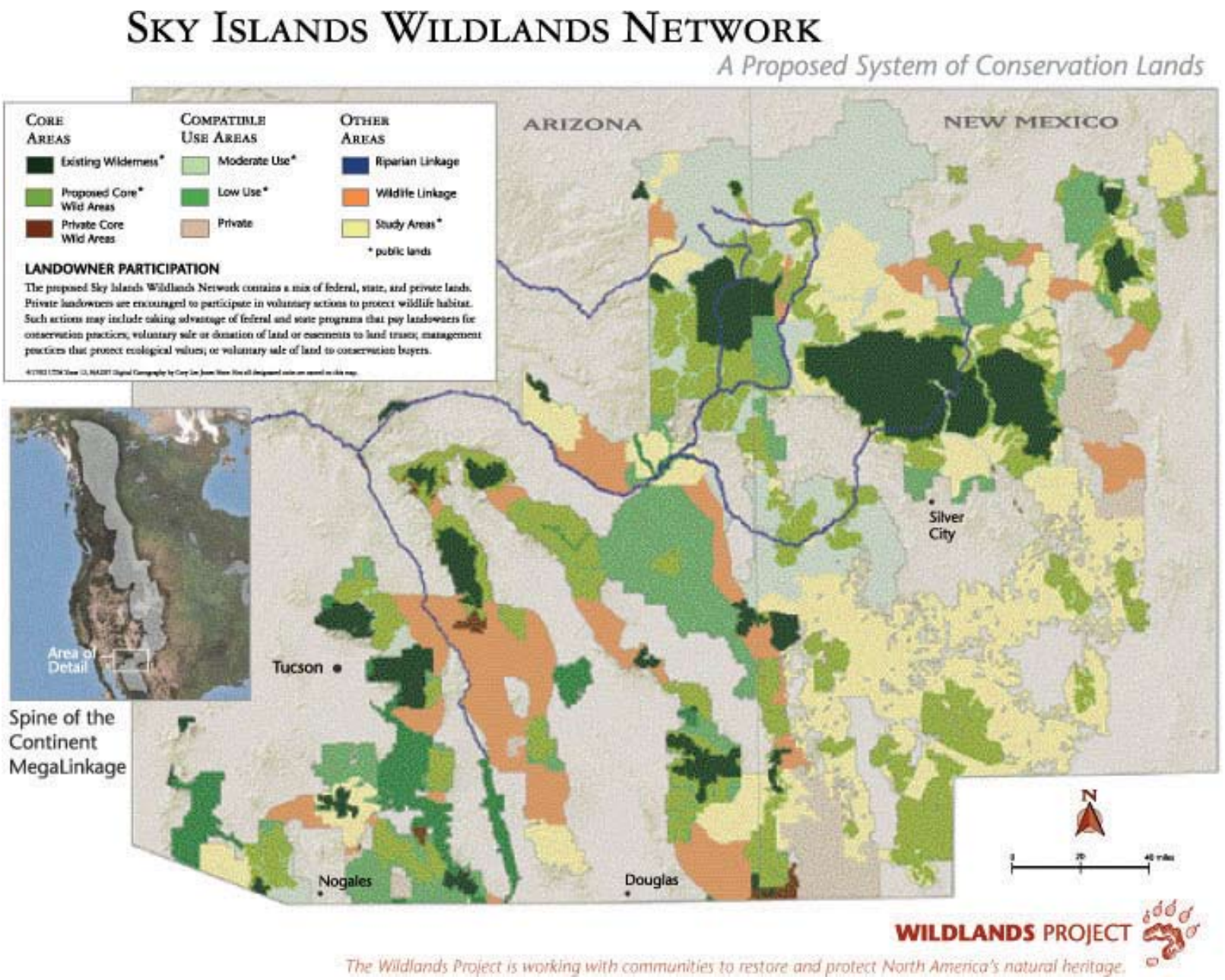

Figura 1. Red silvestre de montañas (*Sky Islands*): Un sistema propuesto para la conservación de tierras.

Noss y otros, examina las áreas núcleo protegidas y las conexiones de movimiento de fauna entre ellas, pero además examina el uso compatible de propiedad pública y privada alrededor de estas áreas protegidas.

Hemos encontrado que las tierras públicas no son suficientes para conectar áreas en Arizona y Nuevo México. Por lo tanto, es necesario mirar hacia la propiedad privada, para entender la forma en que esos ranchos y sus prácticas de pastoreo pueden se compatibles con los objetivos globales de conservación, y así crear un marco de conservación y uso sustentable de la tierra para el siglo 21.