

Application of NPScape Landscape Dynamics Products to Support Resource Management at Saguaro National Park



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Introduction

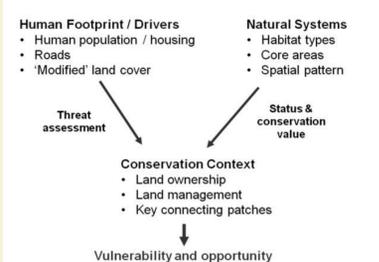
National parks that occur near rapidly-developing urban areas are faced with a host of challenges to effective resource management and protection. Urban development is often dynamic and can be difficult to accurately predict in character and extent. Composed of two districts that bracket the sprawling metropolitan area of Tucson, Arizona, Saguaro National Park is an excellent example of a park-urban interface, and the issues such a boundary presents to park managers. To understand urban interface dynamics and

other landscape-scale monitoring needs, the NPScape landscape dynamics monitoring project provides a suite of standardized, national-scale products (e.g., land cover, housing type, population density, and other socioeconomic data) as well as programming tools to permit customization at park and network scales. Early results from a pilot application of NPScape are presented, with lessons learned and recommendations for application at other parks and protected lands.

Conceptual Model

NPScape is designed to address questions related to resource conservation *Vulnerability and Opportunity*. These dynamics are shaped at the landscape scale by three major factors:

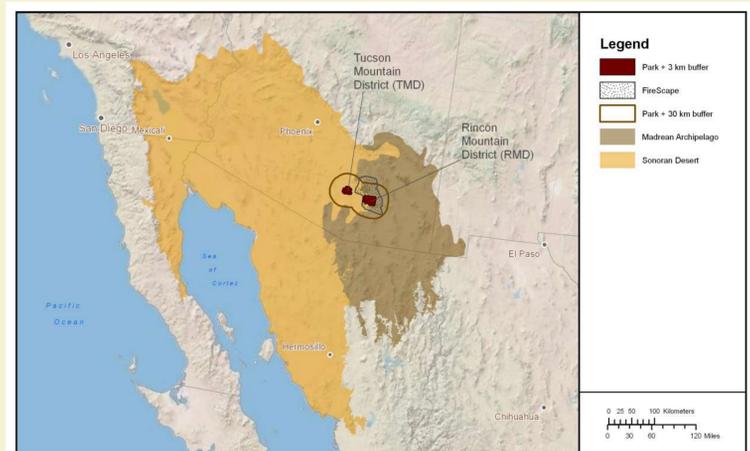
- Natural Systems
- Human Drivers
- Conservation Context



Areas of Analysis

An important question when quantifying landscape dynamics is *how do we define what we mean by "landscape"?* Saguaro selected five ecologically informative Areas of Analysis (AOAs) for purposes of defining meaningful landscapes on a map. Areas more proximate to the Park are important for understanding both opportunities and

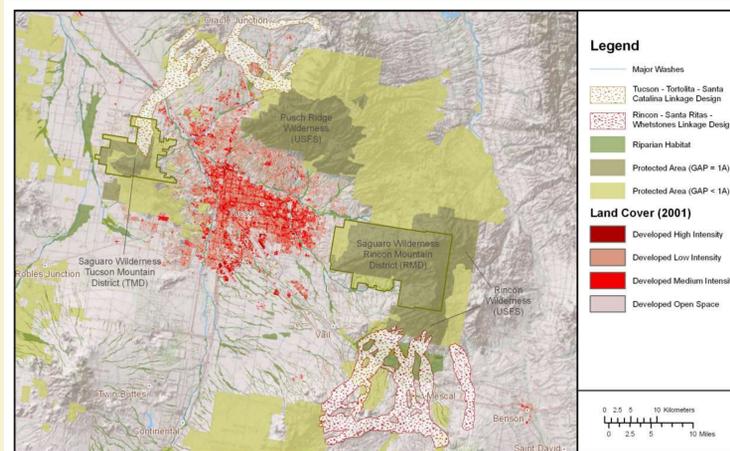
challenges associated with preserving wilderness character and connectivity as Tucson and its suburbs continue to grow. Meanwhile, larger AOAs like ecoregions are important for understanding broader-scale patterns of connectivity and conservation context for wide-ranging species.



For more information:

- Saguaro National Park <http://www.nps.gov/sagu/index.htm>
- Sonoran Desert Inventory and Monitoring Network <http://science.nature.nps.gov/im/units/sodrv>
- NPScape Landscape Dynamics Project <http://science.nature.nps.gov/im/monitor/npscape>
- NPS Natural Resource Information Portal <http://nriinfo.nps.gov>

Natural Systems



Riparian habitats and washes provide key connecting corridors for wildlife species inhabiting lower elevation desertscrub and grassland habitats around Saguaro. NPScape maps these corridors and over-

lays them with other maps to show how species likely move between protected areas, including the two units of Saguaro National Park.

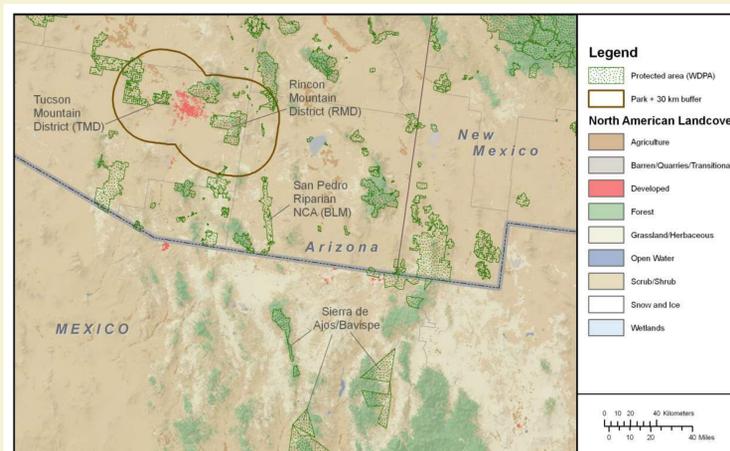


Conservation Context



Higher elevations of the Park are characterized by habitats like Ponderosa pine forest, and these areas provide important habitat for many wide-ranging species. Saguaro is unique in that it straddles two ecoregions, and it is primarily the Madrean Archipelago to the east and

south that contains large and structurally intact patches of forest and grassland. NPScape maps the distributions of these habitats through northern Mexico and considers their distributions in relation to protected area status, as well as opportunities for broad-scale connectivity.

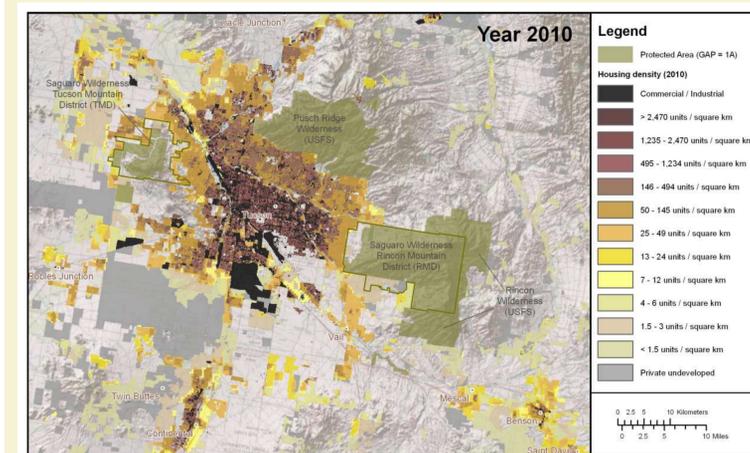
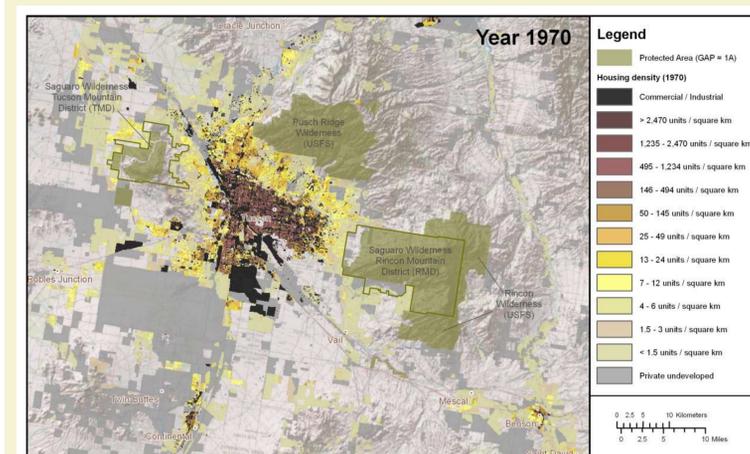


Human Drivers



Preserving wilderness character and ensuring connectivity for wildlife are both challenged by a multitude of human development pressures associated with the growing city of Tucson and its suburbs. NPScape estimates of housing density have proven to be especially useful for wil-

derness planning efforts currently underway at Saguaro. Housing increases are not only associated with more road noise, light pollution, and overflights, but also provide opportunities for conducting education and outreach.



Summary

One of the great values of NPScape products for park managers is to illustrate the inescapable connection between national parks and their surrounding communities. Maps that place Saguaro National Park in its larger geographic context are effective visual tools for talking with our neighbors about

- The importance of partnerships to protect wildlife corridors
- The growing value of wilderness in an increasingly urban world
- The importance of actively engaging with young people who may be growing up only a few miles from a national park without ever having visited it.

NPScape supports Saguaro National Park in these efforts by providing a suite of landscape-level data, maps, results and interpretation that are customized to local park needs.

