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August 22, 2012

Adrian Garcia, Project Manager
Bureau of Land Management
P.O. Box 27115
Santa Fe, NM 87502-0115

Via electronic mail to adrian_garcia@nm.blm.gov; NMSunZiaProject@blm.gov

Re: **Comments on Proposed SunZia Southwest Transmission Line Project DEIS**

Dear Mr. Garcia:

The Tucson Audubon Society (TAS) appreciates the opportunity to provide comments on the Draft Environmental Impact Statement (DEIS) for the proposed SunZia Southwest Transmission Line Project (SunZia). SunZia proposes to construct two parallel high capacity 500-kilovolt (kV) transmission lines that would span between 460 and 542 miles across federal, state, and private lands between central New Mexico and central Arizona. The Bureau of Land Management (BLM) is the lead federal agency for this project, while the project applicant, SunZia Transmission, LLC is a private company.

TAS is a 501(c)(3) non-profit NGO established in 1949 and representing approximately 5000 households scattered throughout the southeastern Arizona region, primarily in Pima County. TAS' mission is to protect and promote the stewardship of the biodiversity of southeast Arizona by connecting people to their natural world through the study and enjoyment of birds. TAS has partnerships with private and governmental entities and works to conserve and protect habitats where wildlife is at risk to the many factors that threaten its existence – including climate change and the degradation and fragmentation of watersheds and habitat caused by development. http://www.tucsonaudubon.org/

TAS submits comments on behalf of its membership based on the potential adverse impacts to birds and other wildlife of the proposed construction and operation of the SunZia Transmission Line. Our comments relate to public process and to the local, regional and hemispheric adverse impacts (direct, indirect, and cumulative) on special status species and unique and rare habitats, migratory species, resilience in the face of climate change, the sustainable health and economy of our region, and our quality of life. Specifically, we believe it is critical to set a direction for the region that focuses on the best available scientific and commercial information.

We support responsible development of renewable energy. We understand the need to distribute electricity generated through the development of sustainable sources to address the threats posed by climate change. We support taking old and polluting coal plants offline, decreasing our dependence on oil from overseas, and creating new green jobs in the United States.

However, we insist that our transition to a clean energy future does not come at the expense of remaining high quality wildlife habitats and pristine wild lands. We can and must ensure that the routing of transmission lines avoids culturally and biologically sensitive areas and minimizes the disturbance of significant natural areas and the corridors that connect them.

We applaud the recent designation by the BLM of multiple areas in the west appropriate for the streamlining of development of industrial solar energy resources which were selected with extensive public and agency input to avoid potential conflicts with significant biologic, cultural, and historic resources.

TAS offers the following comments on the SunZia Transmission Line proposal for your consideration.

Recommendation – Adopt the NO ACTION Alternative

We recommend that the BLM adopt the No Action Alternative which the National Environmental Policy Act of 1969 (NEPA) requires you to consider as a viable alternative. We believe that the balance of theoretical benefits of this proposal does not outweigh the considerable long term, if not permanent, negative environmental impacts of developing and operating the proposed SunZia Transmission Line.

The environmental consequences of **any** of the other alternatives would result in such significant degradation and potentially irreparable harm to our natural environment that it would be impossible to mitigate for the adverse impacts caused by this proposal.

While we generally share the concerns expressed by the broad spectrum of opposition to the proposed project, including the specific concerns expressed by our colleagues from the Cascabel Working Group (CWG), Defenders of Wildlife (DOW), Sky Island Alliance (SIA), Coalition for Sonoran Desert Protection (CSDP), Sierra Club – Grand Canyon Chapter, Archaeology Southwest, Friends of the Aravaipa Region (FAR) and others, we highlight as especial concern the following:

Procedural and Public Process Concerns

We share the concerns expressed by many that the DEIS scheduled public meeting process is flawed, inadequate and unresponsive to a number of issues: the repeated written requests from ourselves and our colleagues for GIS layers with which to do our own analysis in a timely fashion; repeated verbal and written requests for interactive question and answer periods with BLM representatives following the public presentations; repeated verbal and written requests for the scheduling of public hearings; written requests for a formal conflict resolution process incorporating the U.S. Institute for Environmental Conflict Resolution (USIECR); and repeated

verbal and written requests for an extension of the public comment period so that diverse stakeholders can adequately evaluate the massive three volumes (2200 pages) of the DEIS.

In order to meaningfully and substantively comment, the public must have access to all the data the BLM used to arrive at its conclusions. Yet despite numerous written requests for GIS layers from the BLM and their consultant, none were made available until more than half way through the comment period. This has limited our ability to assess the massive amount of information in the DEIS in a professional and thorough manner.

It has been impossible to make properly informed comments due to the lack of information of sufficient quality regarding many aspects of the SunZia proposal, for example the impacts of construction activities including, but not limited to, fragmentation and degradation of the hydro-geologic processes and habitat of the impacted areas. In addition, we question what the negative effects of the proposed widespread habitat destruction and degradation will be on wildlife species of concern and wildlife viewing? What are the direct, indirect and cumulative economic impacts on all the sustainable recreational uses within the proposed transmission line's sphere of activity? What is the complete cost benefit picture? There are many other questions that, given sufficient time, we would like to address. We share the concerns of our colleagues throughout our region regarding the adequacy and accuracy of the DEIS analyses and information. For example, BLM may have accepted technical analyses submitted by SunZia consultants without critical review (e.g., claims of being based on "primarily renewable" sources of energy, economics, hydrology, cumulative impacts, etc.).

The manner in which the BLM has "managed" implementation of the public process mandated by NEPA has been increasingly controversial, far less than open, interactive, or transparent, and has thus not fully nor adequately engaged the public. BLM has apparently chosen to disregard their own NEPA handbook which states, "Public meetings or hearings are required when there may be substantial environmental controversy concerning the environmental effects of the proposed action [or] a substantial interest in holding the meeting". Numerous requests for interactive public hearings have been ignored.

Neither has BLM complied with repeated requests from our colleagues at Archaeology Southwest, who have identified over 500 cultural sites in the lower San Pedro watershed, to utilize the NEPA process of the DEIS to initiate formal consultation under Section 106 of the National Historic Preservation Act in compliance with policy outlined in Instruction Memorandum 2012-108 and/or the Programmatic Agreement between BLM and the Advisory Council on Historic Preservation. The San Pedro and Aravaipa drainages contain near-complete records of 12,000 years of past human activity, including both Native American and Euro-American. For example, one alternative from the Safford area west would likely cause significant impacts and is likely to cause significant concern and controversy. The route would run directly between two (Mt. Turnbull/Santa Teresa Mountains, and the Pinaleño Mountains/Mt. Graham) of the four sacred mountains of residents of both the San Carlos and White Mountain Apache Tribes. The Pinaleño Mountains (aka Mt. Graham) have been found by the Forest Service to be eligible for a "Traditional Cultural Property" designation.

Scoping

In our 2010 scoping comments, we clearly stated that "we want assurances that this line will actually deliver energy from renewable energy sources" and that any proposed route through the San Pedro River Valley or impacting the Aravaipa Creek/Canyon is unacceptable due to high levels of ecological sensitivity. We emphasized "complete avoidance", abandoning and "removing consideration" [*sic*] for those routes which would impact the San Pedro River Valley, the Aravaipa ecosystem, and the Agua Verde Creek south of the Rincon Wilderness in Pima County, allowing no impacts to "any high quality riparian lands in Arizona". Not only were these areas not removed from consideration in the DEIS but a new route, not disclosed in the scoping process, located on the western side of the San Pedro River Valley, has suddenly and surprisingly been put forward as the BLM's "preferred alternative".

Purpose and Need

BLM has repeatedly stated that the proposed high-capacity SunZia project is intended to deliver power generated from "primarily renewable energy" sources. We appreciate BLM quietly removing this misleading and unsubstantiated claim from its website after repeatedly being called upon to do so. However, we remain concerned that this was not retracted and clarified during the public presentation by the SunZia consultant nor does the DEIS retract this spurious assertion when, in fact, all the current proposed routes appear expressly designed to provide connection to, and a market for, an as yet un-built, speculative 1000 MW natural gas-fired power plant at Bowie, Arizona. Though the exact source of the natural gas is unknown at this time, the potential exists for the gas to be obtained through "fracking", a controversial practice that may adversely impact subsurface aquifers that provide potable drinking water throughout the United States and which have been implicated in causing earth tremors and/or quakes. Why did BLM not consider routes going due west from the northernmost point in New Mexico? Why do all routes pass through Bowie? The DEIS analysis of alternatives is inadequate in this regard.

BLM claims that this power will provide much needed "renewable" energy to states such as California. However, Michael Picker, Senior Advisor for Renewable Energy Facilities to Governor Jerry Brown of California wrote to the Western Electricity Coordinating Council cautioning them against building long interstate transmission lines to California because California is projected to meet its 2020 33 percent Renewable Portfolio Standard requirement with in-state resources. This he reported in recent correspondence with Mr. Norman "Mick" Meader, Co-Chair of the Cascabel Working Group (CWG), when he wrote, "I was surprised to get your letter regarding SunZia, and the suggestion that the purpose of the power line might be to sell power into California. That seems like a risky business bet. Most California utilities report that they are already oversubscribed for renewable power generation." He goes on to state, "In fact, the California Public Utilities Commission reports that the state's investor-owned utilities have enough contracts from renewable power projects to supply 40% of the state's electricity needs." And further, "In fact, California has become an exporter of renewable power to neighboring states. The Hudson Ranch1 geothermal plant in California's Imperial County recently completed construction and has begun selling power to the Salt River Project

{Arizona's SRP}. We've made this point to regional transmission bodies in the past, urging caution on planning regional transmission solely for bulk power sales of renewables to help meet California's 33% Renewable Portfolio Standard. See my letter to WECC of August 3, 2011…" (appended).

The DEIS states, at1–3, that the need for the proposed action arises from the Federal Land Policy and Management Act of 1976's (FLPMA) establishment of a multiple use mandate for the management of federal lands. 43CFR 2801.2 specifies that BLM activities be done in a manner that:

a) protects the natural resources associated with public lands and adjacent lands, whether private or administered by a governmental entity;
b) prevents unnecessary or undue degradation to public lands;
c) promotes the use of rights-of-way in common, considering engineering and technological compatibility, national security, and land use plans; and
d) coordinates, to the fullest extent possible, all BLM actions under the regulations in this part with state and local governments, interested individuals, and appropriate quasi-public entities.

BLM is required to "minimize adverse impacts on the natural, environmental, scientific, cultural, and other resources and values (including fish and wildlife habitat) of the public lands involved." 43 U.S.C. §1732(d)(2)(a). The DEIS appears to have done just the opposite of what FLPMA requires. The DEIS disregards the current proposal of a Collaborative Conservation Initiative and new National Wildlife Refuge along 40 miles of its "preferred route" through the lower San Pedro River Valley; the purchase with voter-approved Open Space Bonds by Pima County of the A-7 and Six Bar ranches and the Bingham Cienega to facilitate implementation of an Incidental Take Permit (ITP) and draft Multi-species Habitat Conservation Plan (MSHCP) in compliance with Section 10 of the Endangered Species Act (ESA); the designation of the lower San Pedro River Valley as most suitable for open space conservation in the Pinal County Open Space and Trails and Comprehensive Plans; the decades of conservation efforts of numerous public and private entities to conserve the lower San Pedro River watershed; the existence of mitigation lands for previous infrastructure construction and habitat loss managed for restoration and conservation of candidate, threatened, and endangered species; the irreplaceable nature of the globally critical resources to be impacted and the absolute inability to mitigate for their loss or jeopardy; and the existence of a far more relevant and regionally useful transmission line project currently undergoing scoping - the Southline proposal.

Southline is a proposed southwestern New Mexico-southeastern Arizona transmission project that would connect the Afton generating station northwest of El Paso with the Saguaro generating station north of Tucson, ultimately connecting to Pinal Central and the Palo Verde hub through the Tucson Electric Power Company's new 500-kV lines. It essentially parallels the SunZia proposal over this distance and would actually access solar energy resources predominantly in southwestern New Mexico without the dire ecological consequences to unique resources proposed by SunZia, which are, in contrast, unable to be mitigated. Also in contradiction to SunZia, Southline's public process has been engaging, responsive, open and transparent. Unlike SunZia, Southline appears economically feasible, would provide numerous opportunities to improve southern Arizona's grid capacity and reliability and would, for the most

part, follow existent rights-of-way, thus minimizing its potential adverse impacts. Though Southline has its own unique challenges, we support the facilitated permitting and development of Southline as our preferred alternative to the SunZia proposal.

The DEIS has disregarded FLPMA's (a) & (b), has failed to consider local and regional land use plans, and has not "coordinated, to the fullest extent possible" with "local governments, interested individuals, and appropriate quasi-public entities." For reasons beyond our ability to comprehend, the DEIS fails to comply with the requirements for an adequate FLPMA or NEPA analysis. We are frankly surprised and disappointed, given BLM's previous history of conservation efforts along both the upper and lower San Pedro River watershed, that the BLM could bring forth any lower San Pedro River Valley or Aravaipa alternative with a straight face for serious consideration.

The DEIS (4-424) anticipates that 4,500 MW of new generation capacity empowered by SunZia would result in the disturbance of approximately 40,270 acres of land. The creation of new, massive infrastructure comprised of roads and multiple high towers along miles of a new power line corridor within or near the San Pedro River Valley, its tributaries, the Sulphur Springs Valley or Willcox Playa region would severely compromise two of only eight designated Globally Important Bird Areas in Arizona. As we wrote in our scoping comments, TAS strongly urges that these special wildlife areas be completely avoided and fully protected from any aspect of the SunZia proposal which, in our opinion, will degrade habitats for all wildlife and especially endanger the many high conservation value bird populations they support.

Conservation and Multiple Uses

The southwest is now the fastest growing area in the United States. In order to maintain ecosystem resilience upon which human health depends we must seek a balance between uses that will enable certain lands to be preserved in perpetuity. These priority lands must be identified using robust scientific methodology.

In **Pinal County**, the many years long public process that resulted in the final adopted Open Space and Trails Master Plan examined cultural (pg.14) and biological resources (pg.10), amongst other factors. The eventual product (pgs. 42 & 52) indicate that proposed SunZia alternatives through the lower San Pedro River Valley or Aravaipa region may traverse significant cultural resources, proposed and adopted County Trail Corridors (including the Arizona Trail), and proposed or existing/planned Open Space and a Regional Park. http://pinalcountyaz.gov/Departments/ParksTrails/Documents/FINAL%20Open%20Space%20and%20Trails%20Master%20Plan.pdf

The Pinal County Comprehensive Plan states,

> "The purpose of the Comprehensive Plan Open Spaces and Places chapter is to promote the County's quality of life by providing passive and active recreational opportunities, conserving existing natural resources and cultural heritage for the benefit of present and future generations…Throughout the planning process, residents reinforced their commitment to the preservation of open space and access to trails and recreational opportunities. The Vision component states: *Residents value the large connected open spaces and unique places of Pinal County, not only as part of their*

quality of life, but as an important resource to sustain the region's immense wildlife habitat and corridors." (pg. 221)

Also see pgs. 53, 57, 58, and 225-237 of the 2011 Updated Pinal County Comprehensive Plan) http://pinalcountyaz.gov/Departments/PlanningDevelopment/ComprehensivePlanUpdate/Documents/Complete%20CompPlan.pdf . The DEIS fails to analyze or address this.

The following segment regarding **Pima County's Sonoran Desert Conservation Plan** (SDCP) was written in conjunction with the Coalition for Sonoran Desert Protection (CSDP). In 1998, TAS was a founding member of the CSDP, which works to create a community where ecosystem health is protected, nature and healthy wild animal populations have value, and visitors, children and future generations can all drink clean water, breathe clean air, and find wild places to roam. The CSDP is committed to working toward science-based land use planning, focusing on Pima County's national award winning conservation planning effort and its efforts to obtain an ITP in association with the implementation of its draft MSHCP.

The county's SDCP seeks to conserve the most ecologically valuable lands and resources across the region, while guiding growth into more appropriate areas. The SDCP addresses several elements of resource conservation, including cultural preservation, open space conservation, protection of parks and natural reserves, ranch conservation, and ecological conservation http://www.pima.gov/cmo/sdcp/maps.html. The San Pedro River is identified as a "Priority Habitat and Corridor", a "Proposed Nature Preserve", an area of ranch preservation, cultural and environmental significance, and an "Important Riparian Area" (IRA). http://www.pima.gov/cmo/sdcp/habitat.html.

The biological goal of the SDCP is "to ensure the long-term survival of the full spectrum of plants and animals that are indigenous to Pima County through maintaining or improving the ecosystem structures and functions necessary for their survival." Objectives include:

> "promote recovery of federally listed and candidate species to the point where their continued existence is no longer at risk; where feasible and appropriate, re-introduce and recover species that have been extirpated from this region; maintain or improve the status of unlisted species whose existence in Pima County is vulnerable; identify biological threats to the region's biodiversity posed by exotic and native species of plants and animals, and develop strategies to reduce these threats and avoid additional invasive exotics in the future; identify compromises to ecosystem functions within target plant communities selected for their biological significance and develop strategies to mitigate them; and {*promote long-term viability for species, environments and biotic communities that have special significance to people in this region because of their aesthetic or cultural values, regional uniqueness, or economic significance.*}" as noted at 3-181 of the DEIS (italics added).

Conservation strategies entail:

> **"**Focus future growth and associated infrastructure expansion in areas in closest proximity to existing urbanized areas, not in areas of highest biological richness. Significantly lower intensity of future land uses allowed in certain biologically sensitive areas near major washes, within ecologically rich habitats, adjacent to Saguaro

National Park, and other sensitive areas of Pima County. Avoid or minimize future losses and fragmentation by a publicly supported land acquisition and conservation program. Open Space Acquisition funds and other private/public partnerships enable the acquisition of lands or conservation easements adjacent to the existing reserve system as well as ranches conserved through acquisition of development rights or conservation easements, thereby implementing the Ranch Conservation and Mountain Park Expansion Elements of the SDCP. Prioritize 26 percent of the CLS {Conservation Lands System} for conservation by the adoption of Habitat Protection Priorities in Eastern Pima County. This includes approximately 525,000 acres of biological core, important riparian areas, threatened and endangered species management areas, and special landscape elements. Pima County will continue to nominate and pursue acquisition of biologically sensitive lands for reclassification by the Arizona State Land Department under the Arizona Preserve Initiative, or through state land constitutional reform. Conserving important biological resources has become a very important part of future land use decisions."

The Conservation Lands System (CLS) is a part of the Environmental Element of Pima County's Comprehensive Land Use Plan's Regional Plan Policies, in compliance with Arizona law and Growing Smarter legislation, and provides one mechanism in the tool box to implement the county's draft ITP and MSHCP. The DEIS fails to evaluate SunZia's impacts to important elements of this regional conservation planning effort.

Acres of Pima County's Conservation Lands System that would be impacted by typical 400-foot right-of-way associated with SunZia routes. (Source: CSDP)

CLS Categories	SunZia Routes Through Pima County		
	Preferred	**4C2**	**4C2 Local Alternative**
Important Riparian	24 acres	670 acres	976 acres
Biological Core Management	638 acres	970 acres	462 acres
Multiple Use Management	124 acres	592 acres	173 acres
Special Species Management	*See analysis below*		

Important Riparian Areas (IRA) constitute the most biologically sensitive of CLS lands. They are "critical elements of the Sonoran Desert where biological diversity is at its highest. [They] are valued for their higher water availability, vegetation density, and biological productivity. They are also the backbone to preserving landscape connectivity."

http://www.pimaxpress.com/Documents/planning/ComprehensivePlan/PDF/Policies_Legend/Regional%20Plan%20Policies%20%28pp.%2019-65%29.pdf

Pima County guidelines recommend a landscape conservation objective of 95% undisturbed natural open space for Important Riparian Areas.

Biological Core Management Areas are "those areas that have high biological values. They support large populations of priority vulnerable species, connect large blocks of contiguous habitat and biological reserves, and support high value potential for five or more priority vulnerable wildlife species." Pima County guidelines recommend a landscape conservation objective of 80% undisturbed natural open space for Biological Core Management Areas.

Multiple Use Management Areas are "those areas where biological value are significant…[and] support populations of vulnerable species, connect large blocks of contiguous habitat and biological reserves, and support high value potential habitat for three or more priority vulnerable species." Pima County guidelines recommend a landscape conservation objective of 66-2/3% undisturbed natural open space for Multiple Use Management Areas.

Special Species Management Areas (SSMA) are "areas defined as crucial for the conservation of specific native floral and faunal species of special concern to Pima County. Currently, three species are designated as Special Species: Cactus Ferruginous Pygmy-owl, Mexican Spotted Owl, and Southwestern Willow Flycatcher." This designation is an overlay on top of the other CLS land designations. Pima County guidelines recommend at least 80 percent of the total acreage of lands within this designation shall be conserved as undisturbed natural open space and will provide for the conservation, restoration, or enhancement of habitat for the affected Special Species. As such, land use changes will result in 4:1 land conservation (i.e., four acres conserved for every one acre developed) and may occur through a combination of on- and off-site conservation inside the Special Species Management Area. The 4:1 mitigation ratio will be calculated according to the extent of impacts to the total surface area of that portion of any parcel designated as Special Species Management Area."

Acres of Pima County's Special Species Management Areas that would be impacted by typical 400-foot right-of-way associated with SunZia routes. (Source: CSDP)

Overlap with CLS Categories	SunZia Route 4C2
Important Riparian	284 acres
Biological Core Management	88 acres
Multiple Use Management	473 acres
Areas outside CLS	3 acres

Finally, Critical Landscape Connections are another important component of the CLS. They are "broadly defined areas that provide connectivity for movement of native biological resources but which also contain potential or existing barriers that tend to isolate major conservation areas." Two of the Critical Landscape Connections are "across the I-10/Santa Cruz River corridors in the northwest" and "across the I-10 corridor along Cienega Creek in the east", two areas crossed by the 4C2 route.

The proposed SunZia Project poses significant threats to the CLS, but the DEIS does not quantify or even qualify impacts to the CLS, a crucial component of the larger SDCP. Without further evaluation of the CLS and other components of the SDCP such as Pima County's proposed MSHCP and ITP, the DEIS does not satisfy the federal mandate that a DEIS "shall include discussions of possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned." 40 C.F.R. § 1502.16(c). Furthermore, the DEIS does not align with 40 C.F.R. § 1506.2(d) which states that, "To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law."

Pima County has sought to find a balance between development and conservation where priority conservation and preservation lands are identified and conserved using robust scientific methodology. There is certainly precedence for this approach. Not all public lands have a "multiple use ethic." Some are established in order to protect specific values, including natural hydro-geologic processes and wildlife. Wilderness areas, wildlife refuges, national parks, and national monuments are just a few of those areas, which have a more protective higher mandate than "multiple use."

The **Arizona Game & Fish Department's** (AZGFD) Strategic Plan for the Years 2007–2012, ***Wildlife 2012***, states that the goals of its wildlife program are "to conserve and preserve wildlife populations and habitat; to provide compatible public uses, while avoiding adverse impacts to populations and habitat; to promote public health and safety; and to increase public awareness and understanding of wildlife resources."

The **National Park Service** mission is to "preserve unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations." Portions of Saguaro National Park East and the Rincon Wilderness Area will be able to view the proposed power line.

The mission of the **BLM's National Landscape Conservation System**, which includes the Upper San Pedro River Riparian National Conservation Area (the Nation's first) and the Las Cienegas National Conservation Area (NCA), a pending Important Bird Area (IBA), is "to conserve, protect, and restore these nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations." Again, the protection of these attributes is prioritized over other activities. One SunZia route could impact the La Cienegas NCA.

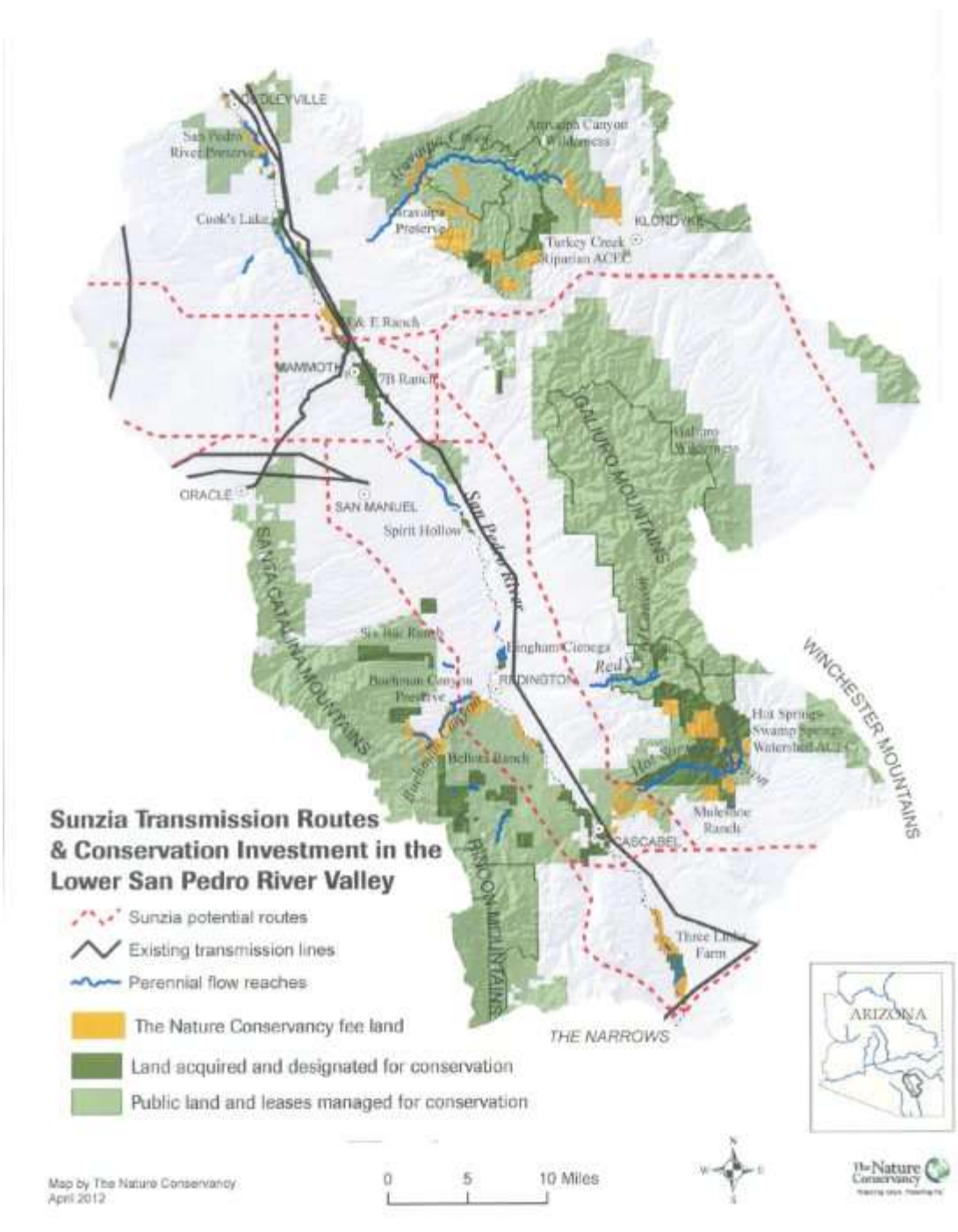
The entire region enjoys the various diverse habitats within the **Coronado National Forest**'s multiple units, much of which is designated multiple use. Yet even the very definition of "multiple use" in the Multiple-Use Sustained Yield Act of 1960 recognizes "that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output."

The **National Wildlife Refuge System Administration Act of 1966** mandates the standard of compatibility, i.e.: uses of refuge lands must be determined to be compatible with the purposes for which individual refuges were established. This standard was later clarified in the National Wildlife Refuge System Improvement Act of 1997: Conservation is the priority, then various compatible uses. The DEIS fails to adequately analyze a proposal for a new National Wildlife Refuge is currently in the scoping phase for the lower San Pedro River Valley.

The DEIS implication that the current SunZia proposal could be permitted in compliance with FLPMA because the lower San Pedro River Valley is already impacted and by inference fragmented by human uses is flawed. The analysis is inadequate under NEPA and FLPMA.

We would call your attention to the significant investment to conserve the cultural, historic, and biologic resources of the lower San Pedro River Valley by private parties, non-profit organizations, and state and federal agencies. Along the lower San Pedro River, the BLM, the BOR, the AZGFD, Pima County, TNC, SRP, and private landowners have protected close to 40,000 acres and invested over $25 million dollars in acquisitions of conservation/preservation lands and water rights (Baker, 2010).

The Nature Conservancy's (TNC's) April 2012 map, shown on the next page (p12), illustrates the proximity and potential for fragmentation of the proposed SunZia alternatives to conserved areas along the lower San Pedro River Valley and Aravaipa Creek. It documents the extraordinary efforts and investment, by diverse stakeholders, in attempting to preserve and conserve over 500 archaeological sites of cultural and historic importance, as well as the unique and irreplaceable biological resources of the watershed. However, when considering the river and its tributaries in its entirety, TNC estimated in the spring of 2012 that more than 733,589 acres of public and private restoration and conservation sites are encumbered by easements.


Sunzia Transmission Routes
& Conservation Investment in the
Lower San Pedro River Valley
Sunzia potential routes
Existing transmission lines
Perennial flow reaches
The Nature Conservancy fee land
Land acquired and designated for conservation
Public land and leases managed for conservation
Map by The Nature Conservancy
April 2012
0
5
10 Miles
ARIZONA
The Nature Conservancy
MAMMOTH
ORACLE
SAN MANUEL
KLONDYKE
REDINGTON
CASCABEL
THE NARROWS
SANTA CATALINA MOUNTAINS
GALIURO MOUNTAINS
WINCHESTER MOUNTAINS
RINCON MOUNTAINS
San Pedro River
Spirit Hollow
Cook's Lake
Turkey Creek
Riparian ACEC
Bingham Cienega
Red
Hot Springs
Swamp Springs
Watershed ACEC
Muleshoe
Ranch
Three Links
Farm
Bellota Ranch
Buchman Canyon
Preserve

Some of the lower San Pedro River Valley easements are listed in more detail below:

1. **San Pedro River Preserve**: TNC is restoring this 6,900-acre property—formerly a catfish and pecan farm—and re-seeding it with native grass. Water is being restored to the river and the plant community is rebounding. Partner: Bureau of Reclamation (BOR).

2. **Aravaipa Canyon**: Flanked at either end by a TNC preserve, this 58,900-acre wilderness is noted for its majestic cliffs, bighorn sheep and a creek which supports a thriving population of native fish. Partners: BLM, AZGFD.

3. **H & E Land & Cattle**: TNC is restoring the natural washes and native grasses on this 570-acre property, thereby improving the floodplain and returning water to the river. Partner: Arizona Department of Water Resources.

4. **7B Ranch**: TNC is managing this 3,100-acre property to eliminate invasive species and restore its wetlands and the largest mesquite bosque remaining in the Southwest. Partners: Resolution Copper Company, U.S. Fish & Wildlife Service (USFWS), BLM.

5. **Mercer Ranch Rancher**: Mike Mercer has planted native grass along the river's floodplain and is using significantly less water than on previous crops. Partners: USFWS, Mercer family.

6. **Buehman Canyon**: From lands high up in the Santa Catalina Mountains, water flows down this canyon—a critical wildlife corridor—to feed the San Pedro. This parcel contains designated "Outstanding Arizona Waters" by ADEQ. TNC donated the parcel to Pima County in January of 2012. Partners: TNC, Pima County, Forest Service.

7. **Bingham Cienega**: This restored spring-fed marsh sits on 285 acres with cattails, native grass, mesquite, cottonwood and willow. Owned by Pima County. Partners: TNC & Pima County.

8. **A-7 Ranch**: TNC originally purchased this 6,828-acre property to conserve the wildlife corridor extending from the forests of the Santa Catalina Mountains to the river. Purchased by Pima County with $2 million of voter approved Open Space Bonds for conservation purposes. The preferred alternative would bisect the ranch with a denuded right-of-way (ROW). Partners: TNC & Pima County.

9. **Hot Springs Canyon**: Five landowners and TNC signed conservation agreements covering 1,700 acres of this critical wildlife corridor that connects the Muleshoe Ranch to the San Pedro River. Partners: Cascabel Hermitage Association, Saguaro-Juniper Association, BLM, private landowners.

10. **Muleshoe Ranch Cooperative Management Area**: TNC manages this 57,500-acre property in the Galiuro Mountains to restore native grasslands and streamside areas, creating excellent habitat for rare native fish. Partners: BLM, Forest Service, AZGFD.

11. **3 Links Farm**: TNC purchased and placed conservation easements on 2,209 acres, restricting future development and restoring water to the river. Now this once-dry, six-mile stretch of river is permanently flowing, and the beavers have returned. Partners: BOR, SRP, private landowners.

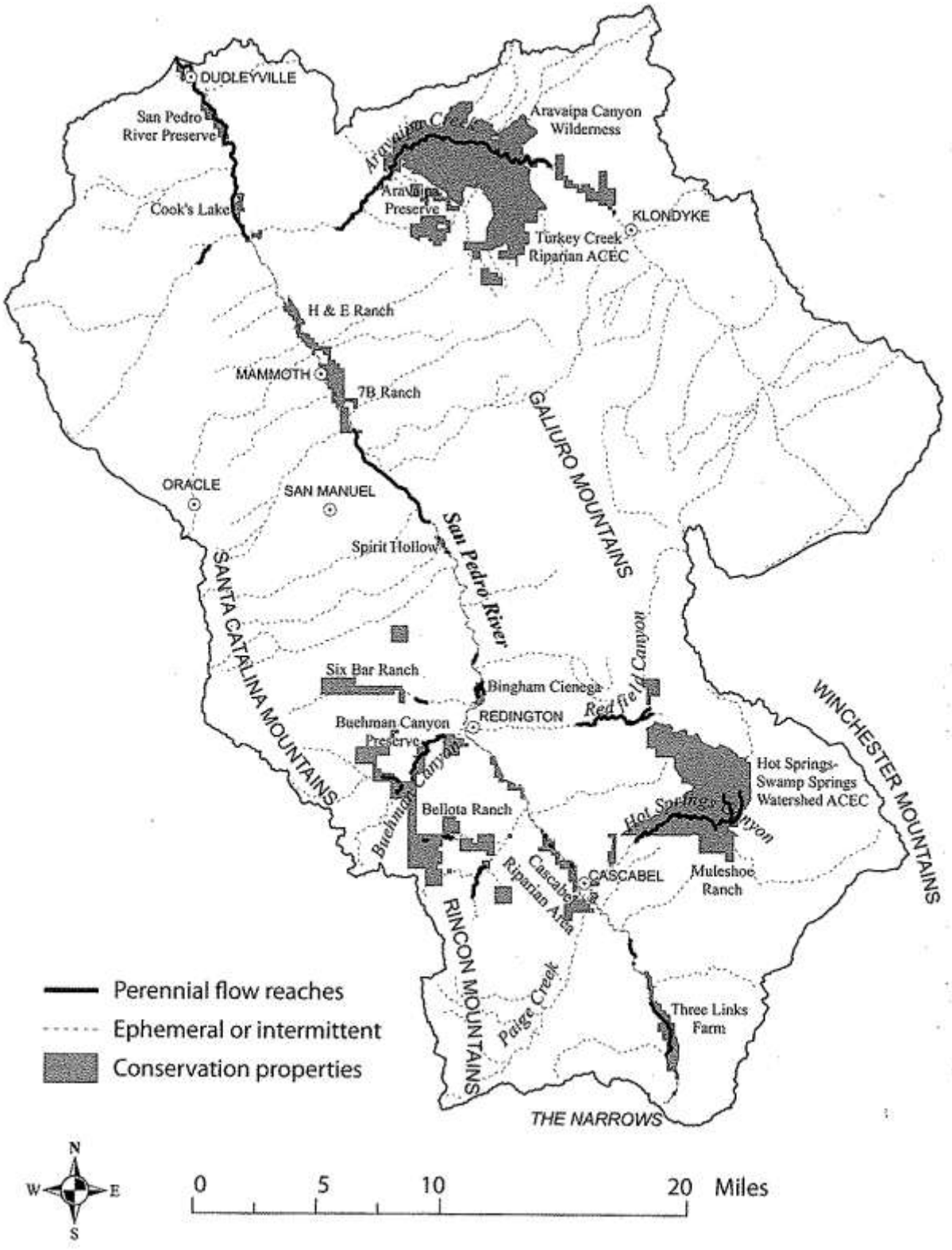


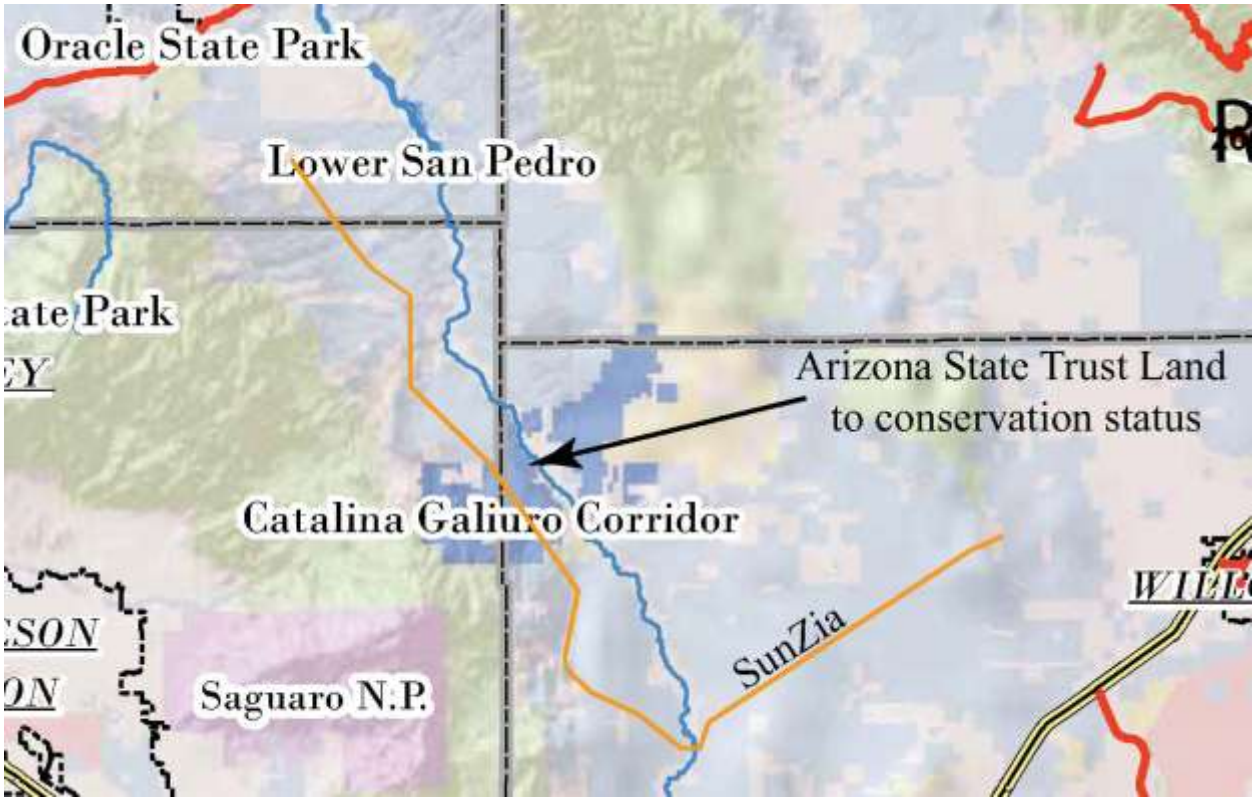
Fig. 19.1. Map of lower San Pedro River basin showing riparian conservation areas (public and private). Map prepared by Dale Turner, Arizona Nature Conservancy.

While the previous TNC map does not include all current conservation or archaeological easements, it is a clearer illustration of some of the easements along the lower San Pedro River Valley.

State Trust Land Reform

State Trust land reform efforts have a long history in Arizona. The desire to provide for buffering of military lands, accountability, transparency and the public good have led to numerous efforts which have increasingly focused on the best available science to identify those lands which, if conserved in perpetuity, would most benefit the resilience of the ecosystem and give the biggest bang for the buck expended.

The most recent efforts in this regard have identified a suite of State lands in the lower San Pedro Valley that would provide a critical wildlife linkage, or corridor, between the Galiuro range and the Santa Catalina/Rincon Mountains complex, illustrated in a darker blue color below.



Map Courtesy of CWG. Impact of the SunZia preferred alternative on Arizona State Trust Land being considered for inclusion in conservation status in Arizona State Trust Land Reform initiatives.

The DEIS fails to adequately consider and analyze potential effects of the SunZia proposal with regard to fragmentation and local, regional and state land use planning and conservation efforts.

Economic Impact Analysis

The DEIS has used a deficient economic analysis that examines only one side of the economic

equation — the economic benefits of the proposed SunZia transmission line — while ignoring the negative economic impacts to other sectors. An in depth analysis needs to be done using the best available scientific and commercial information.

The San Pedro River and its tributaries, the Aravaipa Creek area, Sulphur Springs Valley and the Willcox Playa and associated environs, represent well-known ecotourism hot-spots in this region and birders in particular come from all over the world to bird this region. If this ecotourism were reduced because of direct, indirect and cumulative impacts of the transmission line, this would directly, indirectly and cumulatively adversely impact the various communities, from San Simon to Winkelman to Benson and Tucson to Oracle to Wilcox, that benefit so much from ecotourism. Ecotourism is especially important for dispersed rural communities.

In short, the DEIS fails to adequately analyze the economic role of public lands, river valleys, playas and open spaces in supporting local economic health and it ignores existing research documenting the economic importance of protected public land resources. Income from tourism is a sustainable source of income, but requires that the resource is managed and protected. The proposed SunZia transmission line has the potential to forever damage sustainable regional resources for a questionable purpose and need.

Watchable Wildlife Economics

One of the AZGFD's recreation strategies is to "Identify, assess, develop and promote watchable wildlife recreational opportunities." Audubon members enjoy birding, hiking, wildlife viewing, and photography and think it is critically important to protect wildlife habitat and ensure sustainable populations of the full spectrum of native wildlife species.

You might be surprised to learn that **birding leads ALL other recreational activities in promoting the economic growth of ecotourism in Arizona**.

In a 2006 study, the Outdoor Industry Foundation reported that all outdoor wildlife-related recreational activities generated $730 billion annually for the United States economy, and of that, watchable wildlife generated $43 billion annually. They reported 66 million Americans participated in wildlife viewing, which supported 466,000 jobs. Estimated economic returns included retail sales averaging $8.8 billion, trip related expenditures of $8.5 billion, and state and federal tax receipts of $2.7 billion. The report is available at http://www.outdoorindustryfoundation.org./. Although much of this economic impact is due to outdoor recreation, other visitors may come to these areas for sight-seeing, for family gatherings, for educational benefits and for many other values not captured by the category of outdoor recreation.

Outdoor recreation, natural resources conservation and historic preservation in the United States all have measurable economic impacts.According to a 2011 study by the National Fish & Wildlife Foundation, http://www.nfwf.org/Content/ContentFolders/NationalFishandWildlifeFoundation/HomePage/ConservationSpotlights/TheEconomicValueofOutdoorRecreation.pdf, a minimum estimate of the combined value of outdoor recreation, nature conservation and historic preservation shows that over 9.4 million jobs were created while $107 billion was generated by local, state and federal tax revenues resulting in a minimum total economic impact nationally of $1.6 trillion! Outdoor

recreation sales (gear and trips combined) of $325 billion per year are greater than annual returns from pharmaceutical and medicine manufacturing ($162 billion), legal services ($253 billion), and power generation and supply ($283 billion).

The U.S. Fish & Wildlife Service contributed about $4.2 billion in economic activity and supported over 32,000 jobs through their management of 553 National Wildlife Refuges and thousands of smaller natural areas in the United States. One detailed study of visitation to National Wildlife Refuges (Caudill and Henderson, 2005) looked further into the impacts on the local communities around these reserves in 2004. In 2004, there were 36.7 million visitors who generated $1.64 billion of economic activity in regional economies. Caudill and Henderson went further into their analysis and showed that about two-thirds of the total expenditures were generated by non-consumptive activities and not fishing (27%) or hunting (5%), which illustrates the value these natural areas have for passive enjoyment of nature. The authors also conducted willingness-to-pay studies to determine the value of these refuges beyond what it actually cost them to visit. They found that visitors showed a consumer surplus of more than $1.3 billion, with $816 million of this amount attributed to non-consumptive visitation.

The most recent economic analysis using USFWS data calculated by Arizona county states that ecotourism is worth over $1.5 billion dollars to Arizona each year - over $300 million in Pima County, over $95 million in Pinal County, over $25 million in Cochise County, and over $13 million in Graham County each year.
http://tucsonaudubon.org/images/stories/conservation/AZ_County_Impacts_-_Southwick.pdf.
This analysis revealed that Arizona created 15,058 full and part-time jobs and accounted for salaries and wages of $429,391,051, or nearly $430 million in total household income. Arizona engendered over $57 million in state taxes (state sales taxes of $46,756,837 and state income taxes of $10,821,828) and federal income taxes of $75,544,307. Home owners near parks and protected areas are repeatedly seen to have property values more than 20% higher than similar properties elsewhere.

Ecosystem Services, Economics and Climate Change

The term **"Ecological values"** refers to clean air, clean and abundant water, fish and wildlife habitat and other values that are generally considered public goods. "**Ecosystem services**" include all the functions and natural processes performed by nature that would otherwise have to be paid for by people through the construction of facilities. These services include climate regulation, waste treatment, water supply, carbon sequestration, nutrient cycling, habitat provision and many others that all help modulate and regulate climate, weather and various resources needed for human comfort, security and quality of life. Wetlands, forests, grasslands, river systems, and lakes all provide environmental services.

For example, the total value of ecosystem services provided by the acreage of natural habitats in National Wildlife Refuges in the United States totaled $32.3 billion/year, or $2,900 thousand/acre/year (Ingraham and Foster, 2008). In fact, the total amount of ecosystem services provided by these categories of natural land amount to about $1.6 trillion, which is more than 10% of the GDP in 2009 when land in the contiguous United States is tallied.

Consider birds, which contribute irreplaceable ecosystem services: according to the **American Bird Conservancy's 2007 report**,

> "Birds play an important role in maintaining the ecosystems on which humans depend to maintain our quality of life and civilization. For example, birds eat billions of insects each year that left unchecked could decimate our crops. Birds also play an important role as pollinators, providing a fundamental service to agricultural production that simply cannot be replaced by other means. According to the Smithsonian Migratory Bird Center, birds eat up to 98% of budworms and up to 40% of all non-outbreak insect species in eastern forests. The value of this insect control has been estimated to be as much as $5,000 per year per square mile of forest."
>
> "Birds are also superb "canaries in the coal mine", or indicators of environmental health and change. Rapid declines in bird numbers have alerted us to the harm being caused to humans and the environment by toxic chemicals. And birds, by virtue of their insect control services, can help prevent the spread of insect borne diseases such as malaria and dengue fever, both formerly prevalent in the wetlands of the arid southwest. The knowledge we gain from birds directly affects our quality of life and our understanding of how economic development can be made more environmentally sustainable." http://www.abcbirds.org/habitatreport.pdf

Maintaining sustainable rural and urban landscapes is important for the public health, safety, and quality of life for all those who live in Arizona and New Mexico. The results from the **2012 Colorado College State of the Rockies Conservation in the West poll** find that Arizona and New Mexico voters across the political spectrum — from Tea Party supporters to those who identify with the Occupy Wall Street movement and voters in-between — support upholding and strengthening protections for clean air, clean water, natural areas and wildlife. Voters also view Arizona's and New Mexico's parks and public lands as essential to their state's economy and quality of life.
http://www2.coloradocollege.edu/stateoftherockies/conservationinthewestsurvey_media_coverage.html

Sustainable forestry, agriculture and ranching practices can help to maintain and restore the vitality of our communities while also helping to preserve our culture, natural landscapes and ecosystems. It only makes common sense that it should be our general policy to support the maintenance, enhancement and restoration of ecosystem values and services throughout the state, focusing on the protection of land, water, air, soil and native flora and fauna upon which our human health and safety depend.

We encourage landowners within the potentially impacted area(s) to explore gaining access to additional sources of revenue such as emerging ecosystem services markets that help landowners diversify their incomes, improve the ecological functions of their lands and pass along their lands and the lands' associated benefits to future generations. The term **"Ecosystem services market"** describes a system in which providers of ecosystem services can access financing to protect, restore and maintain ecological values.

Employment and economic opportunities are important in order to maintain our quality of life while providing assurances that development will occur in suitable locations so that ecological

values will be maintained and improve. We must recognize the need for biological connectivity and the overall ecological viability of conservation and restoration efforts at a landscape scale, such as has already occurred along portions of the lower San Pedro River Valley and Aravaipa Creek and environs. The conservation and restoration of these rare ecosystem services will help avoid carbon emissions, help address impacts associated with climate change and help natural resources adapt to these impacts.

It is widely accepted that the Sonoran ecoregion is currently in the throes of a **profound drought** and that these types of drought have occurred historically in the region. On June 23, 1999, the Arizona Division of Emergency Management declared a statewide drought emergency (PCA99006) which remains in effect as a "current open disaster" at this time. However, new findings appear to indicate that weather changes associated with global climate change may exacerbate the negative impacts of previous climate patterns.

University of Arizona climate models document current, and predict future, above average warming trends in the Sonoran desert ecoregion which may exacerbate the extremes of previous precipitation patterns. Jonathon Overpeck, director of the U of A's Institute for the Study of Planet Earth, was a lead author on the April 2007, Nobel Prize- winning Intergovernmental Panel on Climate Change's report linking atmospheric greenhouse gas increases to human activity. "The climate in the Southwest is changing faster than anywhere else in the U.S.," he said. "The implications of climate change have already started in Arizona. We'll have to deal with warmer temperatures, less precipitation and more drought…" "These temperature changes that are coming are huge, will demand a lot of water and will make the droughts of the past look pale because they will be so much hotter," he testified before the House Science and Technology Committee at a hearing on water supply challenges for the 21st century (AZ Daily Star 5/15/2008). Published May 2008, the ***Synthesis and Assessment Product 4.3 (SAP 4.3): The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity in the United States*** (http://www.sap43.ucar.edu/) is the most extensive examination of the impacts of climate change on important U.S. ecosystems undertaken to date. It concludes that, in arid region ecosystems that have not co-evolved with a fire cycle, the probability of loss of iconic, charismatic mega flora such as saguaro cacti and Joshua trees will greatly increase and that:

- Climate change is already affecting U.S. water resources, agriculture, land resources, and biodiversity, and will continue to do so.
- Higher temperatures will negatively affect livestock. Warmer winters will reduce mortality but this will be more than offset by greater mortality in hotter summers. Hotter temperatures will also result in reduced productivity of livestock and dairy animals.
- Forests in the interior West, the Southwest, and Alaska are already being affected by climate change with increases in the size and frequency of forest fires, insect outbreaks and tree mortality. These changes are expected to continue.
- Much of the United States has experienced higher precipitation and streamflow, with decreased drought severity and duration, over the 20th century. The West and Southwest, however, are notable exceptions, and increased drought conditions have occurred in these regions.

- Weeds grow more rapidly under elevated atmospheric CO_2. Under projections reported in the assessment, weeds migrate northward and are less sensitive to herbicide applications.
- There is a trend toward reduced mountain snowpack and earlier spring snowmelt runoff in the Western United States.
- Invasion by exotic grass species into arid lands will result from climate change, causing an increase fire frequency. Rivers and riparian systems in arid lands will be negatively impacted.
- A continuation of the trend toward increased water use efficiency could help mitigate the impacts of climate change on water resources.
- The growing season has increased by 10 to 14 days over the last 19 years across the temperate latitudes. Species' distributions have also shifted.

Seager *et al*. (2007) examined future subtropical drying by analyzing the time history of precipitation in 19 climate models. Of the total of 49 individual projections conducted with the 19 models, even as early as the 2021–2040 period, only 3 projections show a shift to a wetter climate. These simulations provided initial conditions for 21st-century climate projections. In the multimodel ensemble mean, there is a transition to a sustained drier climate that begins in the late 20th and early 21st centuries in the southwestern United States and parts of northern Mexico. In general, large regions of the relatively dry subtropics dry further, whereas wetter, higher-latitude regions become wetter still. The American Southwest experiences a severe drying. This pattern of subtropical drying and moistening at higher latitudes is a robust feature of current projections with different models of future climate.

Seager explains the drying of subtropical land areas that, according to the models, is imminent or already under way is unlike any climate state we have seen in the instrumental record. It is also distinct from the multidecadal megadroughts that afflicted the American Southwest during Medieval times. The most severe future droughts will still occur during persistent La Niña events, but they will be worse than any since the medieval period, because the La Niña conditions will be perturbing a base state that is drier than any state experienced recently (Seager *et al*. 2007, *Science*, 25 May 2007, Vol. 316, pgs. 1181-1184).

Powell, in his 2011 *Pima County Inventory of Conserved Open Space Perennial Water,* found that the county's San Pedro open space lands contained significant springs and tinajas that may contribute to many species adapting to climate change: Youtcy Spring, where Lowland leopard frogs were found; two tinajas each in Youtcy Canyon and Espiritu Canyon; Grapevine Spring; and tinajas/pools in Buehman and Bullock Canyons, where Lowland leopard frogs and longfin dace were found. All of these sources contribute to the surface water availability in the San Pedro watershed.

Powell states that the results of the census indicate there is an average of one source of perennial water for every 20,000 acres of county owned open space. He says,

> "This does not discount the importance of sites with intermittent or ephemeral surface water. These areas can be crucial resources for a wide range of resources. For example, ephemeral surface water, which sometimes remains for only a few weeks, is used almost exclusively by most of the desert toads (family Bufonidae). These surface water resources play critical a critical role in a host of ecosystem functions such as dispersal of aquatic animals, nutrient cycling, and sediment movement."

Powell goes on to report that regional models predict a 10-20% decrease in annual precipitation, primarily decreasing winter rains, and more severe summer monsoons resulting in drying of already stressed ecosystems.

Levick *et al*. 2008, describe the importance of intermittent and ephemeral water sources:

> "Ephemeral and intermittent streams make up approximately 59% of all streams in the United States (excluding Alaska), and over 81% in the arid and semi-arid Southwest (Arizona, New Mexico, Nevada, Utah, Colorado and California) according to the U.S. Geological Survey National Hydrography Dataset…Ephemeral and intermittent streams provide the same ecological and hydrological functions as perennial streams by moving water, nutrients, and sediment throughout the watershed. When functioning properly, these streams provide landscape hydrologic connections; stream energy dissipation during high-water flows to reduce erosion and improve water quality; surface and subsurface water storage and exchange; ground-water recharge and discharge; sediment transport, storage, and deposition to aid in floodplain maintenance and development; nutrient storage and cycling; wildlife habitat and migration corridors; support for vegetation communities to help stabilize stream banks and provide wildlife services; and water supply and water-quality filtering. They provide a wide array of ecological functions including forage, cover, nesting, and movement corridors for wildlife. Because of the relatively higher moisture content in arid and semi-arid region streams, vegetation and wildlife abundance and diversity in and near them is proportionally higher than in the surrounding uplands. In the rapidly developing southwest, land management decisions must employ a watershed-scale approach that addresses overall watershed function and water quality…Consideration of the cumulative impacts from anthropogenic uses on these streams is critical in watershed-based assessments and land management decisions to maintain overall watershed health and water quality."

Recently, land managers have noted dwindling fish populations in the San Pedro River, citing higher than normal water temperatures, lethal to some native fish, as one cause (Regional Monitoring Partnership meeting notes, 1/25/2007). Climate change may bring further changes to the flow, temperature, vegetation, and species distribution of the San Pedro River. These and other foreseeable impacts to intermittent, ephemeral or perennial waters and the watersheds they support must be analyzed in light of their impact on the ability or limitation of the landscape and wildlife to adapt to climate change, as well as the how such reasonably foreseeable changes will affect the livelihoods, economies and general availability, quantity, and quality of water of the residents of the areas impacted. The DEIS analysis is inadequate and does not

address the reasonably foreseeable circumstances of prolonged drought and climate change.

Our natural resources provide food and shelter, flood control, water filtration, clean air, fish and wildlife habitat, recreational opportunities, aesthetic benefits, jobs, and a higher quality of life for all. Science has demonstrated the importance of these natural resources to our daily lives. The adverse impacts of climate change may stress some natural resources and systems to the point that they may struggle to adapt and provide ecosystem services. It is necessary to maintain and improve the overall health of our natural resources in order to maintain them for the health, welfare, and enjoyment of present and future generations.

Habitat Fragmentation

Un-fragmented landscapes are key indicators developed by biologists in assessing the conservation value of regions and sites and the imminence of the threats they face (Baker, 2010). Large blocks of habitat have the potential to sustain viable species populations and they permit a broader range of species and ecosystem dynamics to persist. Studies have shown that even specialized species such as neo-tropical migrants are using the entire watershed, not just the "green ribbon" created by the lower San Pedro River Valley (LSPRWA, 2006).

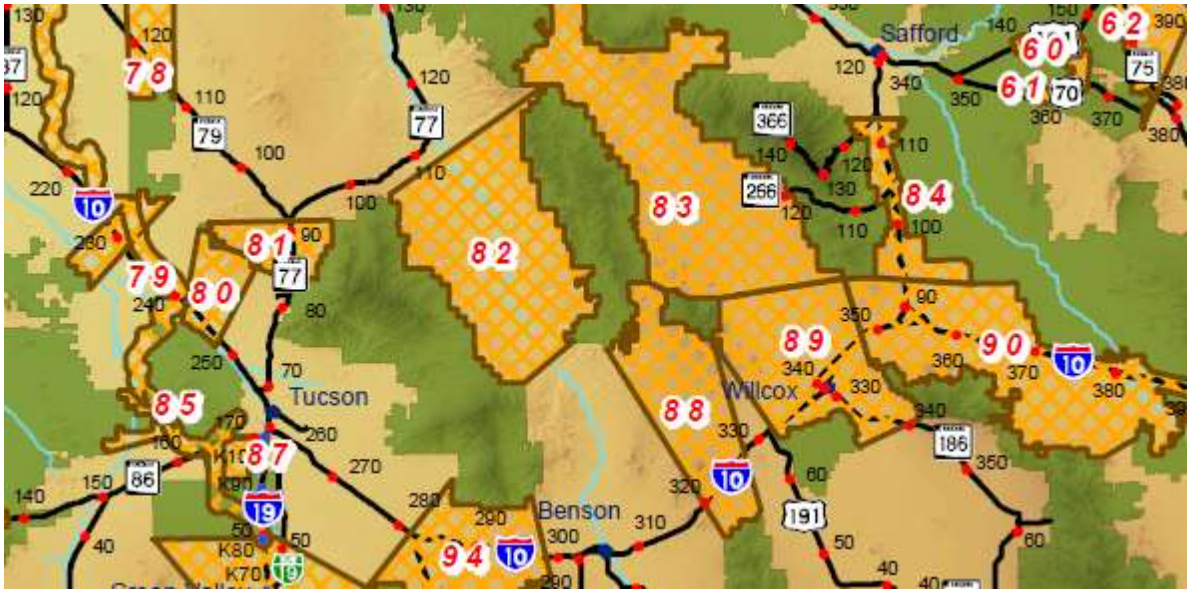
Harvard's Richard Forman pioneered studies showing that roadway and infrastructure construction and maintenance fragments habitat and can adversely impact flora and fauna by interruption of wildlife movement and migration, clearing of native vegetation, increased human and vehicular traffic in the area of impact, introduction of invasive species, light and sound impacts, and negative edge effects.

It is well documented that transmission lines cause significant and direct mortality of raptors (Banks 1979, Klem 1979, Churcher and Lawton 1987) (United States Fish & Wildlife Service {USFWS} BO for Las Cienegas 10/4/2002, pg. 72). Also problematic for small birds, herps and mammals is that the transmission line will create a continuous linear swath, which will eventually total hundreds of miles in collective length, where the towers will serve as a giant hunting perch for raptors. Raptors may perch on the towers and pick off anything that flies across or runs out into the open, denuded area. The towers and denuded area together are a potentially lethal combination that will seriously impact both resident and migratory bird species. Eventually raptors will likely habituate to areas along the line where the highest concentrations and/or movements of birds, herps and small mammals occur and exploit the height of the towers and lack of cover, resulting in a higher concentration of raptors nesting close to the line.

There is a strong likelihood that the access and maintenance roads will become travel corridors for all-terrain off road vehicles resulting in significant disturbances to wildlife, spread of exotic invasive species, and habitat fragmentation. In *The State of the Desert Biome*, Nabhan and Holdsworth state, "…although once considered a non-consumptive use of the desert relative to mining, grazing and logging, recreation-related damage is now considered the second most pervasive impact upon threatened and endangered species in the Western United States (Rick Knight pers. Comm.) Off-road vehicle damage of vegetation, vandalism and illicit collecting of endangered plants - all incidentally associated with outdoor recreation - are collectively cited more frequently than any other pressures on threatened plants in the U.S./Mexico borderlands (Nabhan *et al*. 1989). In survey results of public land managers regarding the adverse impacts

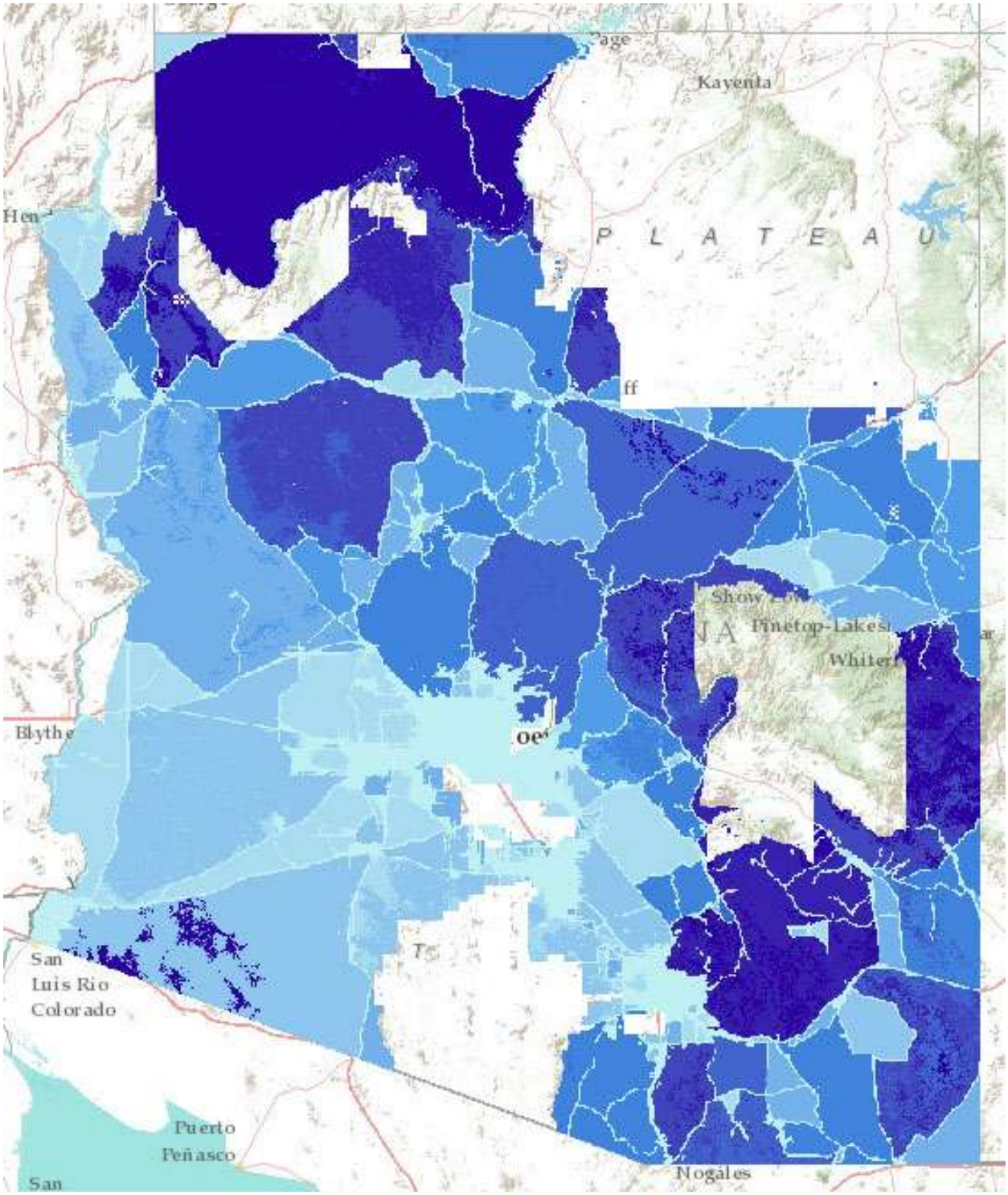
of recreational use of natural resources, soil erosion was the most frequently cited negative impact, followed by frequency of disturbance of understory vegetation, fuel-wood harvesting, disruption of nesting birds and disturbance of other landscape features, including riparian vegetation and dunes" (Nabhan and Holdsworth 1998, pgs. 24–25).

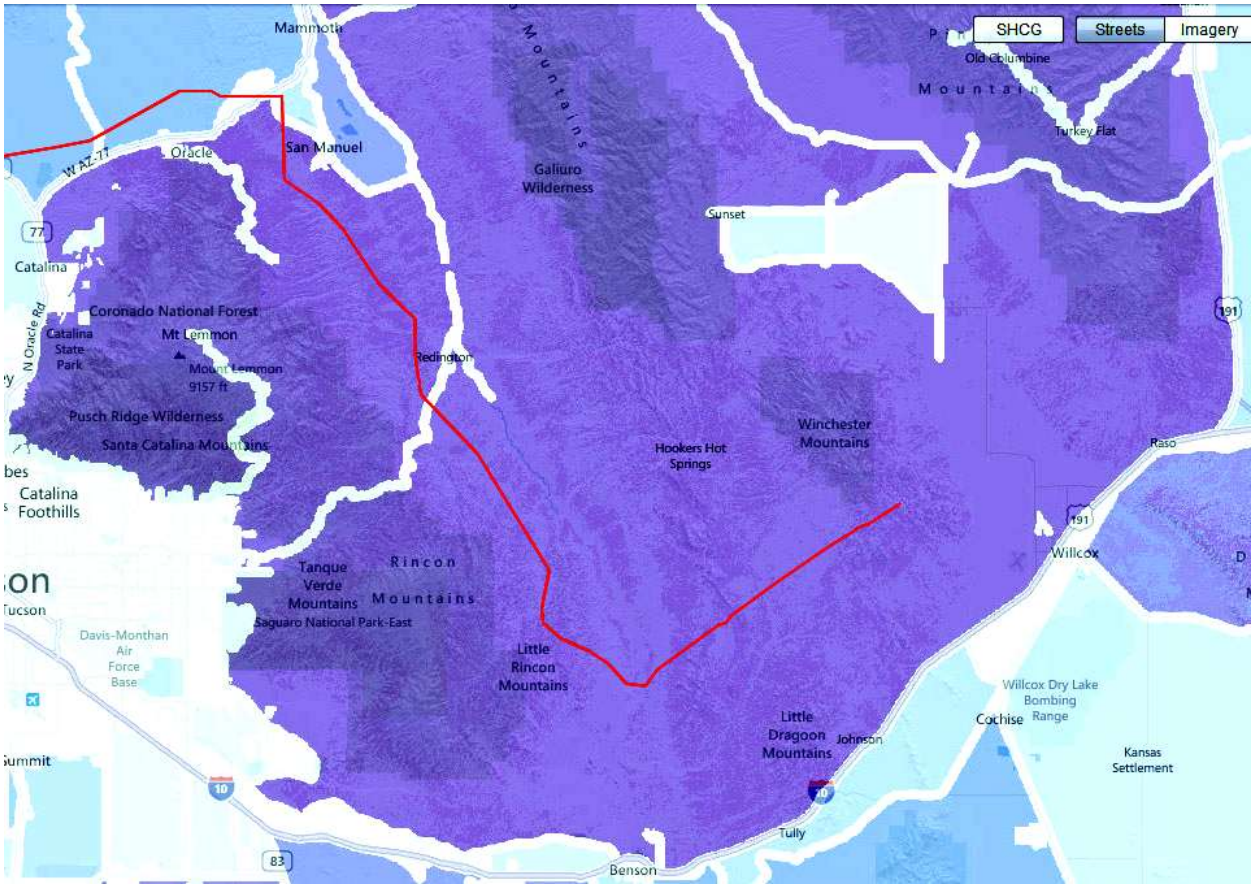
The Arizona Wildlife Linkages Working Group, comprised of the Arizona Department of Transportation (ADOT) and the Arizona Game and Fish Department (AZGFD) in conjunction with the FHWA, BLM, USFS-Tonto National Forest, USFWS, Northern Arizona University, Sky Island Alliance, and the Wildlands Project, created the "Arizona Wildlife Linkages Assessment Document" http://environment.fhwa.dot.gov/integ/case_arizona.asp. The practice of clearing the transmission corridors of all vegetation for fire suppression and transmission line maintenance will result in even more fragmentation of the lower San Pedro River Valley and its tributaries, adversely impacting crucial wildlife movement corridors and connectivity between the Rincon and Catalina Mountain portions of the Coronado National Forest with the Galiuro Wilderness, Aravaipa Canyon and the Santa Teresa Mountains. Potentially impacted linkages are numbers 78, 79, 80, 81, 82, 83, 84, 88, 89, and 90, http://www.azdot.gov/Highways/OES/AZ_WildLife_Linkages/map.asp excerpted below.



The **Arizona Wildlife Linkages Assessment Document** includes a detailed written description of each linkage and the species associated with each one. The 2008 Western Governors Association Wildlife Corridors and Crucial Habitat Initiative (http://www.westgov.org/index.php?option=com_content&view=article&id=123&Itemid=68) incorporated the initial work of the Arizona Wildlife Linkages Working Group. AZGFD is continuing the refinement of the original report on a county by county basis, completing more detailed assessment reports for Pinal and Pima Counties and currently developing a more detailed assessment of Cochise County.

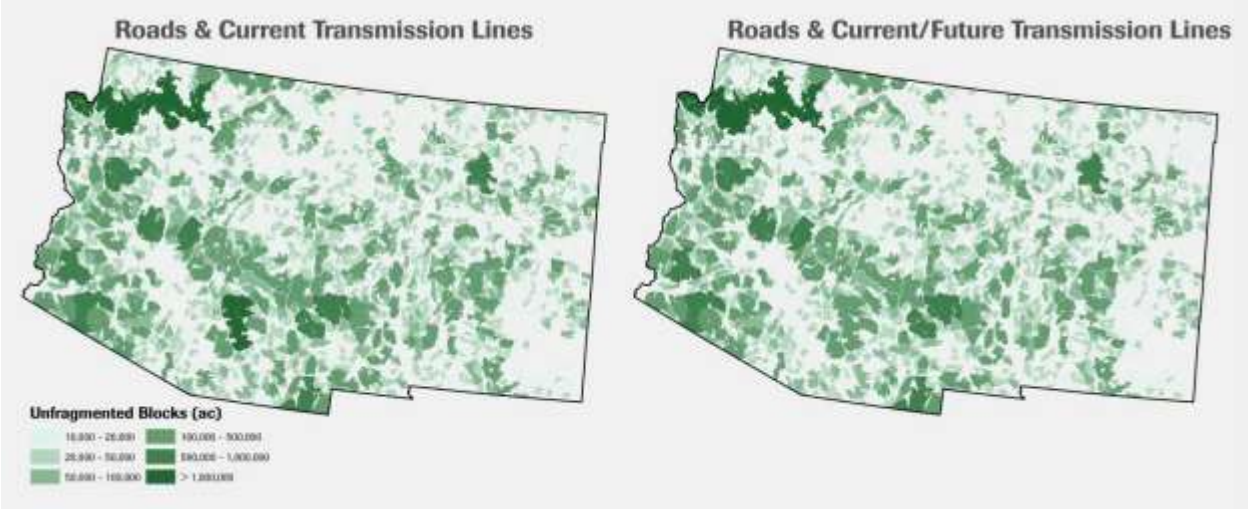
The AZGFD map of fragmentation in Arizona, available from http://www.habimap.org/habimap, is shown below. The darker the blue, the less habitat fragmentation. The lower San Pedro watershed/Aravaipa- Galiuro-Santa Teresa region remains the second least fragmented landscape in Arizona, surpassed only by the Grand Canyon area.





Courtesy of CWG. A detailed view showing the SunZia preferred alternative in the San Pedro Valley superimposed on the Arizona Game and Fish Department's fragmentation map for Arizona.

TNC's June 18th, 2012 map illustrating levels of fragmentation of habitat in New Mexico and Arizona tells a tale. TNC states, "The graphic below compares the baseline condition to the future scenario. The largest remaining habitat blocks are indicated by progressively darker shades of green… The graphic to the right illustrates the change in size of this habitat block from the proposed Sunzia line."



TNC's cumulative effects analysis (appended) found that this wild land complex is second only to the Grand Canyon region in the Southwest in terms of its size and relative intactness. The TNC cumulative impacts analysis states:

> "The take home from these analyses is that the Sunzia transmission route proposed to cross the Galiuro-Aravaipa-Santa Teresa area would split in half the second largest unfragmented landscape remaining in the southwestern U.S. and introduce habitat disturbance into an area where, for example, there are no paved roads and no roads that cross over the axis of the Galiuros from Aravaipa Valley to the San Pedro River Valley, or from Aravaipa Valley over the Santa Teresas into the Gila River Valley. With the Southwest's largest remaining intact area, the Grand Canyon, already in protected status, ***it raises the question of whether mitigation measures are even possible for disturbances to the region's second largest intact landscape*****"** (emphasis added).

In their scoping comments, TNC stated,

> "Over the last three decades The Nature Conservancy and many other agencies and organizations have been working steadily to protect the Lower San Pedro Basin. This area has become a focal point for conservation and mitigation investments because of the opportunity to protect and restore a relatively undisturbed river system, cross-valley wildlife movement, and ecological processes such as fire that maintain ecosystem health. Partners in this effort include the Bureau of Land Management, Bureau of Reclamation, Salt River Project, Arizona Game and Fish Department, Pima County and a number of private landowners. The Resolution Copper Company has offered to protect

> additional lands in the valley through its proposed land exchange for a mine site in Superior. Together, these partners have protected close to 40,000 acres and invested over $25 million in acquisition of conservation lands and appurtenant water rights. Close to one third of the lower river corridor is now in protected status, and stream flow and habitat conditions are improving."

Duncan and Slagle (2004) describe the San Pedro River as one of the most significant perennial undammed desert rivers in the United States, providing important habitat for almost 400 species of migratory birds, 80 species of mammals, and 40 species of reptiles and amphibians.

We can't help but conclude that the best available science mandates that we keep habitat and landscape level ecosystem functions as unfragmented as possible in the Galiuro-Aravaipa-Santa Teresa area, the lower San Pedro River Valley watershed, the Sulphur Springs Valley and the Willcox Playa area, for local, regional and hemispheric resident and migratory wildlife populations, unique habitats, resilience and ecosystem services. The DEIS analysis is fatally flawed and inadequate when addressing these issues. The No Action Alternative is the only reasonable option.

Soil Stability, Invasive Species & Changing Fire Regimes

Erosion and damage to highly erodible soils is likely given the potential impacts associated with miles of new roads and other construction related activities. According to the Redington NRCD's own plan, http://redingtonnrcd.org/attachments/Long_range_plan_20102016.pdf,

> "sediment pollution of streams and erosion of rangeland is a major problem in the district. Roads associated with recreation and utility construction/maintenance were the major source of erosion in the district and the number one cause of human-related gully erosion… The Natural Resource Conservation Service describes the erosion hazard for the Stagecoach, Sonoran and Pinaleno soils, which make up 85% of the area, as severe which indicates that significant erosion is expected. The numerical rating is .95 where 1.00 has the greatest negative impact… Excessive erosion from roads can overwhelm a river's capacity to process sediment. Cross-country road construction increases unauthorized access to off-road vehicles. The clearing of vegetation and associated soil compaction from these roads counter the re-vegetation and rangeland improvement efforts currently taking place in the district (Baker, 2010)."

Soil disturbance associated with access roads associated with design, construction and maintenance activities can potentially result in adverse water quality impacts. Sheet flow may form in these areas, leading to soil erosion and other damage to surrounding soils. Soil erosion and sedimentation can clog streams and threaten aquatic life. Removal of the tree canopy along stream crossings can increase water temperature, algal growth, dissolved oxygen depletion, and cause adverse impacts to aquatic biota.

Courtesy of CWG. Clear-cutting of riparian vegetation across the San Pedro River beneath the double 345-kV lines that connect Tucson Electric Power Company's Springerville generating station with Tucson shown 0.65 miles north of the crossing of the SunZia preferred alternative.

Improper use of herbicides to control vegetation could result in runoff to streams with negative impacts on water quality and aquatic life. Construction and maintenance of roads associated with the proposed project can result in permanent loss of all habitats in the developed area, disruption of animal movement and dispersal, and creation of a continual disturbance that affects animal communities in the adjacent fragmented portions of their habitats throughout the life of the project. These linear impacts can become a vector for exotic invasive species, fire, and illegal activities such as drug smuggling.

Fire is a very real and significant threat in the arid southwest desert uplands and grasslands, especially so with the rapidly expanding invasion of the exotic invasive species, especially African buffelgrass, (*Pennisetum ciliaris*).

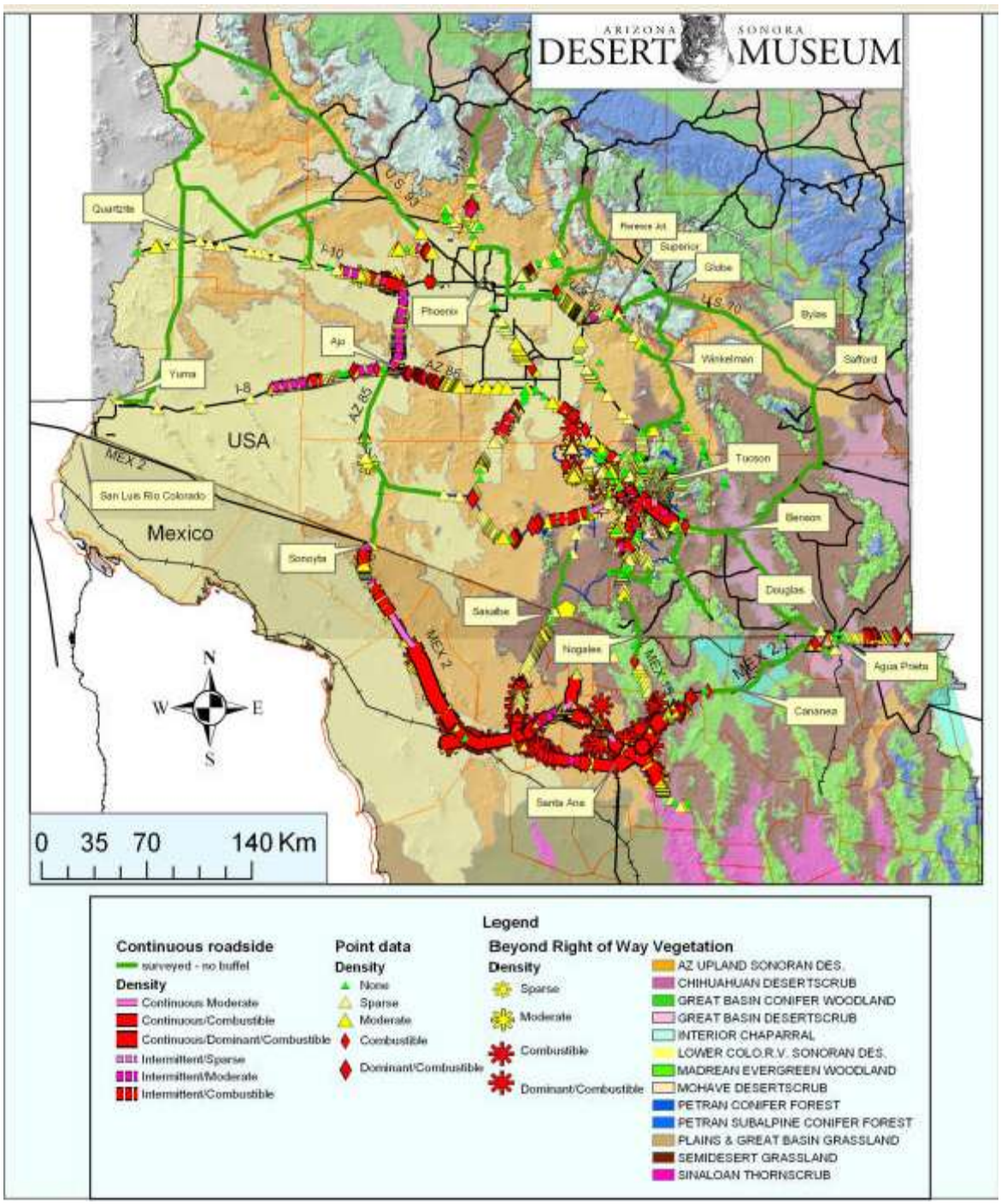
> "The cattle-related introduction and intentional sowing of African grasses in the Sonoran bioregion has not only affected the biotic composition of semidesert grasslands, but has profoundly changed vegetation structure, fire intensity and frequencies and migratory wildlife corridors within several subregions of the Sonoran Desert proper." (Nabhan and Holdsworth 1998, p2)

Van Devender and Dimmit (2000) state that the introduction of buffelgrass into fire-intolerant desert communities results in a permanent conversion to a buffelgrass savanna with reduced plant cover and diversity. In some cases the conversion to buffelgrass has been so complete

that consequences are irreversible in the short term (Burquez *et al*. 1998, pg.21). Van Devender and Dimmit (2006) state that buffelgrass is

> "the most serious ecological threat to the Palo Verde-Saguaro-Ironwood desert scrub in the Arizona Upland (AZU) subdivision of the Sonoran Desert" and that, "in time, buffelgrass fires could convert the Arizona Upland into a savanna-like landscape as Saguaro (*Carnegiea gigantea*), Foothill Palo Verde (*Parkinsonia microphylla*), Ironwood (*Olneya tesota*), Organ Pipe Cactus (*Stenocereus thurberi*), etc. are killed".

Buffelgrass invasion of grasslands and columnar cacti of the Sonoran desert biome result in unnatural fire regimes, as documented by a May 28, 2008 controlled burn of 160 acres of buffelgrass invaded land owned by the City of Tucson, in the Avra Valley. University of Arizona researcher Chris McDonald and local firefighters expressed surprise at the "extreme" fire behavior that burned at 1700 degrees and moved at approximately the speed of the wind over a relatively flat terrain. Many desert trees, shrubs, and cacti, including saguaros, are not fire adapted and cannot withstand fires.



Map depicting buffelgrass distribution along roadways of southern Arizona and northern Sonora, Mexico. Source: Van Devender and Dimmit 2006

Other problematic invasive species include but are not limited to Blue Panic (*Panicum antidotale*, a Federal Noxious Weed), Bermuda Grass (*Cynodon dactylon*), Sahara Mustard (*Brassica tournefortii*), another African grass, Lehman's Lovegrass (*Eragrostis lehmanniana*), Saltcedar (*Tamarix ramosissima* and closely related species), Russian Olive *(Elaeagnus angustifolia)*, Giant Reed (*Arundo donax*), and invasive shrubs such as mesquite (*Prosopis*

spp). Exotic species that are of greatest management concern are those that are highly invasive and that strongly modify their environment. Table 1 of Appendix H - Exotic Plant Species in Riparian Ecosystems of the US Southwest, from the 2002 Southwestern Willow Flycatcher Recovery Plan, has extensive information on invasive species of concern to riparian areas inhabited by the Southwestern Willow Flycatcher, including the San Pedro River and its tributaries.

As the conversion of native to non-native plant communities is primarily a human-facilitated issue, and because many current fires are human-caused, the issue of fire in an environment of increasingly fragmented landscapes which facilitates invasive non-native plant communities is a legitimate threat to public health and safety and the survival of our ecosystem in general.

Riparian Habitat

TAS is engaged in wildlife and conservation issues and focuses on research, education, advocacy, recreation, and conservation through habitat protection and restoration, with specific emphasis on the importance of riparian systems to resident and migratory species, especially birds, in the arid southwest.

Southwestern riparian habitats, the lush ribbons of vegetation running along our streams and rivers, contain the highest density and diversity of bird species outside tropical rain forests. Habitats along watercourses are known for their high density and diversity of animal species. Yet as early as the November 1988 issue of *Wildlife Views*, the AZGFD stated that 90 percent of the Arizona's riparian habitat had been lost.

The **Arizona Department of Environmental Quality** (ADEQ), pursuant to A.C.C. R18-11-112, has designated "**unique waters**" or "**Outstanding Arizona Waters**" as having exceptional recreational or ecological significance and/or providing habitat for threatened or endangered species. Designations include **Aravaipa Creek** from its confluence with Stowe Gulch to the downstream boundary of Aravaipa Canyon Wilderness Area (Aravaipa Canyon and lower San Pedro basins) and **Buehman Canyon Creek** from its headwaters to approximately 9.8 miles downstream (lower San Pedro basin).

The **American Bird Conservancy**'s report on the "***Top Twenty Most Threatened Bird Habitats in the United States***" lists **Southwestern Riparian Habitat** as the **fifth most threatened in the nation**. This increasingly rare habitat type, epitomized by the Lower San Pedro River watershed, is described as occupying only a tiny fraction of the land area while supporting the largest concentrations of animal and plant life, and the majority of species diversity in the desert southwest, a designated "hotspot" of biological diversity. The report states "The scarcity of water in the Southwest makes rivers and streams particularly important for sustaining the region's communities. This dependence places a severe strain on natural ecosystems. Achieving riparian habitat conservation depends on public agency buy-in to broad-scale land management plans and the successful provision of incentives to private property owners to restore their degraded land. Riparian areas take time to recover… Currently, though, efforts to restore riparian areas are being considerably outpaced by the rate at which they are being lost, making these vibrant ecosystems an ever-rarer feature of the Southwest." http://www.abcbirds.org/newsandreports/habitatreport.pdf.

The **Arizona Partners in Flight *Bird Conservation Plan*** states, "Riparian woodlands comprise a very limited geographical area that is entirely disproportionate to their landscape importance, recreational value, and immense biological interest (Lowe and Brown 1973). It has been estimated that only 1% of the western United States historically constituted this habitat type, and that 95% of the historic total has been altered or destroyed in the past 100 years (Krueper 1993, 1996)… Riparian woodlands are among the most severely threatened habitats within Arizona…. Maintenance of existing patches of this habitat, and restoration of mature riparian deciduous forests should be among the top conservation priorities in the state". http://www.azgfd.gov/pdfs/w_c/partners_flight/APIF%20Conservation%20Plan.1999.Final.pdf.

Riparian woodlands in the desert southwest are an extremely important resource because they constitute less than one percent of the desert landscape, yet typically support more than fifty percent of the breeding birds. Indeed, the positive effects of even a degraded riparian area in central Arizona extend up to one km into the adjacent uplands (Szaro and Jakle 1985). Riparian woodlands also provide shelter and critical food resources for dozens of species of migratory birds that stop in these woodlands during their spring and fall migrations. From 2006 – 2008, **Kirkpatrick *et al*** found that riparian areas contained 68 percent more species and 75 percent more individual birds compared to adjacent uplands, with this pattern holding true for both the breeding and non-breeding bird communities. They believe:

> "First, should long-term drought conditions persist and/or ground water levels fall to the point where surface water flows are reduced or eliminated, populations of breeding (e.g., Black Phoebe, Common Yellowthroat, Yellow Warbler, Song Sparrow, and Lesser Goldfinch) and migrant (e.g., Yellow-rumped Warbler and Wilson's Warbler) species are likely to decline. Second, should long-term drought conditions persist and/or ground water levels fall to the point that riparian vegetation is negatively affected, populations of breeding species such as Bell's Vireos, Yellow Warblers, and others are likely to decline… Three species that inhabit low-elevation riparian woodland are considered Arizona PIF priority species: Southwestern Willow Flycatcher (*Empidonax traillii extremus*), Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*), and Lucy's Warbler (*Vermivora luciae*). The Southwestern Willow Flycatcher and the Western Yellow-billed Cuckoo are considered wildlife of special concern in Arizona… and are federally listed as endangered and candidate species, respectively (Federal Register 1996)… An additional 8 species that inhabit low-elevation riparian woodland are considered Arizona PIF preliminary priority species: Brown-crested Flycatcher (*Myiarchus tyrannulus*), Northern Beardless-tyrannulet (*Camptostoma imberbe*), Bell's Vireo (*Vireo bellii*), Yellow Warbler (*Dendroica petechia*), Rufous-winged Sparrow (*Aimophila carpalis*), Abert's Towhee (*Pipilo aberti*), and Summer Tanager (*Piranga rubra*)."

Some 80 percent of vertebrate species in the arid southwest region are dependent on riparian areas for at least part of their life cycle; over half of these cannot survive without access to riparian areas (Noss and Peters 1995). Arizona and New Mexico have lost 90 percent of pre-settlement riparian ecosystems (Fig 3e, Noss et al. 1995). TNC lists the Fremont cottonwood-Gooding willow riparian community as highly imperiled. In Arizona and New Mexico, more than

100 federally and state listed species are associated with cottonwood-willow bosques (Noss and Peters 1995).

Among U.S. Federal Register notices listing plants and animals as endangered species, water impoundment and diversion are among the most frequently cited threats mentioned. Inundating vegetation in reservoirs behind dams and changes in river flow are among the most severe pressures on threatened plants and nesting birds in the US/Mexico borderlands. The regional decline of 36 of the 82 breeding bird species which formerly used riparian woodlands is a case in point. In combination with water diversion, groundwater pumping has affected nearly all river valleys in Arizona's portion of the Sonoran Desert. In the heart of agricultural areas, groundwater overuse has been most precipitous, leading to ground subsidence, salinization and the demise of riparian forests (Nabhan and Holdsworth 1998, pg. 2).

However, according to **Webb, Leake, & Turner** (2007, ***The Ribbon of Green***, Tucson: U. of A. Press, pg. 223), "Riparian vegetation has generally increased along the [San Pedro] river north of the U.S.-Mexico border.... [and] closely follows the alternating pattern of perennial-ephemeral flow that characterizes this watercourse along its greater than 150-mile length in Arizona " Moreover, "...the case of riparian vegetation change on the San Pedro River represents one of the largest increases in woody riparian vegetation in the Southwest. Many researchers have noted that this river, once swampy, now sustains a verdant forest."

In the majority of the Sonoran desert, only remnant fragments of mesquite bosques remain and restoration is hampered by rail, roadway, and utility infrastructure, as well as commercial, residential, agricultural, and recreational development. The lower San Pedro is the exception.

Under Executive Order 11990, Federal agencies are required to minimize the destruction, loss, or degradation of wetlands, and preserve and enhance their natural and beneficial values. These habitats should be conserved through avoidance, or mitigation should occur to ensure no net loss of wetlands functions and values. BLM best management practices (BMPs) for wetlands must be used during construction, upgrades, and rebuilding of any proposed transmission lines and towers and support structures for transmission lines must be located outside the limits of the 100-year floodplain consistent with Executive Order 11988 on Floodplains. Construction and maintenance, not to mention public access and use, associated with placement and maintenance of a transmission line in or adjacent to riparian areas will degrade watershed hydro-geological processes and habitat in resources already imperiled by a decadal, if not historic, drought and climate change.

Therefore, it should not be surprising that we have grave concerns regarding the proposal to locate any portion of the transmission line within, or adjacent to, any riparian area, especially the San Pedro River Valley and its environs. Thus, we have consistently and strongly advocated complete avoidance of the valley and its tributaries, such as Aravaipa Creek.

Aravaipa Creek

Aravaipa Canyon and the Galiuro Mountains are at the heart of one of the wildest and most intact wilderness complexes in the Southwestern United States. Adjacent to the two designated wilderness areas are contiguous roadless public lands that have been identified by the Arizona Wilderness Coalition's Citizens' wilderness inventory as suitable for wilderness designation.

The Aravaipa Canyon Wilderness Area has nine side canyons and is surrounded by tablelands. Administered by the BLM, it was designated in 1984 and includes 19,700 acres along the 11-mile long central gorge of the canyon, which cuts through the northern end of the Galiuro Mountains. TNC's Aravaipa Canyon Preserve, consisting of about 7,000 acres, includes lands at both the east and west ends of Aravaipa Canyon as well as lands on the canyon's south rim (TNC, 2006). In 2007, the 1,250-acre Cobra Ranch near the east end of the canyon was donated to the TNC. Cobra Ranch contains Stowe Gulch, a drainage area estimated to contribute nearly half of the groundwater flowing to the headwaters of Aravaipa Creek (TNC, 2007).

According to TNC,

> "The Galiuro-Aravaipa-Santa Teresa area encompasses over 100,000 acres of intact, high value wildlife habitat. The area maintains the full complement of wildlife from large mammals (mountain lion, black bear, bighorn sheep, mule deer, white-tailed deer), to highly limited species such as Gould's turkey and the threatened Mexican spotted owl. The Aravaipa area, alone, includes over 500 species of plants and birds, 45 mammals, and 67 amphibians and reptiles. The streams on the Muleshoe Ranch and Aravaipa Canyon are the best refugia remaining for the states' imperiled native fish species. The abundance of the area's bighorn sheep population has enabled the Game and Fish Department to transplant."

A new development corridor would be detrimental to the security and integrity of outstanding wildlife habitat in this wild land complex.

The perennial flow of Aravaipa Creek links three mountain ranges, three wilderness areas and maintains migratory corridors for both large mammals and birds, making it a crucial component to maintaining biodiversity and ecological integrity in southeastern Arizona. Aravaipa Creek is a major tributary to the lower San Pedro River and contains an intact native fish assemblage, including the endangered Spikedace (*Meda fulgida*) and Loach Minnow (*Tiaroga cobitis*). The presence of a robust population of these fishes in Aravaipa Creek, and the largely unregulated hydrology of its waters, led to a 46.1-mile reach of Aravaipa Creek and its upper tributaries – Deer Creek and Turkey Creek - being designated as Spikedace critical habitat. Similarly, critical habitat for these species exists within Hot Springs Canyon (5.8 miles plus 3.4 additional miles within Bass Canyon, an upper tributary) and in Redfield Canyon (4.0 miles). Hot Springs and Redfield Canyons are also tributaries to the lower San Pedro River near Cascabel. The DEIS fails to adequately analyze impacts to these areas and resources.

The August 28th, 2009 scoping comments by SIA, the CSDP and others state:

> "Three Areas of Critical Environmental Concern (ACEC) lie within the Aravaipa Canyon Watershed Management area including Turkey Creek, Table Mountain and Desert Grasslands. Table Mountain and Desert Grasslands are also designated as Research Natural Areas (RNA). Areas of Critical Environmental concern are defined by the BLM to be areas where "special management attention is required to protect and prevent irreparable damage to public land and/or related waters containing resources, values,

systems, processes, or hazards identified, designated, and protected through the land-use planning process." These areas must have significant cultural, scenic value; fish or wildlife resources; or other natural processes or systems, and must have substantial significance or value. This requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. Research Natural Areas are areas that contain important ecological and scientific values and are managed for minimum human disturbance. They are primarily used for non-manipulative research and baseline data gathering on relatively unaltered community types. They make excellent controls for similar communities that are being actively managed.

The Turkey Creek ACEC consists of 2,326 acres that adjoins a portion of the Aravaipa Canyon Wilderness at its southeast end and contains two riparian woodlands. The area has significant cultural and scenic values and is an important wildlife resource and riparian area. The area is threatened by off road vehicle (ORV) use, unregulated camping and current and potential resource extraction.

The Table Mountain ACEC contains two plant communities of concern. These include an Alligator Juniper savanna at the top of Table Mountain that exists in less than 20 locations and a white oak woodland containing Mexican Blue Oak in the adjoining Sycamore and Saddle Canyons. The total area encompasses 1,220 acres to the south of the canyon and of concern in this area is ORV use, prescribed fire and preventing mineral withdrawal and vegetation impacts.

The Desert Grasslands ACEC is significant due to its relict desert grasslands which are an important baseline for management objectives. Desert grasslands are widely used for the majority of grazing in the desert southwest but also provide critical habitat for 13 state-listed wildlife species and are important for watershed stabilization. The retention of undisturbed tracts of relict desert grasslands is of value to BLM management and scientific research (BLM, 1991). The Desert Grasslands area is greatly threatened by ORV use, livestock grazing, and could benefit from a prescribed fire plan. It consists of 840 acres with three areas of undisturbed desert grasslands on two different soil types."

Special Status Species in the Aravaipa Canyon Watershed are listed below.

COMMON NAME	**SCIENTIFIC NAME**	**STATUS**
Allen's Big-eared Bat	*Idionycteris phyllotis*	S
American Peregrine Falcon	*Falco peregrinus anatum*	SC, WC
Aravaipa Sage	*Salvia amissa*	S
Aravaipa Wood Fern	*Thelypteris puberula var. sonorensis*	S
Arizona Giant Sedge	*Carex spissa* var. *ultra*	S
Bald Eagle	*Haliaeetus leucocephalus*	LT, WC
Belted Kingfisher	*Ceryle alcyon*	WC

Black-bellied Whistling-duck	*Dendrocygna autumnalis*	WC
Buff-collared Nightjar	*Camprimulgus ridgwayi*	S
Catalina Beardtongue	*Penstemon discolor*	HS
Cave Myotis	*Myotis velifer*	S
Common Black Hawk	*Buteogallus anthracinus*	WC
Desert Sucker	*Catostomus clarki*	S
Fringed Myotis	*Myotis thysanodes*	S
Gila Chub	*Gila intermedia*	WC
Gila Topminnow	*Poeciliopsis occidentalis*	LE, WC
Loach Minnow	*Tiaroga cobitis*	LT, WC
Longfin Dace	*Agosia chrysogaster*	S
Lowland Leopard Frog	*Rana yavapaiensis*	WC
Mexican Spotted Owl	*Strix occidentalis lucida*	LT, WC
Northern Goshawk	*Accipiter gentilis*	WC
Northern Gray Hawk	*Asturina nitida maxima*	WC, S
Roundtail Chub	*Gila robusta*	WC
San Carlos Wild-Buckwheat	*Eriogonum capillare*	SR
Sonora Sucker	*Catostomus insignis*	S
Sonoran Desert Tortoise	*Gopherus agassizii*	LT, WC
Speckled Dace	*Rhinichthys osculus*	S
Spikedace	*Meda fulgida*	LT, WC
Toumey Agave	*Agave toumeyana* var *bella*	SR
Western Red Bat	*Lasiurus blossevillii*	WC
Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	WC

LE – Listed Endangered under the Endangered Species Act

LT – Listed Threatened under the Endangered Species Act

WC – Wildlife of Special Concern in Arizona.

S – BLM Sensitive

HS – Arizona Native Plant Law Highly Safeguarded

SR – Arizona Native Plant Law Salvage Restricted

Key Ecological Attributes of the Lower San Pedro River Valley

The San Pedro River originates in Sonora, Mexico and flows northward for approximately 100 miles to its confluence with the Gila River near the Town of Winkelman, Arizona. It is the last major undammed river in the American Southwest, and exhibits a remarkably intact riparian system including extensive stands of Fremont cottonwood (*Populus fremontii*)/ Goodding's willow (*Salix gooddingii*) gallery forest and large mesquite (*Prosopis velutina*) bosques. Duncan and Slagle (2004) describe the San Pedro River as one of the most significant perennial undammed desert rivers in the United States.

An approximately 40-mile reach of the upper San Pedro River between the International Boundary and St. David is encompassed by the BLM's San Pedro Riparian National Conservation Area (RNCA), one of only two RNCAs in the nation. The San Pedro RNCA was designated in order to protect the "…unique riparian area and the aquatic, wildlife, archeological, paleontological, scientific, cultural, educational, and recreational resources of the public lands surrounding the San Pedro River."

In special recognition of the San Pedro RNCA's extraordinary avian diversity, it was designated North America's first Globally Important Bird Area in 1996. A Monitoring Avian Productivity and Survivorship (MAPS) bird banding and research site has been established on the San Pedro RNCA. The Arizona Important Bird Area program has applied for current Global IBA status for the SPRNCA IBA for the high concentrations of the Bell's Vireo, a Global qualifying species.

The San Pedro River serves as a corridor between the Sky Islands of the Madrean Archipelago in northern Sonora and southern Arizona in its southernmost reaches and, in the north, Arizona's Central Highlands. The river is not only a major corridor between varied habitat types and ecoregions; it represents a ribbon of water and riparian vegetation in an otherwise arid environment. The river thus exhibits a remarkably high biodiversity, both in resident and migratory species.

More than 100 species of breeding birds and another approximately 250 species of migrant and wintering birds occur in the area, representing roughly half the number of known breeding species in North America. The San Pedro River serves as a migratory corridor for an estimated 4 million migrating birds each year.

Notably, 36 species of raptors, including the Gray Hawk (*Asturina nititda* = *Buteo nitidus*), Mississippi Kite (*Ictinia mississippiensis*), Common Black Hawk (*Buteogallus anthracinus*), and Zone-tailed Hawk (*Buteo albonotatus*) can be found within the San Pedro River watershed. The San Pedro RNCA is thought to support 40 percent of the nesting Gray Hawks in the United States. The lower San Pedro River, like the upper reaches, also supports appreciable numbers of nesting Western Yellow-billed Cuckoos (*Coccyzus americanus occidentalis*), currently a candidate for Federal listing as a threatened or endangered species. Direct loss and degradation of low-elevation riparian woodland habitats have been cited as the primary causes for the declines in the Distinct Population Segment (DPS) of Yellow-billed Cuckoos in the western portion of their range. http://www.fs.fed.us/r2/projects/scp/assessments/yellowbilledcuckoo.pdf The abundance of mammals, reptiles, and amphibians is also high; over 80 species of the former and more than 40 species of the latter. Fourteen species of native fish formerly occurred in the San Pedro

River; two persist today. The upper reaches of the San Pedro River and its watershed also support populations of the endangered Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*), a semi-aquatic plant.

Investigations conducted in the 1940s and 1970s documented between 95 and 111 bird species solely within the approximately 3500 acre mesquite bosque currently owned by BHP-Billiton (Arnold 1940, Gavin and Sowls 1975). Surveys conducted by TAS on the BHP-Billiton property from 2006 to 2012 have documented 148 species (www.aziba.org). The lower reaches of the San Pedro River are currently subject to intensive survey efforts, largely conducted by AZGFD biologists, for the endangered Southwestern Willow Flycatcher (*Empidonax traillii extimus*). Its mission to control insects in riparian areas is an essential function benefiting people as well as plant life.

River and stream impoundments, ground water pumping, and overuse of riparian areas have altered up to 90 percent of the Flycatcher's historical habitat. The aforementioned survey effort has shown the reach between Three Links and the Gila River confluence to be densely occupied by Southwestern Willow Flycatchers. Indeed, in 2005, the most-recent year for which complete survey data have been summarized, the reach thus described contained 164 Southwestern Willow Flycatcher territories consisting of 307 adult birds (English *et al*. 2008). These lower reaches thus contain over 99 percent of the Southwestern Willow Flycatcher territories on the entire San Pedro River within the United States. The San Pedro RNCA hosted the remaining less than one percent of the territories (one) and adults (a single pair). It must be noted that the middle reaches of the river, between St. David and Three Links, are largely unsurveyed due to limited habitat and poor access to private lands. Few to no surveys have been conducted in Sonora.

The high importance of the lower San Pedro River for the recovery of the Southwestern Willow Flycatcher contributed to its designation as critical habitat for the species. The current critical habitat includes approximately 60 river miles of the lower San Pedro River between a point approximately 3.5 river miles south of Hot Springs Canyon to the Gila River confluence. In 2011, the U.S. Fish and Wildlife Service proposed to redesignate (and increase the length of) **Southwestern Willow Flycatcher critical habitat** over a 79 mile reach of the lower San Pedro River.

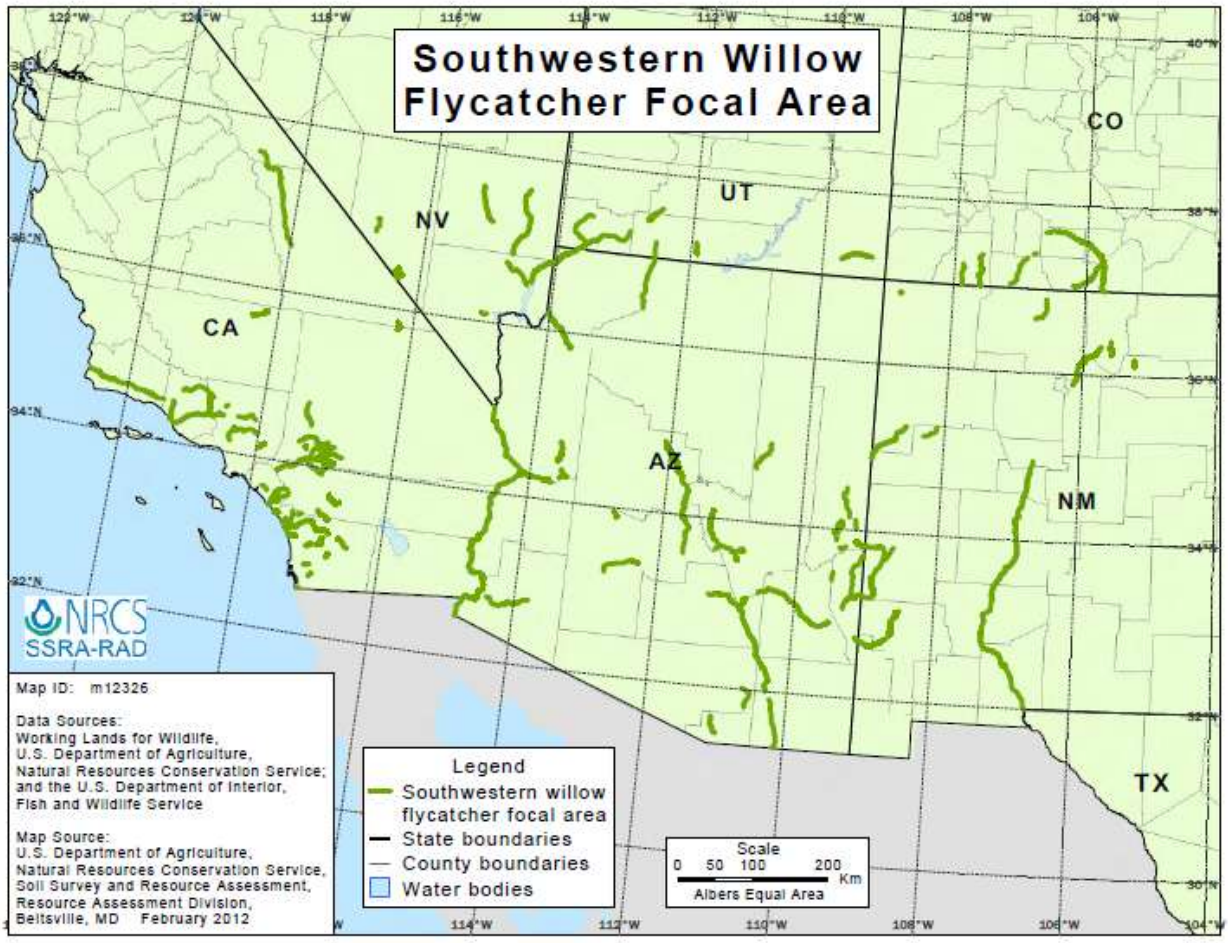
The protection of riparian resources and the desire to provide flood protection and plentiful clean drinking water to the residents of the Phoenix valley and others is what originally prompted the SRP, a utility, and the BOR to purchase and conserve federally required mitigation lands along the lower San Pedro River. These lands are encumbered by easements and are specifically managed, under the Roosevelt HCP, to conserve Southwestern Willow Flycatchers and mitigate for the impacts of the rising waters associated with the construction of the Roosevelt Dam and flooding territories there. The BLM and the BOR own disjunct parcels within the reach. TNC and the BLM also own and co-manage lands within the Aravaipa Canyon and Muleshoe Ecosystem Management Areas, both located on major tributaries to the lower San Pedro River.

TNC has identified the San Pedro River as “One of the Last Great Places”.

TNC is working with the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program to restore an artesian spring-fed Cienega (wetland) and reestablish endangered Gila Topminnow (*Poeciliopsis occidentalis occidentalis*) and Lowland Leopard Frog (*Rana yavapaiensis*) on the 7B Ranch.

The Department of Interior's **American Great Outdoors (AGO) Initiative** http://americasgreatoutdoors.gov/ will focus on the three areas in the desert borderlands: the Malpais Borderlands, the Upper San Pedro River, and the Lower San Pedro River. The AGO Initiative operates from the premise that protection of our natural heritage is a non-partisan objective shared by all Americans. It turns to communities for local, grassroots conservation initiatives that also promote recreational opportunities which support sustainable economies based on working landscapes, cultural and historic heritage and ecotourism.

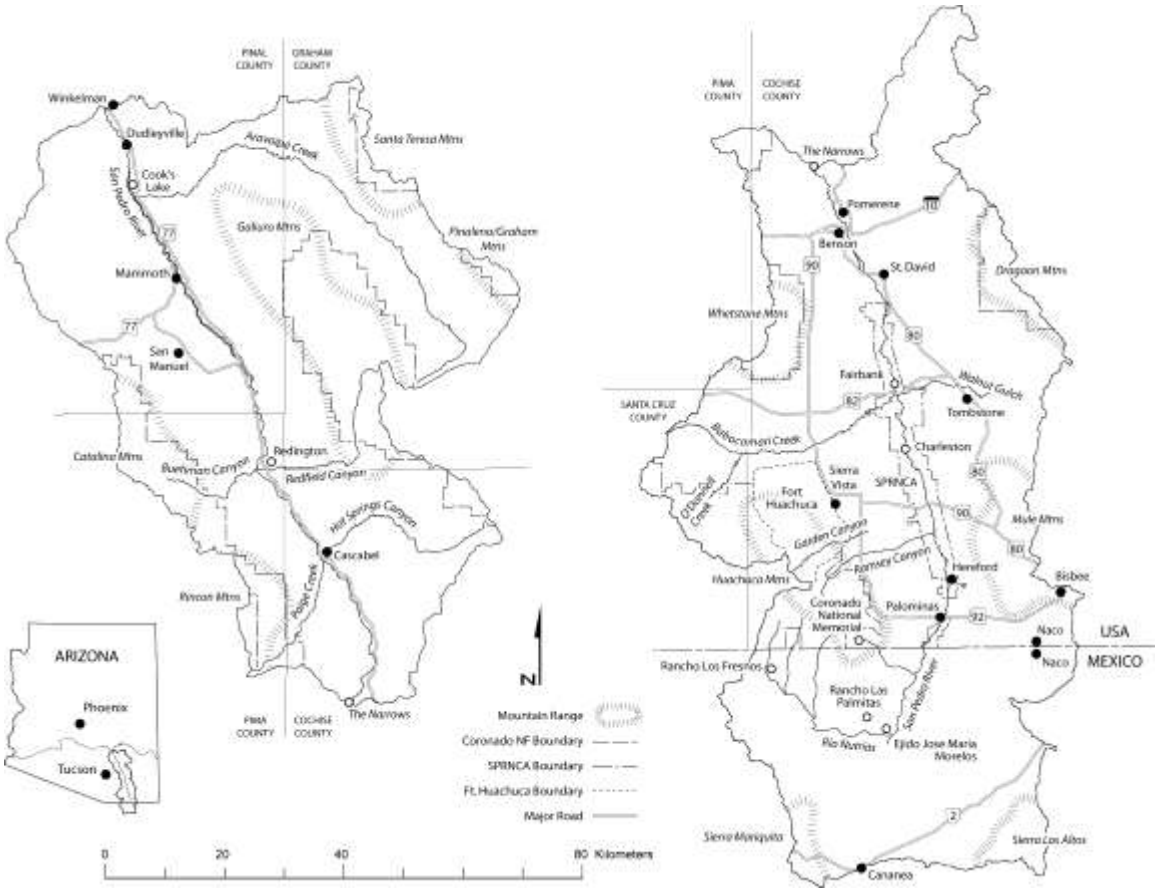
The Department of Agriculture's (USDA) Natural Resource Conservation Districts (NRCDs) and the USFWS have revealed their new **Working Lands for Wildlife Habitat Initiative** www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/whip/?&cid=stelprdb1046975 which, in Arizona, will focus' on cooperative efforts to assist ranchers and farmers in preserving their heritage and way of life while strengthening rural economies and conserving the federally endangered Southwestern Willow Flycatcher (*Empidonax traillii extimus*), a small Neotropical migratory bird that breeds in the arid southwestern United States. http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/financial/whip/?&cid=stelprdb1047041 Arizona recognizes it as a “species of greatest conservation need.” It was listed as endangered under the Endangered Species Act (ESA) on February 17th, 1995. The ESA, sec. 3, defines critical habitat as--(i) the specific areas...on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management consideration or protection (and; (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon determination that such areas are essential for the conservation of the species. The Working Lands for Wildlife Initiative will prioritize $33 million in restoration actions on a large regional scale to offer financial and technical assistance to farmers, ranchers and forest landowners to restore and protect targeted habitats and most cost effectively focus assistance.



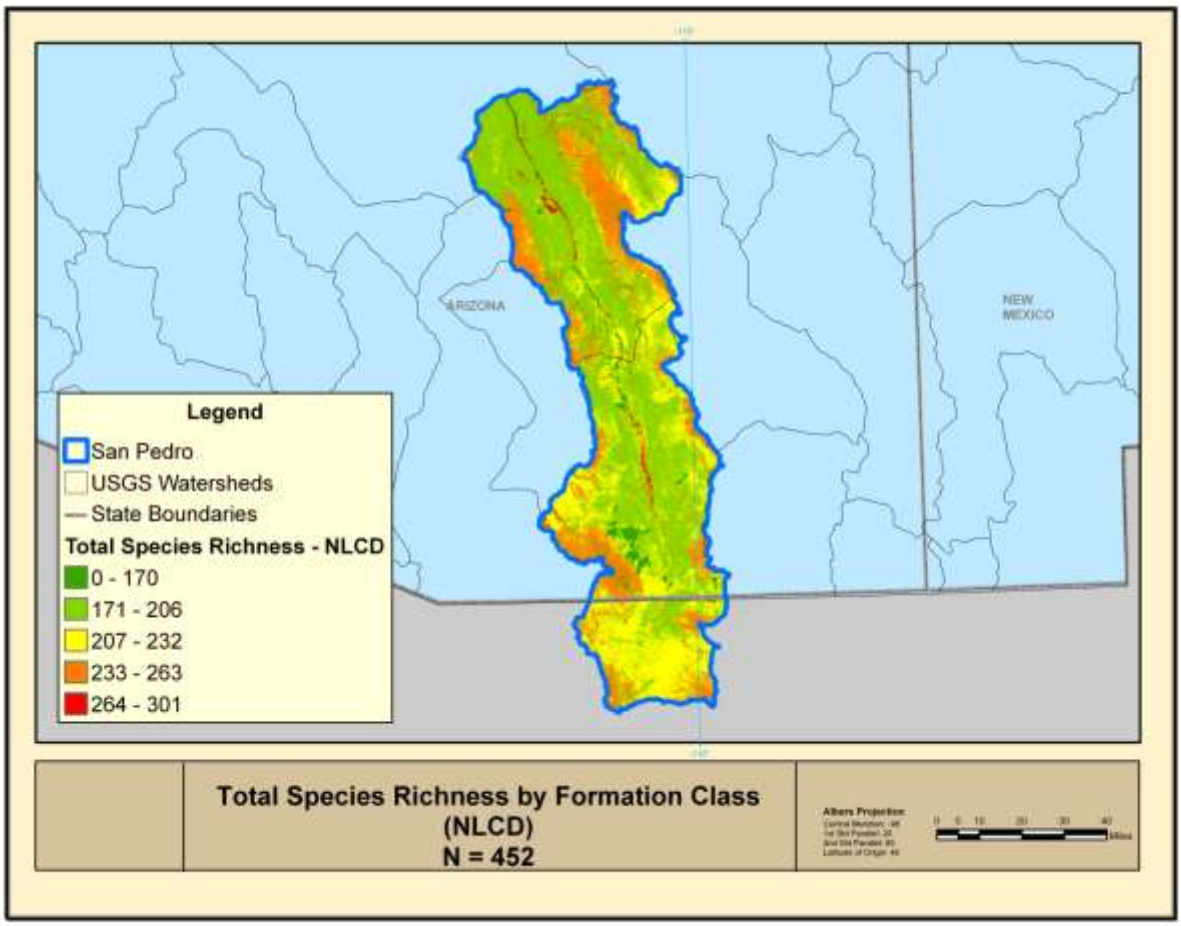
The destruction of tropical rain forests where the flycatcher winters makes the conservation of breeding habitats in the southwest United States even more urgent. Interestingly enough, the survival of riparian ecosystems may depend on the flycatcher as well. “Studies have shown that predation on insects by birds actually results in the improved health of trees and forests,” according to Bill Howe, nongame migratory bird coordinator for the Fish and Wildlife Service’s Southwest Region. “The Southwestern Willow Flycatcher and other insectivorous birds in riparian woodlands consume huge numbers of insects per day, including mass quantities of mosquitoes.”
http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/SWWF/SWWFC.pdf The San Pedro Watershed's ecosystem services are extraordinary and offer tremendous biodiversity at the confluence of four different ecosystems.

Scientists from the Environmental Protection Agency (EPA), the New Mexico State University (NMSU) and others have recently modeled the San Pedro River watershed as one of only two test areas in the nation, mapping metrics reflecting ecosystem services and biodiversity features using U.S. Geological Survey Gap Analysis Program data, including land cover, land stewardship, and deductive habitat models for terrestrial vertebrate species http://fws-case-12.nmsu.edu/CASE/ES/ (illustrations below). The Lower San Pedro River watershed supports

significant biodiversity, especially avian, and surpasses even the Middle Rio Grande River in biodiversity.



Courtesy of Dr. William Kepner, EPA



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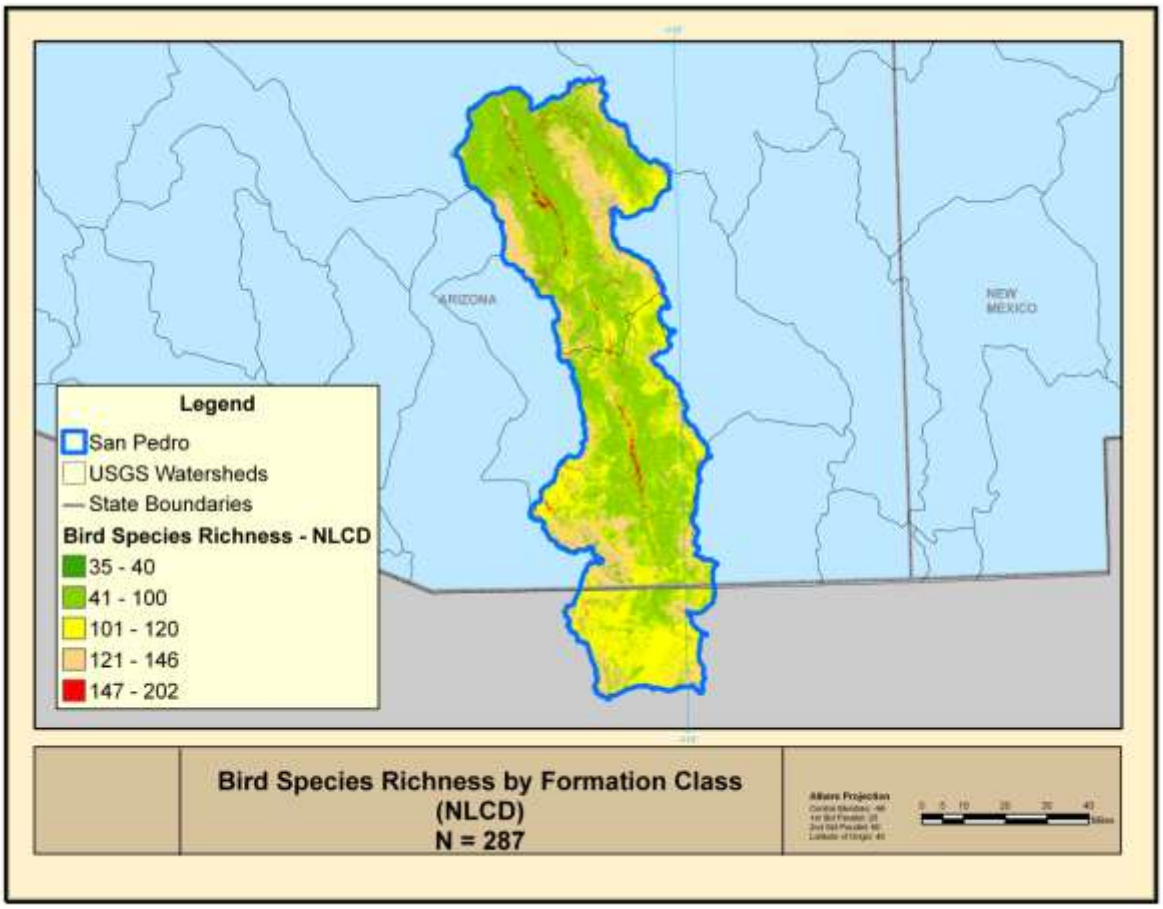
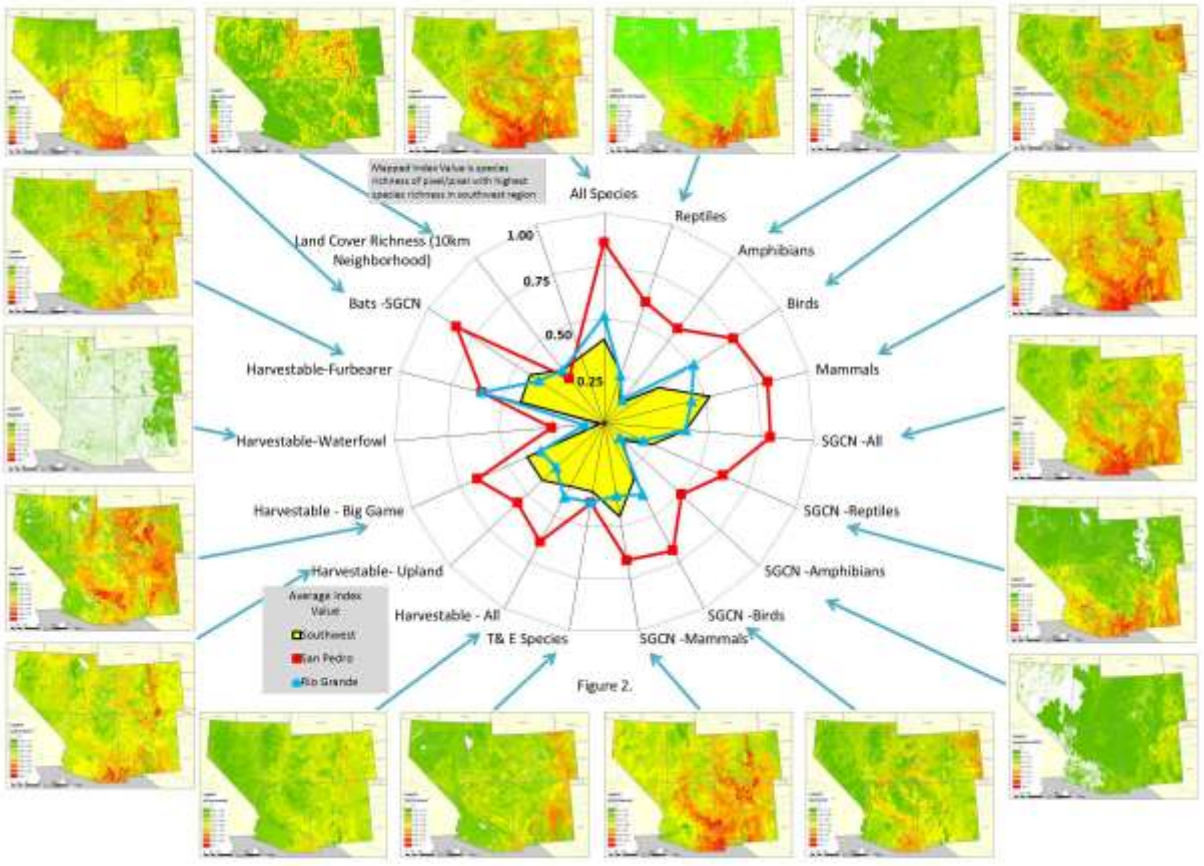


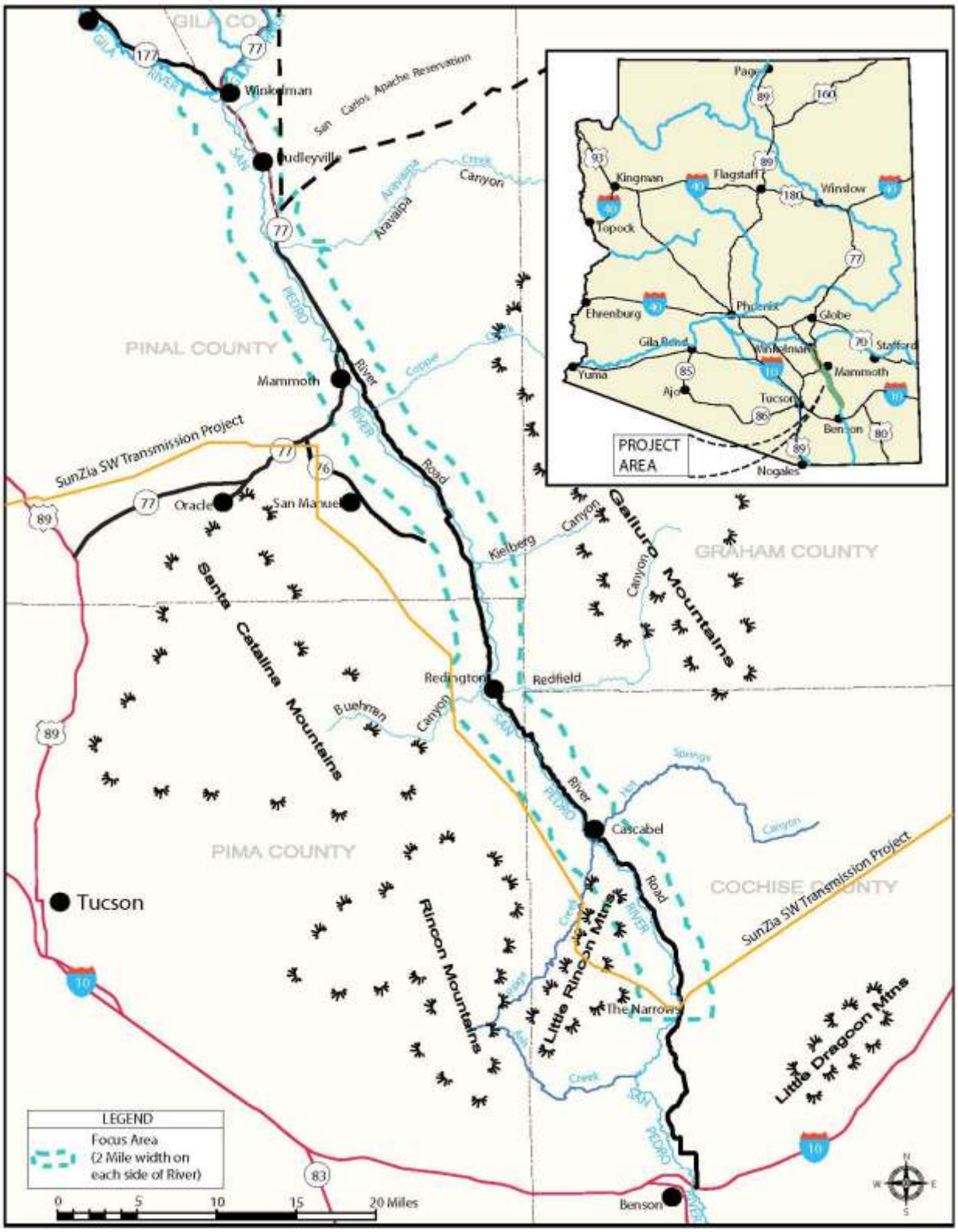
Courtesy of Dr. William Kepner, EPA

Mapping and quantifying ecosystem services have become strategic national interests for integrating ecology with economics in order to help explain the effects of human policies and the subsequent impacts on both ecosystem function and human welfare.



Biodiversity Metrics for Southwest Region portrayed as a Radar Graph May 2011 Courtesy of Dr. William Kepner, EPA

Informed by the study mentioned above, the proposed **Lower San Pedro River National Wildlife Refuge & Collaborative Conservation Initiative** is currently in the scoping phase of a regional discussion — the close of the public comment period was August 15th, 2012. The voluntary Initiative would be a landowner driven venture that would focus on restoring and conserving rural working landscapes while enhancing local economies along the lower San Pedro River corridor. Public outreach has included dialogue with diverse stakeholders such as local landowners, ranchers, NRCDs, other federal, state, and local agencies, Congressional delegation staff, the San Carlos Apache Tribe, and the Pinal Partnership's Open Space and Trails subcommittee. Should there be willing private landowners who choose to participate, collaboration could offer a variety of tools and partnership opportunities to improve habitat and management for sensitive species of plants and animals while contributing to a healthy river system. Cooperation could also contribute to sustainable ecotourism via such uses as interpretation, educational outreach, fishing, hunting, wildlife viewing and photography. Based on the recent biometrics study mentioned above, the San Pedro Watershed's ecosystem services are extraordinary and offer tremendous biodiversity at the confluence of four different ecosystems. The entire river is a "Keystone" Transition Zone.



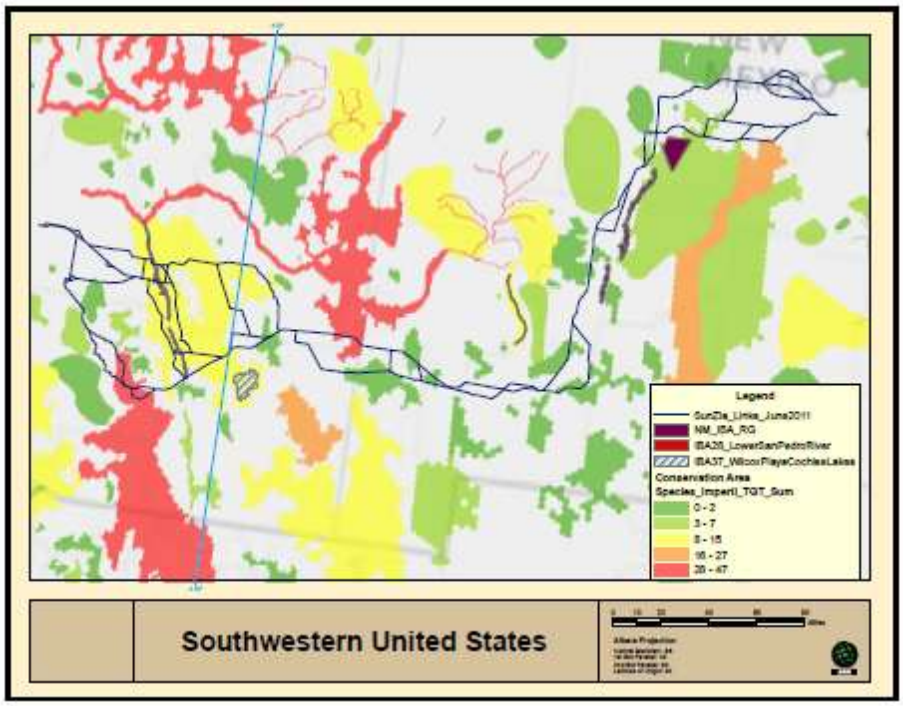
Courtesy of CWG. SunZia preferred alternative and the envelope for the proposed Lower San Pedro River National Wildlife Refuge

http://www.fws.gov/southwest/docs/LSPRCIPlanningUpdate1.pdf The DEIS fails to adequately analyze the potential impacts of SunZia on this proposal. In fact, surprisingly, the preferred alternative has the greatest potential impacts of any of the alternatives on environmentally sensitive water resources.

Birds and Important Bird Area (IBA) Designation

IBA designation is particularly relevant to protecting critical habitat utilized by birds during some part of their life cycle (breeding, feeding, nesting, and migrating) as well as conserving the general biodiversity of wildlife species. Migration and molt are very taxing on birds, and for some species migration is the time of greatest mortality.

To date, of the 2,500 state level Important Bird Areas identified nationally, only 449 have been prioritized as Global Important Bird Areas. These sites include Important Bird Areas significant for more than 65 globally threatened species. Global and Continental Important Bird Areas are determined through a prioritization process, which involves the review of identified State-level Important Bird Areas by the U.S. IBA Technical Committee — they represent high priority sites for conservation actions. http://aziba.org/?page_id=32 and http://www.audubon.org/bird/iba/prioritizedibas.htm.



Courtesy Tice Supplee, Audubon Arizona

TAS established and, in partnership with Audubon Arizona, continues to implement the Arizona component of the global Important Bird Areas (IBA) Program, initiated in 1982 by BirdLife International. Arizona IBA Program offices work with diverse partners on issues and specific projects for the conservation of Important Bird Areas in Arizona to promote win-win objectives for people, wildlife, communities, and sustainable economies. The Audubon network within Arizona has thus far established 42 Important Bird Areas in our state, eight of which have Global IBA status, covering 3.38 million acres of habitat. Each is established using strict standards and scientific data and is peer reviewed by an independent panel of scientists. TAS and Audubon Arizona have partnered with the AZGFD to gather scientific data to identify and set science-based priorities for habitat conservation and to promote positive action to safeguard and protect significant bird habitats. TAS leads the Avian Science Initiative while maintaining the Arizona IBA Bird Survey Database and website http://aziba.org .

The DEIS fails to adequately analyze and develop measures to address potential impacts to birds for each of its alternatives and specifically for its proposed alternative. The Migratory Bird Treaty Act (MBTA) prohibits the taking of migratory birds, nests, and eggs, except as permitted. To minimize the likelihood of adverse impacts to all birds protected under the MBTA, TAS first recommends the No Action Alternative. In the event BLM does not adopt the No Action Alternative, TAS recommends construction activities occur outside the general migratory bird nesting season of February through July, or that areas proposed for construction during the nesting season be surveyed, and if necessary, avoided until nesting is complete. To minimize adverse impacts to birds protected under the MBTA, tree stands or other adequately vegetated areas should be surveyed for the presence of nesting birds during the general migratory bird nesting season of February through July. Disturbance to nesting areas should be avoided until nesting is completed. Sensitive areas should be avoided altogether.

The construction of new transmission lines should also include a detailed study of bird behavior at the precise location where construction is proposed in order to identify species that are particularly vulnerable, and which sites are intensively used. Those studies could be used to identify the optimum transmission line location. Transmission lines and associated structures could then be located where impacts would be completely avoided or minimized. To the best of our knowledge, this has not occurred.

Construction and maintenance activities should be conducted only during daylight hours to avoid noise and lighting issues during the night. If construction or maintenance work activities would continue at night, all lights should be shielded to direct light only onto the work site. The minimum wattage needed should be used and the number of lights should be minimized. Noise levels for day or night construction and maintenance should be minimized. All generators should be “whisper generators”, be in baffle boxes (a sound-resistant box that is placed over or around a generator), have an attached muffler, or use other noise-abatement methods in accordance with industry standards.

Birds at lower elevation appear to be influenced by local topography (Williams et al. 2001). Williams et al. (2001) observed that the lowest 300 meters of bird migration probably represented the densest stratum of nocturnal migrants. Mabee and Sanzenbacker (2008) reported that the majority of nocturnal passerine migrants fly below 600 meters above ground level. Avian migrants reacting to local terrain may result in concentrations of [bird] migrants

over ridge summits or other topographic features of bird migration through mountain passes (Williams *et al*. 2001). Relative to other bird groups migrating over land, passerines tend to migrate at lower flight altitudes, whereas shorebirds and waterfowl tend to migrate at higher altitudes (Kerlinger 1995). The construction of any new transmission lines should include a detailed study of bird behavior at the precise location where construction is proposed in order to identify species that are particularly vulnerable, which sites are intensively used, and hence the optimum transmission line location.

Birds of prey such as eagles, hawks, and owls frequently use power lines and support structures for perching and nesting, preying on species made vulnerable by the clearing of the ROW and the advantage of the excess height of the perch. These raptors can be electrocuted while using power lines, thus contributing to the cumulative mortality factors affecting these biologically important and environmentally sensitive birds. Standard techniques have been developed to prevent raptor electrocutions at electric distribution lines. This guidance is included in the publication *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* by the Avian Power Line Interaction Committee. The document may be requested from Edison Electric Institute at http://www2.eei.org/products_and_services/descriptions_and_access/suggested_pract.htm .

Lower San Pedro River IBA

Identified as an IBA in January of 2007, the lower San Pedro River was scientifically peer reviewed and subsequently designated as a **Global Important Bird Area** in January of 2008. http://aziba.org/?page_id=461

The Lower San Pedro River IBA's southern boundary begins at 3 Links Farms in Cochise County and follows the San Pedro River downstream, north, through Pima and Pinal counties to Winkelman. The majority of the land is privately owned and only select properties in public ownership or under conservation easement and management are specifically included in the approximately 51.2 square mile, 32,762 acre IBA.

This site is important to numerous special status avian species including the Northern Beardless-Tyrannulet (*Camptostoma imberbe*) and Brewer's Sparrow (*Spizella breweri*). It is comprised of a rare, unique, or exceptional representative habitat/ecological community – a low elevation riparian river. Western rivers are increasingly imperiled and provide critical resources for migratory pollinators traveling the hemispheric flyways. In the arid southwest, the San Pedro River is unsurpassed in importance.

The IBA hosts significant concentrations of breeding birds: Southwestern Willow Flycatcher (*Empidonax traillii extimus*) at more than 40 percent of the Arizona breeding population, Mississippi Kite (*Ictinia mississippiensis*) at more than 40 percent of the Arizona breeding population and Gray Hawk (*Asturina nititda* = *Buteo nitidus*) at more than 30 percent of the Arizona breeding population. Land birds occurring in significant numbers/density and/or diversity include Bell's Vireo (*Vireo bellii*) and Yellow Warbler (*Vermivora luciae*).

Arizona Wildlife Action Plan Species of Conservation Concern in the Sonoran Desert include: Mississippi Kite (*Ictinia mississippiensis*), Gray Hawk (*Asturina nititda* = *Buteo nitidus*), Common Black Hawk (*Buteogallus anthracinus*), Belted Kingfisher (*Ceryle alcyon*), Tropical Kingbird (*Tyrannus melancholicus*), Thick-billed Kingbird (*Tyrannus crassirostris*), and Desert or Western Purple Martin (*Progne subis*), Red-naped Sapsucker (*Sphyrapicus nuchalis*), Olive-sided Flycatcher (*Contopus cooperi*), and Zone-tailed Hawk (*Buteo albonotatus*).

Continental Species of Concern include: Elf Owl (*Micrathene whitneyi*) with 40 breeding pairs/120 individuals, Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) with 20 breeding pairs/60 individuals, Southwestern Willow Flycatcher (*Empidonax traillii extimus*) endangered in Arizona with 20 breeding pairs/60 individuals, Lucy's Warbler (*Vermivora luciae*) with 40 breeding pairs/120 individuals, and Abert's Towhee (*Melozone aberti*) with 40 breeding

pairs/120 individuals.

Global Species of Concern, for which the IBA was globally recognized: Bell's Vireo (*Vireo bellii*) (IUCN NT and Audubon WatchList Red) with 30 breeding pairs/90 individuals.

Vegetation communities include iconic cottonwood-willow gallery riparian forests and mesquite (*Prosopis juliflora)* bosque woodland terraces along the San Pedro River, mixed broadleaf forests in tributary canyons and washes, Upper Sonoran desert scrub on lower elevation uplands, Sonoran and Chihuahuan semi desert grasslands at intermediate elevations and Madrean oak woodlands in the surrounding mountain ranges. Conifer forests occur at the very highest elevations. This largely unfragmented watershed includes habitats representing the Chihuahuan Desert, Sonoran Desert, Southern Arizona Semi-desert Grassland, and Mexican Oak-Pine Woodland and Oak Savannah, all of which join together in the lower San Pedro River Valley.

Saguaro (*Cereus gigantea*), Foothill and Blue Palo Verde (*Cercidium microphyllum* and *C. floridum*), Ocotillo (*Foquieria splendens*), and a variety of cacti and small shrubs cover the Sonoran desert uplands. Mesquite (*Prosopis* spp), Catclaw Acacia (*Acacia greggii*), Burrobush (*Hymenoclea monogyra*), and Desertbroom (*Baccharis sarothroides*) line xeric washes, while Goodding Willow (*Salix gooddingii*), Fremont Cottonwood (*Populus fremontii*), Velvet Ash (*Fraxinus velutina*), and Netleaf Hackberry (*Celtis reticulata*) cluster along wetter drainage ways, interspersed with Sonoran Desert grassland typified by grama grasses (*Boutaloua spp.),* Three-awns (*Aristida spp.)*, and *Mulenberghia spp.*

Cochise County IBA parcels include the **Three Links Farm** consisting of 2,156 acres that lie along the San Pedro River. It was purchased by TNC as part of their long-standing program to protect the San Pedro River and its riparian habitat. Here the banks of the San Pedro are lined by an exceptional Fremont cottonwood-Goodding willow forest and mesquite bosque. This River's forest is host to 345 species of birds including 13 species of breeding raptors, and is a major migratory pathway for Neotropical birds such as Gray Hawk and the rare Western Yellow-billed Cuckoo. It is also the residence for more than 80 species of mammals, 40 species of reptiles and amphibians, 100 species of butterflies and 20 species of bats. Beaver have migrated to the property since the Conservancy's acquisition. Three Links is a retired farm that has had 836.9 acres placed in permanent conservation easements by TNC. The easements encompass six linear miles of the San Pedro River (9.75 kilometers) sub-divided into five parcels sold to conservation owners. Agricultural wells have been dismantled and a large proportion of the water rights are in the process of being retired from the property with the goal of increasing in stream flow in the San Pedro River. As a result of TNC's actions, a majority of the former agriculture fields are becoming dominated by mesquite. The river has been fenced from livestock and is a mix of closed canopy cottonwood/willow gallery forest with an open understory of Tamarisk and Hackberry, Ash, Arizona Walnut and segments of willow stands. The uplands are Chihuahuan Desert Scrub typified by Creosote Bush (*Larrea*), Black Brush and Yucca (*Yucca Elata*). Two one-kilometer long transect lines following the river channel have been established at this property. TNC is collecting riparian vegetation data at established transects that cross-section the river.

Pima County properties include the county owned **Bingham Cienega** — a small 503 acre

parcel with an artesian fed spring, the site has a small marsh habitat and mature gallery cottonwood-willow forest along the river channel. Pima County is actively restoring riparian and sacaton wetland ecosystems. A fire in 2004 burned the willow and tamarisk vegetation around the marsh that was suitable Southwestern Willow Flycatcher habitat. Pima County also owns and manages the 41,000 acre **A-7 Ranch**, the 12,000 acre **Six Bar Ranch** (purchased with $11 million in voter approved bonds), and the 1000 acre **Buehman Canyon**, all tributary to the lower San Pedro River.

The uplands from Pima County north are Sonoran Desert Scrub and mixed cactus habitats. Saguaro (*Cereus gigantea*), Foothill and Blue Palo Verde (*Cercidium microphyllum* and *C. floridum*), Ocotillo (*Foquieria splendens*), and a variety of cacti and small shrubs cover the uplands. Mesquite (*Prosopis juliflora*), Catclaw Acacia (*Acacia greggii*), Burrobush (*Hymenoclea monogyra*), and Desertbroom (*Baccharis sarothroides*) line xeric washes, while Goodding Willow (*Salix gooddingii*), Fremont Cottonwood (*Populus fremontii*), Velvet Ash (*Fraxinus velutina*), and Netleaf Hackberry (*Celtis reticulata*) cluster along wetter drainage ways interspersed with Sonoran Desert grasslands typified by grama grasses (*Boutaloua spp.),* Three-awns (*Aristida spp.)*, and *Mulenberghia spp.*

Pinal County contains the majority of identified properties within the IBA. **San Manuel Crossing** is a small BLM parcel (160 acres) in Township 9 South and Range 18 East; Southeast Quarter of Section 31 and Township 10 South and Range 18 East, Southwest Quarter of the Northwest Quarter Section 6. One 1 kilometer long transect line following the river channel has been established at this property. A mile further south from this location is a property acquired by SRP for Southwestern Willow Flycatcher and Western Yellow-billed Cuckoo mitigation known as **Spirit Hollow** that encompasses approximately one linear kilometer of river located at Township 10 South and Range 18 East; East Half of Section 8 and the North Half of the Southwest Quarter of Section 9. The site is almost entirely cottonwood/willow gallery forest. An additional 50 acres adjacent and south of Spirit Hollow has been acquired by the U.S. BOR for Southwestern Willow Flycatcher mitigation and is being managed by SRP.

7B Ranch is located east of the town of Mammoth. The 3,200 acre property covers seven river miles, is owned by Resolution Copper Company, and is being for conservation purposes as a part of a proposed legislative land exchange with the federal government. Two one kilometer long transect lines through the mesquite bosque have been established at this property. The property is contiguous with another 7 miles of river to the south owned by BHP-Billiton mining company. Combined, these two properties represent the largest intact mesquite bosque in Arizona at approximately 7000 acres. The BHP-Billiton land also has cottonwood/willow gallery forest that is contiguous with the San Manuel Crossing properties and has equally high conservation values for birds. The highest numbers of nesting Southwestern Willow Flycatcher on the San Pedro River have been documented at this location. Resolution Copper is in the process of creating a nature trail through this property and allowing access for birders and watchable wildlife enthusiasts. TNC is actively doing restoration work for the endangered Chiricahua Leopard Frog.

Aravaipa Crossing (approximately160 acres) has the next highest densities of Southwestern Willow Flycatcher habitat. The Triangle Bar property was previously privately owned by the

mining company ASARCO and ownership has been transferred to the AZGFD to be managed for conservation. A management plan is currently being developed. SRP also has mitigation lands at this location (the Stillinger Preserve and the Adobe Parcel) which are managed by TNC and are included in the IBA. A one kilometer long avian transect line following the river channel has been established at this property.

Cook's Lake/Cienega Seep - BOR and SRP (**Adobe Preserve**) own mitigation land for Southwestern Willow Flycatcher totaling approximately 320 acres which is managed by TNC. ASARCO mining company owns parcels to the north and south, noted above, comprising about 160 acres of river land included in the Lower San Pedro IBA. A one kilometer long avian transect line following the river channel has been established across these properties.

Dudleyville Crossing and TNC San Pedro River Preserve - A well-developed cottonwood/willow gallery forest with a mature tamarisk understory. The properties extend from the Dudleyville Crossing (Schwenesen property) north and total about 1,300 acres. A small 160 acre parcel is just south of the confluence with the Gila River. A nesting colony of Mississippi Kite has been documented at this location. The land at Dudleyville Crossing was privately owned with a conservation easement held by BLM. An eminent domain action of this property by Pinal County is in process and the land is currently being managed by Pinal County. A one kilometer long avian transect line following the river channel has been established at this property.

TNC's San Pedro Preserve is a former fish farm with two ponds now being managed for marshbird habitat. The majority of the property is retired agricultural fields dominated by mesquite. The cottonwood/willow gallery forest experienced a fire in 2004. A one kilometer long avian transect line following the river channel has been established at this property.

We reiterate: the BLM, the BOR, the AZGFD, Pima County, TNC, SRP, and private landowners have protected close to 40,000 acres and invested over $25 million dollars in acquisitions of conservation/preservation lands and water rights (Baker, 2010). TAS is the Stewardship Group for this IBA (http://tucsonaudubon.org) and, as such, it is our duty to defend the integrity of the IBA against any perceived potential threats.

Willcox Playa/Cochise Lakes IBA

Though the SunZia proposal does not directly impact the Willcox Playa IBA, it may contribute indirect and cumulative impacts to migratory species by virtue of its general proximity to the project area and circumstances where avian species find power lines and towers difficult to perceive and therefore subject to collision for migratory species such as Sandhill Cranes (*Grus canadensis*), Snow Geese (*Chen caerulescens*), etc. Avoiding spanning bodies of water or placing lines between heavily-used bodies of water and landscape contexts in which the overhead static wire is obscured or hard to see is a foreseeable circumstance not adequately addressed in the DEIS

This IBA was first identified in June of 2009, and was identified as a **Globally Important Bird Area** in October of 2011. The heart of this roughly 74 square mile, 47,343 acre, IBA is the massive Willcox Playa, a broad alkaline lakebed fringed with semi-desert grassland (primarily saltgrass and sacaton) and mesquite.

The playa is seasonally flooded to a shallow depth. Outlying this playa are the satellite lakes/wetlands of Cochise Lakes (or aka Lake Cochise), alkali flats, and Willcox Playa Wildlife Area containing Crane Lake. The Playa itself is a former bombing range, owned by the Department of Defense and administered by the U.S. Army Corps of Engineers. It is not managed in anyway, and is posted no trespassing. On the upper east side of the playa is the AZGFD managed Willcox Playa Wildlife Area, consisting of 555 acres. The purpose of the Wildlife Area is primarily for optimizing waterfowl habitat and providing for hunting opportunities. There are ten “pot hole” ponds, and one 30-acre impoundment at the Wildlife Area. Over-wintering Sandhill Cranes (*Grus canadensis*) and migratory and wintering shorebirds, waterfowl, and waterbirds use the playa, the Wildlife Area (Crane Lake), and Cochise Lakes, for roosting, resting, and feeding. Sandhill Cranes depend heavily on the surrounding agricultural lands of the broader Sulphur Springs Valley for feeding, particularly in fields of waste corn.

The site is important to special status avian species such as Swainson’s Hawk (*Buteo swainsoni*), Scaled Quail (*Callipepla squamata*), Chestnut-collared Longspur (*Calcarius ornatus*) and Cassin’s Sparrow (*Aimophila cassinii*). It supports significant concentrations of shorebirds (greater than100) and cranes (greater than 2000). Willcox Playa and Crane Lake, within the northern portion of the Sulphur Springs Valley, support the second largest over-wintering concentration of Sandhill Cranes (*Grus canadensis*) in Arizona, typically 4,000 to 9,000 birds (White Water Draw is the area with the largest number of over-wintering cranes — between 10,000 to 22,000 and increasing). Crane numbers are typically 5,000 to 8,000 birds using the Playa, and another 4,000 to 5,000 birds using Crane Lake (with much variability at Crane Lake).

There are occasional years when crane numbers spike when a large number of birds (greater than13,000) from White Water Draw switch to roosting in this area (using either the Playa or Crane Lake).

By the late 1940s the expansion of agriculture within the Sulphur Springs Valley (through the advent of groundwater pumping), provided the waste crop food base (corn) to attract Sandhill Cranes to over-winter in the valley. The wetter period of the mid 1980s brought large increases in crane numbers, and since then numbers have been steadily increasing at both White Water Draw and the Willcox Playa/Crane Lake. Cochise Lakes and an area of nearby alkaline lakes, also provide important habitat for a great number of bird species

Most significantly both in spring and late summer shorebirds can stop-over in very substantial numbers at both the playa and along Cochise Lakes (numbering 400-800 individuals at Cochise Lakes). These in-migration shorebird species using the playa and Cochise Lakes, include: Wilson's Phalarope (*Phalaropus tricolor*) (April, May, July, August, September), Willet (*Catoptrophorus semipalmatus*) (April), Least Sandpiper (*Caladris minutilla*) (April, August, September), Western Sandpiper (*Caladris mauri*) (April, August, September), Long-billed Dowitcher (*Limnodromus scolopaceus*) (May, September), Black-necked Stilt (*Himantopus mexicanus*) (July, August, September), and American Avocet (*Recurvirostra americana*) (July, August, September), plus lesser numbers of other shorebird species (Killdeer (*Charadrius vociferous*), Marbled Godwit (*Limosa fedoa*), Spotted Sandpiper (*Actitis macularia*), Solitary Sandpiper (*Tringa solitaria*), Greater Yellowlegs (*Tringa melanoleuca*), Long-billed Curlew (*Numenius americanus*), Baird's Sandpiper (*Caladris bairdii*), Pectoral Sandpiper (*Caladris melanotos*), Stilt Sandpiper (*Caladris himantopus*), and Red-necked Phalarope (*Phalaropus lobatus*). Small numbers of some shorebirds occasionally breed within the IBA, including American Avocet (*Recurvirostra americana*) and rarely Snowy Plover (*Charadrius alexandrines*) (Audubon WatchList 2007-Yellow, AZGFD Species of Greatest Conservation Need 2006).

One waterbird species, the White-faced Ibis (*Plegadis chihi*), is notably abundant also during migration (April) reaching numbers occasionally in the low 100s (~300). Cochise Lakes support many species of ducks and grebes. Ducks over-winter on the lakes in large flocks, primarily composed of American Wigeon (*Anas americana*) (low 100s), Northern Shoveler (*Anas clypeata*) (low 100s), and Green-winged Teal (*Anas crecca*) (15-50+). In the spring months of March and April and again in the fall months of September and October, large numbers of waterfowl pass through and use Cochise Lakes, including: Ruddy Duck (*Oxyura jamaicensis*) (low 100s), Lesser Scaup (*Aythya affinis*) (occasionally 100+), Ring-necked Duck (*Aythya collaris*) (less than 50), and Cinnamon Teal (*Anas cyanoptera*) (less than 50). In rare very wet winters, waterfowl in huge numbers (greater than15,000, half of which are Green-winged Teal) come to feed and rest within the Playa. Mallard (*Anas platyrhynchos*) "Mexican" ducks nest within the Willcox Playa Wildlife Area. Small numbers of Pied-billed Grebe (*Podilymbus podiceps*), and rarely Eared Grebe (*Podiceps nigricollus*) may also nest.

The alkaline (mud) lakes are important to feeding shorebirds and so are the margins of the Playa and Cochise Lakes. Peregrine Falcon (*Falco mexicanus*) and Merlin (*Falco columbarius*) are frequently in the IBA in the winter preying on the duck and shorebird community.

Scaled Quail (*Callipepla squamata*) (Audubon WatchList 2007-Yellow), Cassin's Sparrows

(*Aimophila cassinii*) (AzPIF Priority 1999), Bendire's Thrashers (*Toxostoma bendirei*) – very rare (IUCN Vulnerable, Audubon WatchList 2007-Red), and Swainson's Hawks (*Buteo swainsoni*) (Audubon WatchList 2007-Yellow) nest on the perimeter of the playa. Occasionally, flocks of Chestnut-collared Longspurs (*Calcarius ornatus*) (March, October <100) (Audubon WatchList 2007-Yellow), and McCown's Longspur (*Calcarius mccownii*) (National PIF WatchList 2004, Homer Hansen personal communication), over-winter and/or pass through during migration, foraging in the grasslands within this IBA.

The Willcox Playa is located in the **Sulphur Springs Valley**, an internationally recognized destination for birding ecotourism particularly highlighting raptors. The valley hosts the largest concentration of wintering hawks in the United States, providing winter habitat for 14 species of raptors, including Great Horned Owl (*Bubo virginianus*), Northern Harrier (*Circus cyaneus*), Prairie Falcon (*Falco mexicanus*), Bald (*Haliaeetus leucocephalus*) and Golden Eagle (*Aquila chrysaetos*), Harris's (*Parabuteo unicinctus*), Ferruginous (*Buteo regalis*), Red-tailed (*Buteo jamaicensis*), and Rough-legged (*Buteo lagopus*) Hawk. Ferruginous Hawks are regularly seen around colonies of Botta's Pocket Gophers (*Thomomys bottae*), their favorite prey.

Summation

As long ago as November 1988, the AZGFD found that 90 percent of the Arizona's riparian habitat had been lost in *Wildlife Views* (AZGFD 1988). The San Pedro River watershed, Aravaipa Creek, the Willcox Playa and the Sulphur Springs Valley are all critical migratory and breeding corridors for millions of birds (4 million + annually), especially riparian dependent species, including some very sensitive species. This crucial portion of the Pacific flyway provides stop-over habitat for migrating avian species from the tip of South America to the Arctic. Recognized as supporting exceptional levels of **biodiversity** (400 bird species recorded), part of which must be maintained for past **mitigation** of habitat destruction at Roosevelt Dam, according to the Roosevelt HCP, the San Pedro River watershed supports over half and nearly two-thirds of the avian diversity in the U.S. It contains high-quality examples of **imperiled natural communities**: the Fremont Cottonwood-Gooding Willow riparian community, and old growth Mesquite bosques. These values conspire to designate the San Pedro River and the Willcox Playa **two** of only eight **Important Bird Areas in the state having "global" status**.

The reach of the San Pedro River from "the Narrows", just north of Benson, northward to the San Pedro-Gila River confluence at Winkelman, has been identified as both a State and Global Important Bird Area by our Arizona IBA Science Technical Committee (January 2007) and by a National Audubon IBA Technical Committee (January 2008), respectively. IBA Science Committee members (12) in Arizona are from the AZGFD, the USFWS, as well representatives from all of the other federal agencies in Arizona. Although Globally Important Bird Area status carries no regulatory authority, it does bring biological information and habitat protection importance awareness to the public's attention, as well as bringing quantitative data and habitat information to the governments and agencies, assisting in science-based land use and land management planning in order to conserve high value wildlife resources at the state, hemispheric and even global levels.

In short, the San Pedro River watershed is a unique biological area of global significance, a true jewel in our region that all should work to protect in perpetuity from the various and diverse

threats coming from many directions. We stand in support of the creation of a Lower San Pedro River Collaborative Conservation Initiative and have advocated for the creation of a Lower San Pedro River Valley National Wildlife Refuge since 2005. We reiterate that the Southline Transmission Line project remains a viable alternative to any and all SunZia alternatives.

We strongly recommend adoption of the No Action Alternative, abandoning any consideration for the routes which impact the San Pedro River Valley or Aravaipa.

Our conclusion

The Aravaipa Creek area and entire San Pedro River Valley watershed has been the focus of conservation and mitigation for many groups and agencies for decades. BLM is aware of the proposal for a new National Wildlife Refuge in the exact area of their new "preferred alternative". Roadways, towers and infrastructure construction and maintenance will lead to fragmentation of the habitat, reducing the value, functions, and biodiversity of the region. This one project, the proposed SunZia Powerline, would undermine and destroy much or all of the conservation work, partnerships, and mitigation activities that have taken place in the past to preserve this rare habitat. We strongly recommend adoption of the No Action Alternative.

A new power line corridor, with multiple high towers, access roads, and habitat clearance, would severely compromise these significant Globally Important Bird Areas in Arizona. BLM's multiple use goals would be destroyed and made a mockery of by this development, for it would destroy the extraordinary ecosystem function and services of this unique area, together with a range of other values and uses that these intact, unfragmented habitats support. The NO Action Alternative is the only reasonable alternative.

Respectfully submitted,

Paul Green, Ph.D.
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Christina McVie
Conservation Chair | Tucson Audubon

Tricia Gerrodette
President | Huachuca Audubon Society

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Addendum 1.

Subject: SunZia

From: Michael Picker <Michael.Picker@GOV.CA.GOV>

Date: 6/14/2012 11:35 AM

To: nmeader@cox.net nmeader@cox.net

I was surprised to get your letter regarding SunZia, and the suggestion that the purpose of the power line might be to sell power into California. That seems like a risky business bet.

Most California utilities report that they are already oversubscribed for renewable power generation (see, for example, the article in Renewablesbiz on the link below). Although there's no requirement that they share all their business relationships with me, I'm not aware that any of the California utilities have contracts for power from renewable generators in New Mexico.

http://www.renewablesbiz.com/article/12/05/pge-says-it-will-meet-california-s-renewable-energy-goals

In fact, the California Public Utilities Commission reports that the state's investor-owned utilities have enough contracts from renewable power projects to supply 40% of the state's electricity needs. Much of that will come from the 151 projects, representing some 16 GW of wind, solar and geothermal that were permitted within California during 2010 and 2011.

In fact, California has become an exporter of renewable power to neighboring states. The Hudson Ranch1 geothermal plant in California's Imperial County recently completed construction and has begun selling power to the Salt River Project.

We've made this point to regional transmission bodies in the past, urging caution on planning regional transmission solely for bulk power sales of renewables to help meet California's 33% Renewable Portfolio Standard. See my letter to WECC of August 3, 2011, which is also attached.

Please feel free to check in if you have further questions.

Michael Picker
Senior Advisor to the Governor for Renewable Energy Facilities
Office of the Governor
State Capitol
Sacramento, CA 95814

(916) 445-7665

Michael.Picker@gov.ca.gov

Attachments:

Final WECC letter 6-21-11.pdf 1.5 MB

Addendum 2.

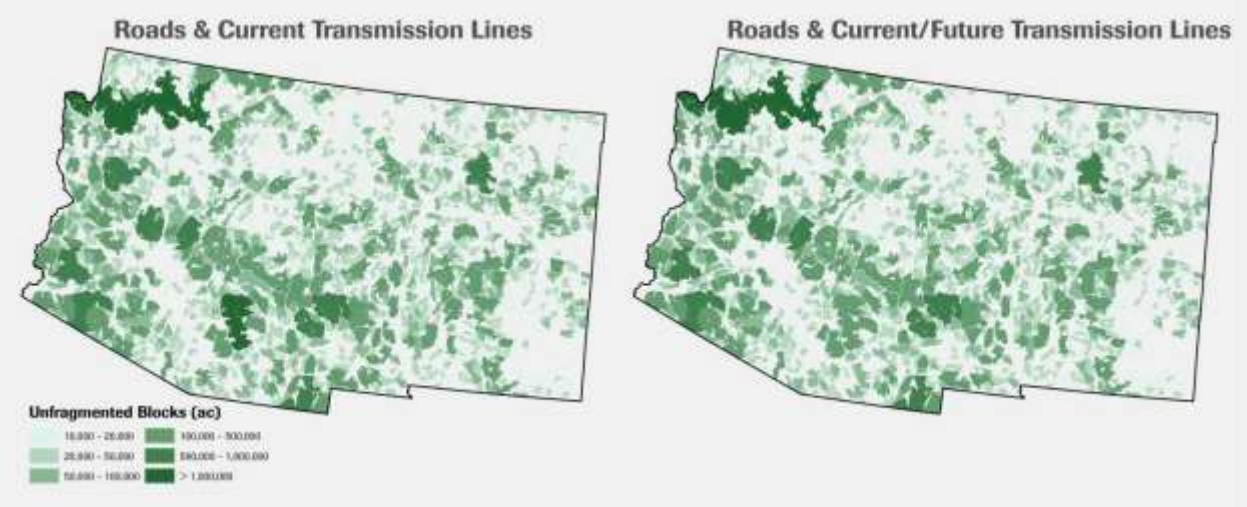
Cumulative Effects Analysis for Proposed Sunzia Transmission Line

Rob Marshall, Dale Turner, and Dan Majka, The Nature Conservancy

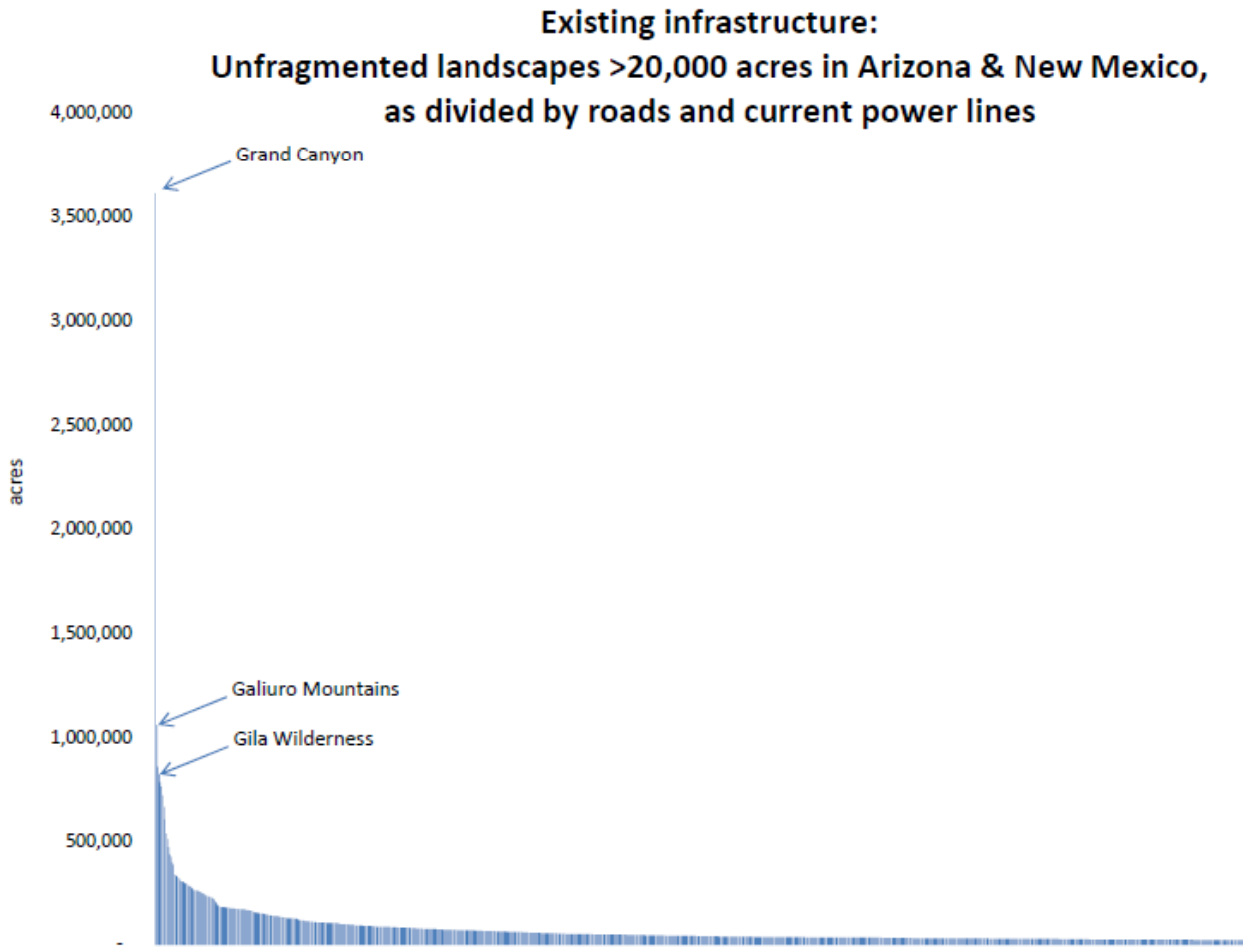
June 18, 2012

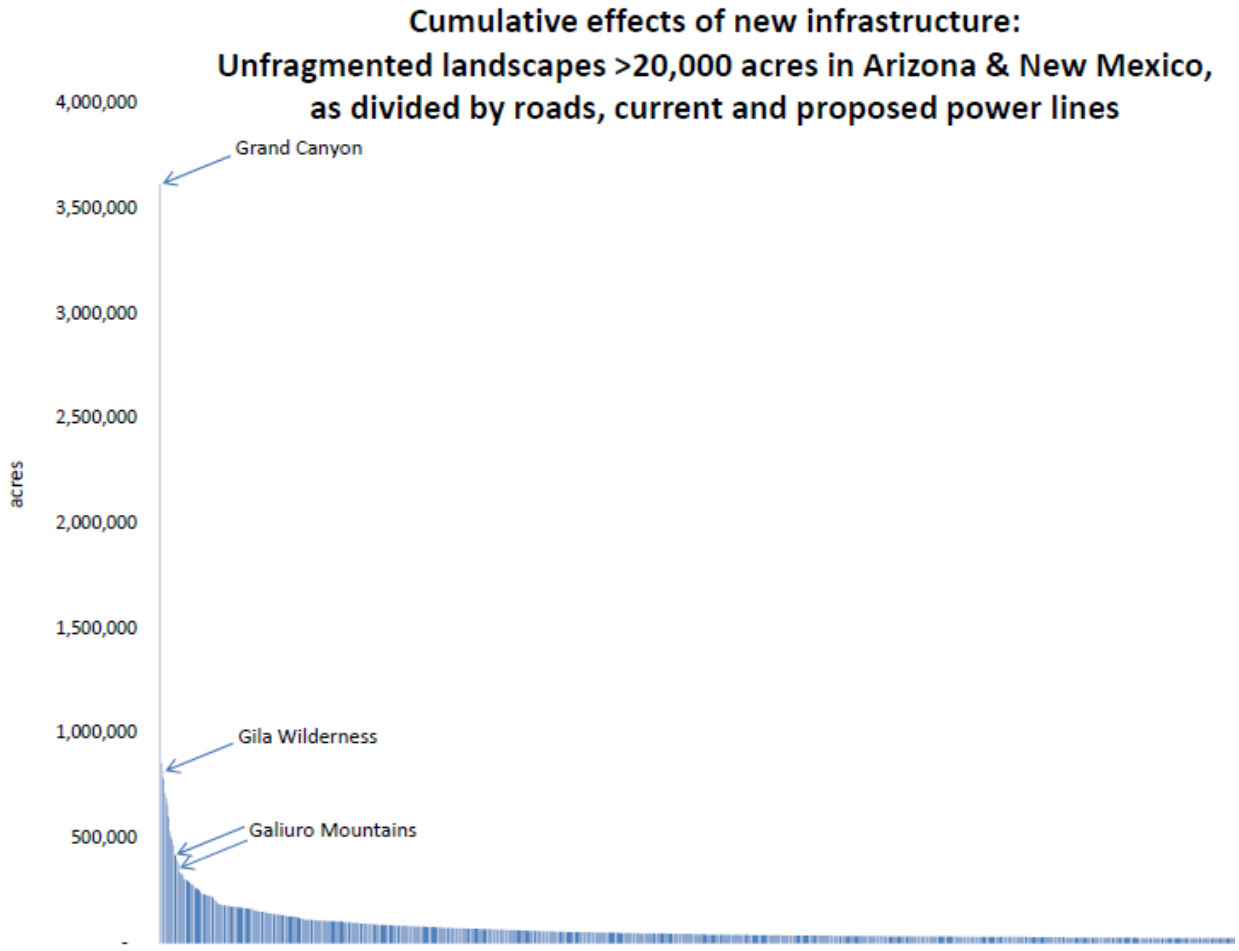
To evaluate cumulative effects associated with the proposed Sunzia transmission line we looked at the current status of habitat fragmentation across Arizona and New Mexico from roads and transmission lines. We then compared the current baseline condition to a future scenario that included the 20 transmission line proposals across Arizona and New Mexico currently in some phase of planning (see table at end). We did not consider pipelines in this analysis but note that pipelines similarly fragment habitat and would further amplify this type of analysis.

The graphic below compares the baseline condition to the future scenario. The largest remaining habitat blocks are indicated by progressively darker shades of green. The red polygon depicts the area encompassed by the Galiuro Mountains, Aravaipa Canyon, and Santa Teresa Mountains. *{We were unable to copy the red oval polygon}* The graphic to the right illustrates the change in size of this habitat block from the proposed Sunzia line.



The two graphics below plot the distribution of habitat patch sizes in acres across Arizona and New Mexico. All patches smaller than 20,000 acres were excluded from the analysis to make the size of the graphic more manageable. The left graphic illustrates how the current baseline condition is skewed considerably to the right, meaning the landscape of Arizona and New Mexico is comprised predominantly of small habitat fragments. This graphic also illustrates that outside of the Grand Canyon, there is no habitat block larger than the Galiuro-Aravaipa-Santa Teresa area. The graphic to the right illustrates the change in ordinal position and size of the Galiuro-Aravaipa-Santa Teresa area from siting Sunzia across the axis of this area.


Existing infrastructure:
Unfragmented landscapes >20,000 acres in Arizona & New Mexico,
as divided by roads and current power lines
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
-
acres
Grand Canyon
Galiuro Mountains
Gila Wilderness



The take home from these analyses is that the Sunzia transmission route proposed to cross the Galiuro-Aravaipa-Santa Teresa area would split in half the second largest unfragmented landscape remaining in the southwestern U.S. and introduce habitat disturbance into an area where, for example, there are no paved roads and no roads that cross over the axis of the Galiuros from Aravaipa Valley to the San Pedro River Valley, or from Aravaipa Valley over the Santa Teresas into the Gila River Valley. With the Southwest's largest remaining intact area, the Grand Canyon, already in protected status, it raises the question of whether mitigation measures are even possible for disturbances to the region's second largest intact landscape.

Implications

The Galiuro-Aravaipa-Santa Teresa area encompasses over 100,000 acres of intact, high value wildlife habitat. The area maintains the full complement of wildlife from large mammals (mountain lion, black bear, bighorn sheep, mule deer, white-tailed deer), to highly limited species such as Gould's turkey and the threatened Mexican spotted owl. The Aravaipa area, alone, includes over 500 species of plants and birds, 45 mammals, and 67 amphibians and reptiles. The streams on the Muleshoe Ranch and Aravaipa Canyon are the best refugia remaining for the states' imperiled native fish species. The abundance of the area's bighorn sheep population has enabled the Game and Fish Department to transplant animals from

Aravaipa to supplement bighorn populations elsewhere in Arizona.

For over 30 years the Nature Conservancy, in cooperation with BLM, USFS, AZ State Land Department, and AZ Game and Fish Department, has been managing the Aravaipa tablelands and Muleshoe Ranch areas with prescribed and wildland fire. BLM's Muleshoe Ranch and Aravaipa Ecosystem Management Plans both include habitat management objectives that call for the continued use of prescribed and naturally-occurring fire. When USFS's Firescape planning is completed this management practice will be available throughout the Galiuros helping to ensure that the areas grasslands are not encroached by shrubs to the degree that would alter habitat for grassland species or movement corridors for wildlife such as bighorn sheep.

Existing transmission lines across the two-state area range in size from 46 kV to 500 kV. Direct and indirect effects will likely vary depending upon the size of the line, type of habitat the line traverses, soil types, and topography, among other things. However, the role of fire in managing grassland and forested habitats is rarely considered in the siting of transmission infrastructure. For example, BLM's DEIS for Sunzia addresses fire suppression concerns but omits mention of fire as a habitat management tool in the area.

Because of the significant liabilities transmission providers face if they incur outages due to vegetation management, placement of line across the Galiuro-Aravaipa-Santa Teresa area would severely limit, if not preclude entirely, the use of fire as a management tool to maintain sustainable wildlife populations. Along with fragmentation effects of transmission lines, the exclusion of fire from habitats historically maintained by fire will result in habitat loss for species dependent upon grassland and forested habitats. Moreover, limiting the use of fire as a management tool increases the chance of catastrophic wildfire in an area with few roads and limited access for fire suppression activities, which would introduce a constant threat for any new infrastructure. Use of fire is the only practical tool to manage habitat for an area of this size. It is the lack of extensive infrastructure in this area that has made habitat management using fire practical, something that has become increasingly difficult to accomplish elsewhere as urban, suburban, and exurban development encroach into prime wildlife habitat throughout the state's forests and grasslands.

Proposed Transmission Lines in Arizona and New Mexico in Some Phase of Planning

1. Navajo Transmission Project (500kV)
2. PNM Tap to Rio Puerco (345 kV)
3. PNM West Mesa to San Juan (345 kV)
4. Lucky Corridor (500 kV)
5. High Plains Express (500 kV)
6. Roosevelt to Curry (138 kV)
7. Sunzia SW (500 kV)
8. Southline Transmission Afton to Apache (345 kV)
9. TEP Greenlee to Springerville (345 kV)

10. TEP Vail to Winchester ((345 kV)
11. TEP Nogales to Gateway (345 kV)
12. TEP Nogales to Tortolita (345 kV)
13. TEP Nogales to Westwing (345 kV)
14. Palo Verde to Saguaro (500 kV)
15. Pinal Central to Pinal West (500 kV)
16. APS TS3 to Liberty (230 kV)
17. Morgan Sun Valley Project (500 kV)
18. Delaney to Sun Valley (500 kV)
19. Palo Verde Hub to North Gila (500 kV)
20. APS Mesquite Generating Station to North Gila (230 kV)