Wildlife Quick Reference Guide
For the
Flagstaff Regional Planning Area

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In cooperation with
Arizona Game and Fish Department
And
Habitat Harmony

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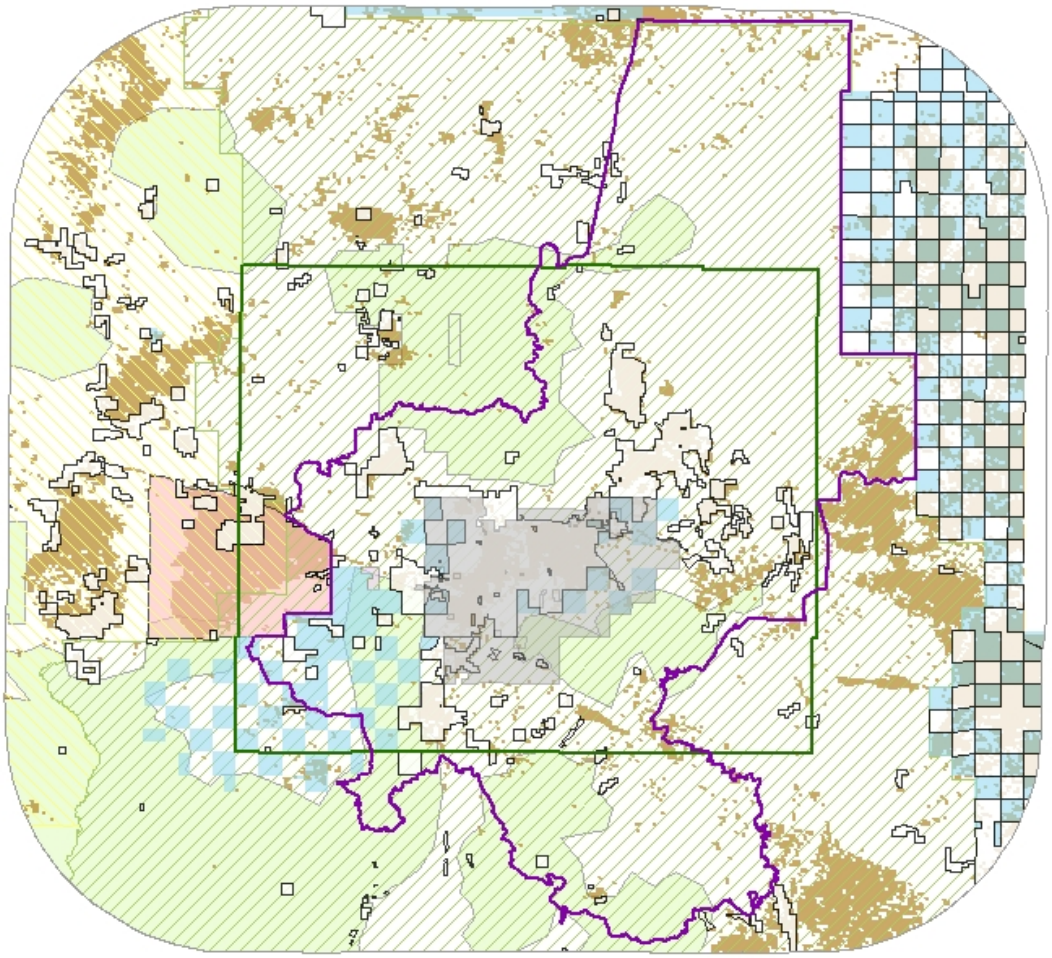
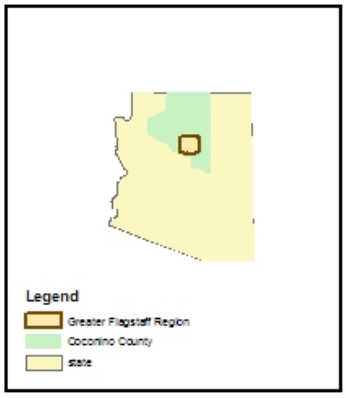
The Flagstaff region in Arizona is known for its natural beauty and abundant wildlife; many people visit or reside in Flagstaff because of the opportunity to live so close to large, natural areas. The Flagstaff region is an interesting mix of land ownerships, with city, county, federal, and state jurisdictions in close proximity to each other and sometimes even overlapping. To make things even more complicated, each of these jurisdictions has its own set of planning documents that help to guide land use and land management decisions; and of course, each of these plans has implications for wildlife their habitat. In an effort to better understand how the various land-use/management plans influence wildlife and their habitats in the Flagstaff region, we have developed the following Wildlife Quick Reference Guide. Enclosed you should find a map of land ownership and planning boundaries, an overview spreadsheet, and a narrative description of how each plan addresses wildlife, habitats, movement corridors, and open spaces, and how plans relate to one another. We hope this synthesis will help clarify the role that land use planning plays in wildlife conservation in the Flagstaff region, and provide planners and residents with a useful conservation planning tool.

Abbreviations you'll need to know:

AGFD	Arizona Game and Fish Department
ASLD	Arizona State Land Department
DOD	Department of Defense
GIS	Geographic Information System
GPS	Gunnison's Prairie Dog
MSO	Mexican spotted owl
MOU	Memorandum of Understanding
NOFS	Naval Observatory Flagstaff Station
NPS	National Park Service
PAC	Protected Activity Center
TES	Threatened and Endangered Species
USFS	US Forest Service
USFWS	US Fish and Wildlife Service

Land Management and Habitat for Two Important Species in the Flagstaff Region





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Legend
FLEA
Flagstaff Area Plan
city_limits_Project1
Private
State Trust
Coconino National Forest
Kaibab National Forest
NOFS
Camp Navajo
GPD Habitat
MSO and NOGO Critical Habitat

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0 1.5 3 6 9 12 Miles

Land Use Plans Relevant to Wildlife in the Vicinity of the Flagstaff Regional Plan

Plan	Initiated	Expires	Implementers	Overview
Flagstaff Area Regional Land Use Plan	2001	2020	City, County	Each section outlines major goals, policies, and strategies. Each section details the topographical, ecological, and urban characteristics of the region for greater understanding of the opportunities and limitations of planning.
Flagstaff Area Open Spaces and Greenways Plan	1998	Coalition should determine review schedule	City, County, ASLD, AGFD, NPS, Coconino National Forest	Guiding Principle: That residents in greater Flagstaff area have open spaces no more than 15 minutes from their neighborhoods.
Coconino County Comprehensive Plan	1974; 1990; 2003	2013 (unofficially)	Coconino County	Provides Guidelines for land use decisions to reflect long term development goals. These include concentrated development and protecting open spaces. Promotes innovative conservation-based planning.
Naval Observatory Station Flagstaff Integrated Nat. Resources Management Plan	2008	20 yrs (with annual review)	US Navy	Provides management objectives for the NOFS with priority on environmental protection and sustainability. Focal spp is Mexican spotted owl.
Coconino National Forest Land and Resource Management Plan	1987; 2005	10-15 yrs	USFS	Provides management goals and objectives for the with focus on recreation and TES management.
Flagstaff/Lake Mary Ecosystem Analysis Area FLEA	2002		USFS	Amendment 17 to Forest Plan. The area includes a Fire Management Analysis Zone with its own wildlife cover requirements (Appendix M). Addresses fire risk reduction, recreation, wildlife habitat cover (MSO), cooperative management.
Kaibab National Forest Land Management Plan	1988; 1989; 1990; 1996; 2000; 2003; 2004	10-15 yrs	USFS	Provides management goals and objectives for the KNF with focus on recreation and T&E species (northern goshawk, MSO) management.
Interagency Management Plan for Gunnison's Prairie Dogs in AZ	2007	Annual review recommended	AGFD and Gunnison's Prairie Dog Working Group	Statewide management guidelines with emphasis on methods of control.
Management Recommendations for the Northern Goshawk in the Southwestern United States	1992	Should be refined as research reveals habitat and prey needs	Forest Service: Rocky Mountain Forest and Range Experiment Station	General management plan for northern goshawks.

Flagstaff Area Regional Land Use Plan (RLUTP)

Relationship to Other Plans

- RLUTP is a result of Vision 2020
- Defers to Open Space & Greenways Plan for limits to sprawl
- Addresses legislation in Growing Smarter (1998) and Growing Smarter Plus (2000) including A.R.S. §9-461.06.M. – Designating State Trust lands as open space included in the Policy Framework Section under "Public Multiple-Use" description, A.R.S. §9-461.05.C. – Areas identified for growth and development and areas suitable for multi-modal transportation and infrastructure expansion and improvements designed to support a planned concentration of a variety of uses included in Land Use and Growth Management Element; Transportation Element; Open Space, Parks, Recreation & Trails Element; Natural and Cultural Resources and the Environment Element; and Community Facilities Services Element, A.R.S. §9-461.05.D.1.- Open Space inventory and forecasted needs included in Open Space, Parks, Recreation & Trails Element, A.R.S. §9-461.05.D.3.- Effects on air and water quality and natural resources included in Natural and Cultural Resources and the Environment Element, and other amendments & updates

Open Space

Refer to OSGW Plan for areas of "high or low retention" or those that should be preserved versus those that can be developed. Use Rural Open Spaces Plan for map of key open space.

Goal: Greater Flagstaff will observe compact land use with well-defined boundaries in order to protect natural environment.

Policy: Establish urban growth boundary.

Strategy: (Adopted with Regional Plan) establish Stage 1 Urban Growth Boundary for priority development in next 20-25 years (to be reviewed every 5 years), establish Stage 2 Urban Growth Boundary for additional lands up for development, determine how these lands will be reviewed.

Goal: Integrity of communities will be maintained by respecting area plans and the open spaces provisions in the Regional Plan and Greater Flagstaff Open Spaces and Greenways Plan.

Policy: Establish rural growth boundaries

Strategy: adopt Rural Growth Boundary with Regional Plan, work with state and federal managers to implement RGB policies and with legislature to restrict unregulated lot splits (within 3 years), create review criteria, and maintain access from Rural Growth Boundary to public lands.

Goal: Flagstaff Region will have a balance of open space, natural areas, wildlife corridors and habitat, trails, greenways, parks and recreation as guided by OSGW Plan, Urban Open Spaces Plan, the City's Long Range Master Plan for Parks, Rec, and Open Space, and the City Area Plan.

Policy: Create institutional framework to protect Open Space.

Strategy: Assign responsibility to departments (within one year), create a public-private coalition (within one year), establish Open Space and Greenways system in accordance with OSGW Plan (within 3 years).

Policy: Implement Open Space plans.

Strategy: Inventory spaces (within 2 years), develop acquisition and management programs (within 3 years), offer incentives to developers for protection (for life of plan).

Policy: Provide non-motorized transportation corridors.

Strategy: Connect neighborhood to trails and open space (within one year), revise development and acquisition standards (within 2 years), create a fund to support acquisition through easements and incentives (within 5 years), acquire McMillan Mesa

lands (through lifetime of plan), develop county trail system (in 1-3 years), coordinate existing trails (in 1-3 years).

Policy: Preserve priority lands.

Strategy: obtain funding, revise zoning and subdivision codes, require buffers for important lands like the Peaks, Walnut Canyon, Mt. Elden, etc, manage access to public lands (through lifetime of plan).

Policy: Protect "neighborwoods".

Strategy: Adopt standards and guidelines to protect vegetation and wildlife (within 3 years), establish neighborwoods associations (in 1-5 years).

Policy: Provide facilities.

Strategy: adopt policies and standards for facilities (within 3 years), pursue funding (throughout life of plan), acquire or designate lands for expansion or to make up for deficiencies (throughout life of plan), consider criteria for park development impact fees or land donations (throughout), acquire and designate open spaces in redevelopment lands (throughout).

Policy: Preserve rural and natural characteristics.

Strategy: Maintain open space buffers between communities (within 3 years), protect key habitat and ecological systems (within 3 years), promote regional cooperation to assure conservation (throughout life of plan).

Policy: Preserve character and natural setting.

Strategy: Provide access from neighborhood to trails and open space. Additionally, see hazard mitigation policies in Habitat section. Acquisition and planning for open space in "hazardous" areas is strategy.

Corridors

See Rural Open Spaces Plan for map of key corridors.

Policy: Preserve rural and natural environment.

Strategy: Adopt and revise standards to protect, enhance, and preserve critical wildlife habitats and corridors and riparian and wetland areas to maintain biodiversity and ecological systems (within 3 years), promote regional cooperation to assure conservation (throughout life of plan).

Policy: Continue agency coordination to protect wildlife habitat and corridors.

Strategy: Use planning to avoid human-wildlife conflict.

Policy: Plan within an environmental framework.

Strategy: Plan with ecological systems in mind to conserve and incorporate landscape features (throughout). Protect floodplains by creating a watershed based Stormwater Master Plan, develop stormwater management funds, develop mitigation plans, develop Urban Wash Restoration and Enhancement Program, develop and implement water quality runoff standards, develop criteria for Coconino County.

Wetlands/ Watersheds

Goal: Maintain high standards to protect and improve quality of life offered by natural resources and environment.

Policy: Sustainable levels of water use.

Strategy: Use reclaimed water where appropriate (throughout), promote "joint use" of water features (throughout), initiate time sensitive water use programs (within 5 years), monitor groundwater (throughout), pursue a greenbelt channel along the urban trail system (throughout).

Policy: Address hazard areas (including fire and flood risks, unstable soils, etc).

Strategy: Increase public awareness (throughout), identify and assess risks (in 1-5 years), design for public safety (in 1-5 years), prepare redevelopment plans (in 1-5 years), foster cooperative planning (throughout).

Policy: Abate noise impacts.

Strategy: Implement programs particularly concerning transportation (in 1-5 years)

Policy: Address hazardous waste disposal and reduction.

Strategy: Adopt policies (in 1-3 years)

Policy: Plan within an environmental framework.

Strategy: Plan with ecological systems in mind to conserve and incorporate landscape features (throughout)

Policy: Maintain and restore natural processes and systems.

Strategy: City and county urban planning should protect systems (throughout)

Policy: Promote forest restoration and sustainable management.

Strategy: Work cooperatively with land managers and planners (throughout).

Policy: Protect hillsides and ridgelines and their surrounding areas.

Strategy: Adopt policies in addition to current zoning to protect these areas (within 3 years).

Policy: Identify and control development in hazardous areas.

Strategy: Develop private sector initiatives/incentives to limit development in sensitive areas (in 1-5 years), promote building in more suitable areas (throughout).

Policy: Address flood hazards through present and future development and safety considerations.

Strategy: Develop and implement standards for natural hazard mitigation (in 1-5 years), develop both a Natural Hazard and a Flood Hazard Mitigation Plan (in 1-5 years).

Policy: Inventory, eradicate or control invasive and noxious weeds while restoring native vegetation.

Strategy: Work cooperatively toward state regulations and to promote public awareness and restoration (in 1-5 years).

Policy: Decrease risk of destructive fires.

Strategy: Limit development on slopes and ridges (throughout), reduce fuel loads through Fuels Management Program and Forest Stewardship Program (throughout).

Policy: Preserve rural and natural environment.

Strategy: Adopt and revise standards to protect, enhance, and preserve critical wildlife habitats and corridors and riparian and wetland areas to maintain biodiversity and ecological systems (within 3 years), promote regional cooperation to assure conservation (throughout life of plan).

Habitat

See Rural Open Spaces Plan for map of key habitat.

Goals: Maintain connectivity between the built environment and the natural landscape. Protect unique forest habitat and meadows.

Policy: Preserve rural and natural environment.

Strategy: Adopt and revise standards to protect, enhance, and preserve critical wildlife habitats and corridors and riparian and wetland areas to maintain biodiversity and ecological systems (within 3 years), promote regional cooperation to assure conservation (throughout life of plan).

Policy: Protect mountains and canyons.

Strategy: Work cooperatively to protect culturally and environmentally significant mountains and canyons.

Policy: Protect topographic features.

Strategy: Develop and adopt drainage design criteria to minimize resource damage (within 3 years), protect hillsides (within 3 years).

Policy: Continue agency coordination to protect wildlife habitat and corridors.

Strategy: Use planning to avoid human-wildlife conflict.

Policy: Address natural hazard areas.

Policy: Maintain and restore natural processes and systems.

Policy: Promote forest restoration and sustainable management.

Strategy: Foster coordinated ecosystem management.

Policy: Inventory, eradicate or control noxious weeds, restore native vegetation.

Strategy: Develop and adopt regulations.

Flagstaff Area Open Spaces and Greenways Plan (OSGW)

Relationship to Other Plans

- Began as update for Flagstaff's Growth and Management Guide (2000)
- There is an MOU among participants prioritizing open space

Open Space Considerations

Goal: Balance open space and urban development.

Objectives: Retain open spaces as community buffers, retain existing open spaces to contain and direct urban development, preserve Forest Service and State Trust lands, manage land use for healthy forests.

Goal: Develop an interconnected system of open spaces and greenways with access for recreation.

Objectives: Promote interconnectedness, protect public access.

Goal: Encourage cooperation among agencies and community stakeholders.

Objectives: Encourage education, promote research, provide sustainable economic land use, create an advisory coalition for the Plan, establish neighborwoods stewardship associations.

Recommendations: residents in greater Flagstaff should be able to reach open spaces within 15-minute walk, acquisition of State Trust, private, and Forest Service lands for example by leases, fee title acquisition, regulatory and congressional action, easements, and donations should be pursued, Forest Service should maintain land for multiple-uses rather than divesting less desirable agricultural lands in the urban interface, private lands with significant natural resources should be protected, State Trust lands should be retained as open space, neighborwoods associations should be formed to protect adjacent lands, development should follow Section 2 to provide linkages and public access to open space, City and Forest Service trails should be connected by County trails, maintain connected vegetation corridors for wildlife while minimizing human-wildlife conflicts and maintaining special habitats, provide educational opportunities to community, the City and County should amend their land use plans and zoning maps, the Forest Service should use this Plan to help revise Coconino National Forest Plan, National Parks Service should incorporate this Plan in their General Management Plan and Strategic Plan, AGFD should begin incorporating this plan, an Open Spaces Coalition should be established to advise and aid government, promote public understanding and support for the Plan.

Recommendations for all landscape districts: Communities should be involved in planning neighborwoods and assist Open Spaces Coalition, where open spaces are developed linkages and public access should be maintained, decisions must be made based upon the best available information, public input, and this Plan, developments along forested gateways should be complimentary to the landscape and screened with vegetation, future signage should not distract from the landscape, if public lands with

potential value as open spaces are proposed for exchange, further assessment will be done to determine the specific locations and relationships between these valued characteristics, if inventories and analyses (with public involvement) determine significant open space values lands should not be developed or exchanged but development rights should be obtained, if inventories and assessments conclude that small Forest Service lots adjacent to private lands are desirable to landowners as neighborwoods but not desirable as public open spaces, these should be exchanged to private hands, prioritize protection of unique natural areas and landscape level benefits when making decisions about open space acquisition and exchange, promote a mosaic of developed and undeveloped lands where open spaces surround and connect developed communities.

Corridors

Objectives: Retain open spaces as community buffers.

Recommendations: neighborwoods associations should be formed to protect adjacent lands, development should follow Section 2 to provide linkages and public access to open space, City and Forest Service trails should be connected by County trails, maintain connected vegetation corridors for wildlife while minimizing human-wildlife conflicts and maintaining special habitats.

Recommendations for all landscape districts: Where development occurs, linkages and corridors should be maintained in and around development that are compatible with the environment.

Wetlands/ Watersheds

Goal: Promote conservation and restoration of natural and cultural resources.

Objectives: enhance wildlife management in and around urban areas, preserve and restore riparian communities, improve watershed protection.

Recommendations: maintain connected vegetation corridors for wildlife while minimizing human-wildlife conflicts and maintaining special habitats (riparian, etc), reestablish natural fire regime, continue consumptive land use activities with consideration for recreation, wildlife, and scenic resources, recreation activities should be evaluated to ensure above recommendation, provide educational opportunities to community.

Habitat

Goal: Balance open space and urban development.

Objectives: Retain open spaces as community buffers, retain existing open spaces to contain and direct urban development, preserve Forest Service and State Trust lands, manage land use for healthy forests.

Goal: Promote conservation and restoration of natural and cultural resources.

Objectives: enhance wildlife management in and around urban areas, protect and restore important vegetative communities through, for example, restricted access, encourage fire management and hazard mitigation, preserve and restore riparian communities, improve watershed protection.

Recommendations: maintain connected vegetation corridors for wildlife while minimizing human-wildlife conflicts and maintaining special habitats.

Coconino County Comprehensive Plan (CCCP)

Relationships to Other Plans

- Growing Smarter Act calls for development considerations
- Area Plans are official amendments to Comprehensive Plan

- Plan is implemented by Zoning and Subdivision Ordinances
- Informs the Flagstaff Regional Land Use and Transportation Plan

Open Spaces

Conservation Guidelines: Consider impacts at the landscape level, identify and preserve rare or critical systems, habitats, and associated spp.

Goal: Conserve and enhance the natural qualities of environmentally sensitive lands.

Policies: Practice integrated design to protect open spaces and conservation lands.

Goal: Protect wildlife and habitat.

Policies: County favors projects that protect open spaces.

Goal: Provide stewardship for natural areas.

Policies: Collaborate to acquire, protect, and interpret natural areas, promote access for residents to open space.

Goal: Manage recreation to minimize damage to the environment.

Policies: Encourage coordinated planning, County shall assist in designating OHV areas or providing education.

Goal: Ensure the preservation of open space.

Policies: County will work with landowners and agencies to protect open lands, encourage developers to maintain open spaces, support open spaces to divide communities, maintain open space zoning for public lands with future zoning changes consistent with the Plan, Area Plans, and others approved for adjacent public lands.

Goal: Concentrate development while conserving open space.

Policies: County may support higher density development where infrastructure and safety are available, support infill development, plan communities with mixed uses where appropriate, discourage rezoning to higher density in remote areas, support federal acquisition of private lands with important habitat or system functions adjacent to public lands.

Corridors

Conservation Guidelines: Consider impacts at the landscape level, minimize fragmentation and maintain or restore habitat connectivity.

Goal: Protect wildlife and habitat.

Policies: County favors projects that protect connectivity.

Goal: Improve forest health by restoring forest ecosystems.

Policies: Development in forested areas should maintain connectivity and discourage user-created roads and trails.

Goal: Install utility corridors in a manner compatible with community character, scenic resources, and ecological conditions.

Policies: Utilities should be established in a manner sensitive to natural resources, encourage use of these corridors as trails, open space, and greenways.

Wildlife Planning Areas: Priority 1 – Doney Park, Red Lake, Fort Valley, Valle. Priority 2 – Kachina/Mountainaire, Rogers Lake, Blue Ridge. Priority 3 – Parks, Bellemont, San Francisco Peaks. Priority 4 – Tusayan, Oak Creek, Munds Park.

As part of the CCCP planning effort, a draft document was generated called the '*Coconino County Wildlife Reference Document'*. The Wildlife Reference Document was drafted by a core group of local wildlife biologists, County planners, interested parties, and GIS specialists who compiled information on wildlife habitats and movement areas in seven identified planning areas within the county. The core group identified important habitats and movement corridors for 16 focal species: pronghorn, mountain lion, elk, black bear, mule deer, turkey, badger, northern goshawk, Gunnison's prairie dog, Mexican spotted owl, tiger salamander, northern leopard frog, Mexican vole, Neotropical migrants, San Francisco Peak groundsel, and Flagstaff pennyroyal. Management recommendations for

Coconino County are provided for each wildlife planning area and for each species. This document is still in draft form and has not been released to the public. For more information, contact Bill Towler with Coconino County Community Development or Sarah Reif with the Arizona Game and Fish Department.

Conservation Guidelines: Encourage the use of cluster design to move development away from environmentally sensitive areas. Support the conservation of pronghorn antelope and their habitat in the design of housing developments. Support the protection of prairie dog colonies to the extent possible where they are present on state and private land. Protect connectivity in wildlife movement areas. Work with Arizona Department of Transportation to minimize wildlife crossing conflicts. Work with landowners, developers, USFS, and Bureau of Land Management to pursue land exchanges that benefit wildlife and unique wildlife habitats. Support the closure of unnecessary roads and the maintenance of roads in poor repair, with the goal of improving watershed conditions and minimizing unnecessary disturbance of wildlife. Develop a transfer of development rights (TDR) ordinance that will allow the transfer of the right to develop or build from one property to another. Develop a conservation incentive design ordinance that will minimize development in sensitive wildlife habitats. Encourage and support wildlife movement research.

Wetlands/Watersheds

Conservation Guidelines: Consider impacts at the landscape level, make decisions compatible with natural features of the site, avoid or mitigate negative impacts upon ecological systems, avoid land uses that deplete natural resources, avoid polluting our communities and environment.

Goal: Conserve and enhance the natural qualities of environmentally sensitive lands.

Policies: Protect and restore floodplains, springs, and riparian areas, avoid development on floodplains, the County promotes tools including conservation easements to protect riparian areas, wetlands, and other critical habitat.

Goal: Protect soils.

Policies: Development reviews should consider mitigation for drainage, erosion, sedimentation, and other potential soil loss, encourage soil conservation, where soils are shallow or poor consider low density development or technologically advanced water treatment systems.

Goal: Ensure water supply for communities while considering natural systems.

Policies: Consider long-term variations when planning, protect sensitive lands that depend on surface and groundwater.

Goal: Provide water efficiently.

Policies: Promote water conservation measures, reuse wastewater where appropriate, use efficient technologies, utilize conservation techniques in County facilities, encourage low water use in new commercial and industrial developments, encourage homeowners and businesses to conserve, encourage the use of treated wastewater where appropriate for recreational, agricultural, commercial and industrial uses, encourage alternative paving to reduce surface water runoff and promote aquifer recharge.

Goal: Protect and improve surface and groundwater quality.

Policies: Consider water quality impacts of residential, commercial, and industrial developments, developments that affect drainage shall include a drainage plan including mitigation measures, minimize the use of impervious surfaces, the County will set an example by locating new facilities to protect water quality.

Goal: Address groundwater management at the local and regional level.

Policies: County supports more local and regional authority for groundwater management, the County will pursue and participate in programs addressing water

resources, water should be a consideration of all major development and subdivision applications.

Habitat

Conservation Guidelines: Consider impacts at the landscape level, make decisions compatible with natural features of the site, avoid or mitigate negative impacts upon ecological systems, identify and preserve rare or critical systems, habitats, and associated spp, minimize habitat fragmentation, minimize introduction and spread of non-native species, avoid land uses that deplete natural resources, consider time scales relevant to natural processes, evaluate long term and cumulative effects of decisions.

Goal: Conserve and enhance the natural qualities of environmentally sensitive lands.

Policies: Protect and restore floodplains, springs, and riparian areas, design to minimize harm to natural features and native vegetation, avoid development on floodplains, practice integrated design to protect open spaces and conservation lands.

Goal: Protect wildlife and habitat.

Policies: County uses conservation design and other strategies to protect important habitat and sensitive lands, development projects will be carefully sited to avoid impacts on sensitive species, County supports habitat protects and closure of unnecessary roads to improve habitat or minimize impacts, County favors projects that protect wildlife watering areas, forest development should protect meadows for neighborhood open space.

Goal: Conserve and improve health of plant communities.

Policies: Promote protection for sensitive plants while protecting natives and other vegetative features, revegetate and restore disturbed areas when possible, require appropriate action to control the spread of noxious weeds.

Goal: Improve forest health by restoring forest ecosystems.

Policies: Protect and preserve old growth forest, encourage public participation in forest management.

Goal: Preserve working ranches and rural character.

Policies: Protect working ranches as unfragmented habitat and open space, consider private and state lands checkerboard in a regional context to preserve unfragmented lands.

Species

Goal: Protect wildlife and habitat.

Policies: County promotes protection for threatened and endangered wildlife and plants and their habitat.

Naval Observatory Station Flagstaff Integrated Natural Resources Management Plan (NOFS INRMP)

Relationships to Other Plans

- Requires cooperation from USFWS and AGFD and at least yearly consultation
- Follows MSO recovery plan and Biological Opinion
- Guided by the State Wildlife Action Plan (Arizona Comprehensive Wildlife Conservation Strategy)
- Follows AGFD Bat Conservation Plan
- Integrated with NOFS Master Plan (1985)
- Outdoor recreation (hunting and fishing) regulated by MOU between DOD and US Department of Interior
- MOU on migratory bird management between DOD and USFWS

General

Objectives: Proactively cooperate in resource planning partnerships, build a strong conservation ethic through stewardship and education, protect biodiversity, support other DOD environmental policies, become a non-binding member of the Grand Canyon Forest Partnership, participate in the NOFS Natural Resources Partnering Team. Improve and refine natural resource management by adaptively adjusting success criteria and priorities based upon past accomplishments, new risks and threats, new biological information, and changes in policy.

Corridors

Objectives: Enhance, restore, and sustain diversity and long-term viability for ecological and evolutionary processes consistent with DOD ecosystem management policy. Protect habitat at the landscape level, considering connectivity. Minimize fragmentation by 1) aligning road and concentrating facilities to avoid fragmentation, 2) maintaining continuity between patches, 3) fostering population dispersal and recolonization potential, 4) increase the area for foraging. Protect big game migratory corridors by avoiding fencing or using AGFD big game fence specifications.

Wetlands/Watersheds

NOFS has at least one jurisdictional wetland and several Waters of the U.S. awaiting verification by Army Corps of Engineers

Objectives: Protect habitats and watersheds to the extent compatible with NOFS mission, protect the integrity of waterways and wetlands, landscape and manage facilities to conserve water. Protect the integrity and function of wetlands. Manage wetlands in accordance with laws. There is no planned harvest activity in wetlands and no riparian areas on the NOFS. Establish buffers for Waters of the US and headwater swales from forestry or other operations. Control erosion and non-point water pollution by evaluating and treating drainages

Habitat

Objectives: Protect wildlife habitats to the extent compatible with NOFS mission, maintain forests within historic range of variation with consideration for global warming, forest health, and fire, protect and restore biodiversity and long-term viability of ecological and evolutionary processes consistent with DOD ecosystem management policy, maintain healthy forests with structural diversity of pines and oaks, treat slash consistent with wildlife values, protect migratory bird habitat, eradicate or control invasive species, use Best Management Practices to protect soil, reseed as necessary in open or disturbed areas, monitor natural resources, participate in prescribed burning, thinning, or herbicide treatment as consistent with NOFS mission. NOFS has a snag monitoring program for snag density, quality, and wildlife use.

Objective: Enhance, restore, and sustain diversity and long-term viability for ecological and evolutionary processes consistent with DOD ecosystem management policy. Continue to identify and monitor MSO habitat and other species. Establish prescriptions for specific habitat types. Protect habitat at the landscape level, considering connectivity. Preserve structural and species diversity. Monitor habitat and management activities, including long term experimental plots. Conduct ten-year comprehensive monitoring and compare to compatible sites if possible including 1) annual point-count bird surveys, 2) periodic small mammal surveys and trends, 3) continue botanical surveys, stratifying by cover density, 4) establish a plant collection, 5) compare MSO habitat surveys with others, 6) tie in with regional monitoring for harmful insects and dwarf mistletoe, 7) employ bat pest management to avoid harm, 8) conduct amphibian and reptile surveys, 9) encourage university research and monitoring, 10) determine invertebrate abundance and diversity. Map 4-1 Identifies wildlife habitat forest thinning and future thinning areas. Current prescribed fire proposal is for partial burns every year.

Objective: Maintain forest stands in a healthy and productive condition that will limit number of pines per acre, increase tree and stand vigor, and enhance structural diversity of pines and oaks.

Objective: Maintain soil stability and productivity.
Objective: Provide for pine and oaks, dead and downed woody material, and wildlife that use these habitat attributes. If trimming is necessary for visibility, it will be conducted at the minimum and with USFWS. Cutting will be minimized on steep slopes – slopes >15% should have no more than 5-acre areas harvested with no adjacent activity until regeneration has reached 14ft. Protect habitat attributes such as dead and downed wood. Investigate need for planting or seeding understory natives in open areas and hand plant conifers where deemed necessary. Improve herbaceous understory for multiple objectives including small mammal prey base (MSO).
Objective: Protect sensitive plants and habitats with a focus on MSO and other cavity nesting, snag-dependent spp. Conduct botanical surveys every five years, avoid negative impacts to sensitive plants, map survey results.
Objective: Conserve migratory bird habitat with emphasis on cavity nesting snag-dependent spp. Determine status, health, and habitat use for these spp. Encourage cooperation and university research. Identify and monitor indicator spp including Gambel oak, woodpeckers, brown creeper, pygmy nuthatch, olive-sided flycatchers, squirrels. Extend monitoring season – establish a Christmas Bird Count. Restrict access to nesting and breeding grounds as needed. Consider habitat enhancements (bird boxes, landscaping, etc). Take action against pest species that pose a threat to migratory birds. Avoid negative impacts from human activities and projects. Cooperate with large-scale monitoring and research efforts like Partners in Flight. Educate and encourage migratory bird stewardship.
Objective: Eradicate or control invasive species. See 4-21 for detailed measures. Appendix B: Natural Resource Project Prescriptions. Appendix C: List of (future) Projects. Appendix K: Forest Thinning Plan. Appendix L: Seeding Recommendations. Appendix N: Landscape – lists approved and unacceptable plants, provides general info on invasive spp.

Species

NOFS does not have designated critical habitat, but falls within the Dry Lake MSO Protected Activity Center (PAC) boundary. No observations have been made on the installation since 1990. Approx. 20 acres of potential nesting habitat for MSO in northern part of installation. Full flora and fauna surveys scheduled for 2010.
Objective: Protect potential MSO habitat from catastrophic wildfire by maintaining a healthy forest and encouraging large pine and oak growth. Manage PAC area according to standards, acquire lands with suitable habitat, conduct annual monitoring, provide forestry consultation, provide specific and quantifiable goals, monitoring, reporting, and where appropriate adaptive management.
Objectives: Protect sensitive species with focus on the Mexican Spotted Owl and other cavity nesters and snag-dependent spp, seek consistency with state Wildlife Action Plans, protect forests with MSO habitat as priority so long as fire control and dark skies objectives are met, provide pine and oak snags, downed wood, and the snag-dependent species that rely on them, manage for focal bird species including northern goshawk, cordilean flycatcher, olive-sided flycatcher, and purple martin, prevent the spread of hantavirus and rabies, promote best practices for pest control to avoid harm to native spp. Sensitive species observed or potentially occurring on NOFS: Bald eagle, northern goshawk, Allen's big-eared bat, fringed myotis, long-eared myotis, long-legged or hairy-winged myotis, occult little brown bat, flammulated owl (observed once 1996-97). Other species observed on NOFS: American three-toed woodpecker, red-naped sapsucker. Follow region-wide management recommendations for these species.
Objective: Enhance, restore, and sustain diversity and long-term viability for ecological and evolutionary processes consistent with DOD ecosystem management policy. Ensure pest management of bats minimizes impacts to species' populations. Inspect for roosting bats before building and demolition projects. Discourage bats from inhabiting occupied buildings by 1) excluding access to roost sites after maternity and before winter hibernation, 2) exploring potential for bat exclusion device, and 3) encourage relocation and use bat boxes with AGFD consultation.

Objective: Preserve stands with priority for potential MSO habitat as long as fire and dark skies requirements are met. Consult USFWS if any forest treatment becomes advisable within a PAC. Appendix D: Surveys and species lists. Appendix M: Bat Management Information – info on bat boxes, surveys, etc. Appendix R: AGFD Comprehensive Wildlife Conservation Strategy Plan – provides detailed info on woodpeckers and bats of Northern AZ.

Arizona State Wildlife Action Plan (SWAP – also known as the Comprehensive Wildlife Conservation Strategy)

The Arizona SWAP identified the Species of Greatest Conservation Need in Arizona, and also identifies critical stressors impacting those species. The SWAP addresses stressors at the habitat-type level, so for the Flagstaff Region this would be the Arizona-New Mexico Mountains Ecoregion and the following habitat types within that ecoregion: Montane Conifer Forest, Great Basin Conifer Woodland, Plans, and Great-Basin Grassland, Subalpine Grasslands, Alpine Tundra, Wetlands/Springs/Seeps, Streams/Rivers, and Lakes/Reservoirs. Conservation Actions are identified in Element 4 of the plan beginning on page 213.

Open Space

Strategy: Conserve Wildlife Habitat – Acquire ecologically important lands, access agreements, conservation easements, and/or water rights. Represent wildlife in multiple-use planning. See 'Habitat' section below.

Corridors

Strategy: Conserve Wildlife Habitat – Perform landscape classification analyses to identify important wildlife corridors. Promote maintenance and restoration of habitat connectivity by removing or modifying barriers, maintaining corridors, and using wildlife-friendly roadway crossing structures. Promote establishment and protection of green belts and other preserves including terrestrial and aquatic corridors. Work with city and county planners to promote in-fill development and limit urban/rural sprawl. Identify wildlife core habitats and corridors to avoid when installing new pipelines and canals. Encourage wildlife friendly design for all road building. Encourage increased partnering and communication with transportation officials on projects that affect wildlife and their habitat. Promote design and construction of overpasses, underpasses or culverts to increase permeability of existing or planned roads. Reduce sedimentation effects from road and trail construction. Incorporate wildlife values in the design of road and trail networks in and around natural areas.

Wetlands/Watersheds

Strategy: Conserve Wildlife Habitat – Promote restoration and protection of aquifers, springs, streams, rivers, lakes, and riparian systems. Support regulations to retain minimum instream slow and water rights for wildlife. Support state efforts to address drought as it relates to wildlife. Protect and restore riparian areas. Encourage the utilization of low water use [and native] plants in landscaping. Promote legislation to increase water conservation. Increase public awareness of water cycles, water tables, instream flow, proper stream morphology, and ecosystem functions (Project WET). Remove or modify unnecessary or inoperative dams or diversions. Incorporate stream morphology and wildlife habitat features in canals and flood control drainages. Use wetlands to buffer and filter contaminants from storm runoff and irrigation return water in and around urban/rural areas. Encourage wise management of ground water. Protect and restore springheads. Encourage gray water use. Encourage low water use agriculture. Encourage the utilization of low water use [and native] plants in landscaping. Increase public awareness on the importance of conserving groundwater and springs for the benefit of wildlife. Promote water conservation methods. Promote water conservation methods in growth planning to develop sustainable water use. Manage watersheds to maintain hydrological integrity and incorporate wildlife values.

Habitat

Strategy: Conserve Wildlife Habitat – Perform landscape classification analyses to identify sensitive habitats and core wildlife areas. Use public education and law enforcement to protect wildlife and habitats. Educate the public and work cooperatively with agencies to promote conservation and minimize impacts on wildlife. Mitigate habitat loss from agricultural conversion and/or urban/rural development. Use environmentally-friendly materials, landscaping, and structure designs for rural and urban development. Work cooperatively with landowners/permittees by providing financial and technical assistance (thru incentive programs) to conservation projects. Work with city and county planners to incorporate wildlife values in urban/rural development plans. Increase enforcement for laws governing recreational activities. Increase enforcement of existing laws and promote more stringent laws prohibiting the release of domestic or nonnative animals into the wild. Revegetate disturbed areas with native plants. Create barriers between susceptible native species and non-natives to reduce hybridization, predation, competition, and transmission of diseases, pathogens, and parasites. Use appropriate concentrations and types of pesticides, herbicides, or alternatives to control undesirable species, especially near sensitive habitat and watercourses. Use seed traps along forest/woodland roads to prevent the spread of nuisance plants. Encourage maintenance of paved and unpaved roads in a manner that minimizes impacts on wildlife and wildlife habitats. Use native plants for roadway landscaping and urban/rural developed areas. Use certified weed-free straw or native vegetation for roadside erosion control. Increase public awareness on the negative effects of creation and use of unauthorized roads and trails for recreation. Prevent or minimize recreational impacts in sensitive habitats. Increase public awareness of responsible OHV use and laws. Encourage responsible outdoor recreation through education (for example: "Stay on theTrails," "Leave No Trace," "Be Bear Aware," "Stop Aquatic Hitchhikers"). Use fencing and/or increased law enforcement presence to reduce unauthorized use and access to sensitive habitats.

Species

Strategy: Maintain and re-establish habitat and habitat-connectivity – Develop plans to conserve priority conservation species that are not sufficiently addressed under existing plans. Manage to sustain sport and native fish populations. Develop pathogen decontamination protocols and collaborate to control disease, pathogens, and parasites. Evaluate, update and enforce regulations for hybridization, nuisance animals, illegal stocking, and animals used for bait. Reduce/Eliminate impacts of feral animals on sensitive habitat and wild populations, educate to reduce this threat. Develop contingency plans for rapid salvage of wildlife populations threatened with extirpation in situations of imminent habitat loss. Advocate for and create new urban fishing opportunities. Manage so as to sustain or enhance native fish and sport fish populations.

Coconino National Forest Land and Resource Management Plan (Coconino LMP)

Relationships to Other Plans

- Supersedes smaller plans within USFS districts on the Coconino NF
- Required by Renewable Resources Planning Act, which created a Southwest Regional Guide, as amended by National Forest Management Act which promotes multiple-use and sustained resource yield, ecosystem protection, tribal rights, participatory and adaptive management.
- The Forest Plan Environmental Impact Statement and technical report provide more detail; Sedona-Oak Creek Plan fully adopted with exception that land adjustment must conform to Coconino LMP
- Adopts Snowbowl Environmental Impact Statement proposal
- Adopts site management plans for Elden Mountain, Schnebly Hill, Mormon Mtn

- Complies with Wilderness Act, National Trail designations, Scenic Rivers, Historic Places, Research Natural Areas, Geological Areas, Easements (pp20 for locations)
- Complies with Arizona State Wildlife Action Plan and other AGFD plans

Open Spaces

Issues Addressed: Land allocation and ownership, lands up for removal or withdrawal on pp 82-83, 8 ownership categories for land acquisition 1) Wilderness and Other Administratively-designated Areas – acquire private lands inside admin boundary, acquire adjacent private lands with development potential, acquire private lands to achieve management goals, 2) Communities – non-forest lands in and adjacent to communities not likely to be acquired, NF lands determined necessary for future community development will be maintained for this potential, 3) Recreation Use and Development Areas – acquire lands for foreseeable public needs including recreation, open space protection, pollution minimization, acquire unique landscapes or waters, 4) Municipal Watersheds – protect and improve watersheds through acquisition, 5) State and Fed Lands Not Administered by FS – acquire to achieve efficient management and enhanced public use, maintain contiguous forest, 6) Small and Scattered NF Ownership – acquire private lands and consolidate for efficiency, 7) Wildlands with Large Non-Forest Ownership – efficiency, acquire habitat and riparian areas for TES spp, 8) Wildlands with Small Non-Forest Ownership – acquire to correct or discourage non-compatible land uses, efficiency of FS and neighboring operations, acquire where special resource needs are identified including TES habitat and riparian areas. Base-for-Exchange standards, Forest Supervisor and Regional Forester determine priorities; see Land and Water Conservation Fund Act (eligible lands on pp 88).

Corridors

Issues Addressed: Transportation – non-essential roads are destroyed at 40mi/yr.

Management Guidelines: Manage old-growth at landscape level to promote connectivity, new infrastructure will consider environmental and TES impacts, maintain average road densities of 1.1 mi open road per section in woodland zone and 2 mi per section in ponderosa pine and mixed conifer zone (temporary roads not included in estimate if totally obliterated nor are long-term closures), coordinate with local authorities to connect trails with greenways.

Wetlands/Watersheds

Issues Addressed: Prioritizes riparian areas above Mogollon Rim, 90% of foreseeable riparian recovery expected by 2030.

Goals: Minimize pollution and degradation by recreation, accomplish 80% recovery by 2030, cooperate with AGFD on cold water fisheries, have all areas in satisfactory watershed condition by 2020, identify and protect wetlands and floodplains.

Management Guidelines: Maintain 300ft radius from cave features for projects, up to ¼ mi buffer for significant resources, no drilling or sedimentation on known cave sites, identify resource damage from dispersed recreation, Off-road Driving Implementation Schedule reviewed annually to protect resources – closures used to protect resources, locate trailheads to protect water resources, consider all areas meeting definition of riparian regardless of size, protect and restore all riparian areas as quickly as possible in context of MSO habitat, permanent salt sources used for livestock grazing may not be placed within ¼ mi of riparian area, establish riparian vegetation according to FSH2509.23, use livestock fencing as needed to protect riparian vegetation, comply with the "Federal Water Pollution Control Act" and AZ Water Quality Standards Best Management Practices, inventory riparian habitat in first 10 years, by 2000 convert at least 25% of unsatisfactory riparian areas to satisfactory and all by 2020, coordinate with the City to manage Inner Basin, Upper and Lower Lake Mary, Lake Mary Well Field, and Woody Mtn Well Field, obtain instream flow water rights, conduct environmental analysis for mineral projects, do not create new roads in riparian areas, existing

roads may be maintained in wet meadows according to Best Management Practices, emphasize road-management and resources/wildlife as primary Forest mission.

Habitat

There are about 18,000 acres of old growth in areas designated non-timber.

Issues Addressed: Firewood – pine, oak, aspen, alligator juniper in high demand, most is slash but also old growth and snags; Timber harvest; Recreational opportunities – degradation, poor enforcement; Off-road vehicle use – damage, user conflict; Wildlife habitat – old growth and indicator species maintained above minimum, expect decrease in early successional habitat and relatively steady old-growth habitat over 50 years; Riparian habitat; Geothermal development – leases on 94,703 acres of NF.

Goals: Preserve and protect caves and other habitat while providing recreation; provide wilderness for recreation; support natural fire regimes; "manage habitat to maintain viable populations of wildlife and fish species and improve habitat for selected species"; maintain high quality grazing at the *D intensity level; combat noxious weeds; develop and implement sustained yield program for firewood and other individual timber extraction activities; manage insects and disease.

Management Guidelines: Caves inventoried w/ Federal Cave Resources Protection Act 1988 and priorities set, District Cave Implementation Schedule dictates action, locations kept confidential, excavations are evaluated and conducted to mimic natural features.

Management Guidelines: Off-road Driving Implementation Schedule reviewed annually to protect resources – closures used to protect resources, practice forage utilization standards to protect owl habitat and prey base, with AGFD pursue Sikes Act fund for TES habitat improvement, use seeding for non-structural habitat improvement, use prescribed fire where consistent with other goals, manage forage to increase indicator species, prioritize TES habitat and follow recovery plans, where needed and approved provide water no more than ¼ mi from openings, create raptor roosts/perches/nests, identify 20-500 acre ungulate forage monitoring areas ¼ to 1 mile from water in productive and accessible areas.

Rangeland-related Management Guidelines: Develop acceptable, site-specific grazing levels during the growing season, otherwise use Integrated Resource Management process, use cattle guards at boundaries, during summer leave water sources for wildlife, in winter use bubblers as needed to prevent freezing, inventory all earthen tanks within 10 years, provide entry and escape for wildlife on open tanks, install passes for antelope or elk jumps where needed, boundary fences should be four wires with the top between 38 and 42 in high and the bottom smooth and 18 in above ground, interior fences 3-wired with same bottom standards.

Management Guidelines: TES habitat takes priority over insect and disease control, timber cuts designed to prevent spread of dwarf mistletoe, use Habitat Capability Index to determine wildlife forage requirements for 10,000 acre timber blocks, manage old-growth for landscape connectivity, seek to develop or maintain 20% old-growth by forest type in any landscape, use pre-European settlement conditions to inform goals, use landscape models including Forest Vegetation Simulator, BEHAVE, and FARSITE, pp 70-2 describes standards for old-growth, conduct Terrestrial Ecosystems Survey according to 2550 of TES Handbook and National Cooperative Soil Survey, in pine forest, desert scrub, grassland, pinyon/juniper and other wildlife habitat the fire suppression objective is to limit fires to 300 acres, during prescribed burns protect snags and logs or TES spp, suppress fires that threaten TES habitat.

Species

Goals: "Manage habitat to maintain viable populations of wildlife and fish species and improve habitat for selected species"; improve habitat for and work toward delisting TES species; identify and protect areas with TES species; increase wildlife related recreation.

Management Guidelines: Monitor and protect bats under Cave Resources Protection Act, bat research requires permit from District Ranger, Off-road Driving Implementation Schedule reviewed annually to protect resources – use closures to protect TES habitat, restrict motor vehicle use during winter for big game as needed – treat winter range for big game with wildlife priority including supplemental forage if NEPA deems needed, consider bear habitat in creating rec areas. Follow federal listing priorities and recovery plans, use science to create implementation schedule for habitat objectives, inventory, monitor and recover TES in accordance with federal regulations, maintain confidentiality and law enforcement for TES locations.

MSO Management Guidelines: Survey for and protect spotted owl. Identify 1) protected, 2) restricted, 3) other forest type, protect mixed conifer and pine/oak forest with slope over 40% where timber harvest has not occurred for past 20 years and preserved areas (no harvest in protected habitat except fire abatement). Restrict all other forest areas to maintain and replace nest/roost habitat and prey, use landscape analysis to ensure minimums are met, mimic natural disturbances and structural diversity, extend rotation for even-aged stands to >200yrs, save all trees >24 dbh and large oaks, retain snags >18in downed logs >12in and hardwoods, survey potential habitat in all 3 designations plus half mile beyond perimeter of project area. Inside PAC: no harvest unless fire safety or firewood and some salvage, limit human activity during breeding; firewood collection – protect oaks, snags, downed logs, harvest only small diameter trees; retain all woody vegetation at least 10-in root collar and debris 12-in diameter.

MSO Monitoring see pp 65-6.

Northern goshawk Management Guidelines: Standards apply outside MSO protected and restricted areas where MSO takes precedence. Survey up to ½ mi from project boundary, fledging areas with 6 nest sites for known pairs, historical nests and where goshawks but not nests have been found over 2 yrs. Maintain diverse age/structure/spp trees and food/cover for prey, limit human activities in nesting area during breeding, protect soils and hydrology, consult with FWS if conflict arises with other TES spp, preferred fuels treatment is thinning from below with hand tools and fire or lopping and scattering debris, minimize debris piles, avoid ground disturbance, limit road density using small permanent skid trails instead, limit human activity during breeding season March-Sept, low intensity ground fire only, avoid burning entire pair home range in one year, prepare fire management plan to minimize risk of abandonment, plan for fire to move away from nest to minimize smoke, etc.

TES Species Management Guidelines: Maintain structural habitat requirements, consult with state and fed agencies. Cooperate with agencies to address wildlife damage directly and where necessary by removing only the offending animal, no surface occupancy (mineral extraction) where listed spp exist or slopes >40%. Power lines and towers to be constructed with raptors in mind, when considering apiary permits minimize conflicts with bears and livestock/wildlife water sites.

Flagstaff/Lake Mary Ecosystem Analysis (FLEA)

Relationships to Other Plans

- Amendment to Coconino NF Management Plan
- Some of the FLEA area will be assessed for compliance with National Fire Plan and Greater Flagstaff Forest Partnership

Open Spaces

Shares Coconino NF plan criteria for land exchange

Corridors

In legal sections where MSO PACs and steep slopes do not occur, maintain up to 15% dense cover conditions to maintain wildlife travel-ways.

FLEA area-wide Guidelines: Maintain connected patches of denser vegetation (considering topography) to provide travelways for wildlife. Maintain the two corridors in the Urban/Rural Influence Zone along the Rio de Flag. Management Area 38 – Maintain wildlife travelways including the corridor that crosses Hwy 180, another between Pumphouse Wash and Woody Ridge south of Kachina Village, and another connecting A-1 Mountain, Observatory Mesa, and the slopes of the San Francisco Mtns.

Wetlands/Watersheds

Improve trails to minimize harm to wetlands, riparian areas, sensitive species.

FLEA area-wide Guidelines: obliterate or close roads based upon the following criteria – riparian area threats, meadows likely to be damaged, roads in wetlands or stream courses, areas in municipal watersheds. Provide wildlife viewing where appropriate. Generally discourage off-road vehicles within ¼ mi of open water and riparian areas. Management Area 2 – Seed and plant woody species in riparian areas. Management Area 12– Inventory, survey, and evaluate riparian areas in first decade, protect riparian and open waters from disturbance to nesting birds May 1-June 15, maintain nesting cover and forage for birds, fish habitat, plant riparian vegetation as needed to meet Regional Guide Riparian Standards for 80% of riparian areas above the rim and 90% below, riparian areas are highly desired for acquisition through land exchange. Management Area 35 – Continue and improve protection for waterfowl at Marshall Lake by creating water holes in the reeds, maintaining wildlife viewing, nesting closures, etc. Management Area 38 – Maintain high water quality in Oak Creek.

Habitat

FLEA area-wide Guidelines: obliterate or close roads based upon the following criteria – key wildlife areas or habitat for TES spp threatened, wildlife reproduction areas. Control or remove exotic and invasive weeds while lessening their spread. Educate the public about meadows and improve vegetative diversity near meadows to diffuse the impacts of grazing. Management Area 3 – Where meadows are to be maintained, eliminate invading vegetation, stabilize gullies to raise the water table, scarify the soil, seed with grasses and forage spp, and use fencing where necessary. Management Area 5 – Fence to protect regenerating aspen where necessary. Management Area 6 – Retain at least 40% of alligator juniper ≤ 12 inches and remove only large overmature trees when alligator juniper accounts for >50% basal area. Management Area 7 – Provide water as needed in winter range and use bubblers where needed to prevent freezing, prioritize firewood/wildlife habitat treatments where forage is needed for elk and deer. Management Area 8&10 – Provide water sources with bubblers to prevent freezing. Management Area 9 – Evaluate within 10yrs the need to restore meadows, construct fences where evaluation deems necessary to protect meadows. Management Area 33 – Restore grasslands and promote healthy pinyon-juniper woodlands. Management Area 33 – Treat as high priority for treating non-native and invasive species.

Species

Retained dense forest cover should include MSO PACs and steep slopes to the extent possible (more than 15% dense forest may be retained where these conditions occur).

FLEA area-wide Guidelines: Where social trails occur in MSO PACs, minimize impact to MSOs, close and revegetate non-system trails in PACs. Where possible, limit human activity within 30-acre goshawk nest stand during breeding season, generally allowing human activity within PFAs. Evaluate bald eagle winter roosts and perch habitat for long-term viability,

promote large diameter trees with open crowns and many layers with tree screens for roosts. For all TES spp, promote research and cooperative management. Management Area 2 – Close bald eagle nesting area Dec 1 – June 15 or when nest is occupied. Management Area 4 – Manage for indicator species (turkey, goshawk, pygmy nuthatch, elk, Abert squirrel, red squirrel, hairy woodpecker, Mexican spotted owl), evaluate owl and bear habitat during project planning, emphasize wildlife protection as timber harvesting is difficult and habitat is generally of high quality. Management Area 5 – Manage for indicator species (yellow-bellied sapsucker, mule deer). Management Area 6 – Manage for indicator species (elk, Abert squirrel, mule deer, hairy woodpecker), manage for an average of at least four turkey roost tree groups per section in identified winter range. Management Area 7&8 – Manage for indicator species (plain titmouse, mule deer, elk). Management Area 8 – Evaluate bear habitat in project planning. Management Area 9– Manage for indicator species (pronghorn, elk). Management Area 10– Manage for indicator species (pronghorn). Management Area 12– Manage for indicator species (cinnamon teal, Lincoln's sparrow, yellow breasted chat, Lucy's warbler, macroinvertebrates). Management Area 32– Manage for grassland species, particularly pronghorn. Management Area 33– Promote desired ponderosa pine forest structure with goshawks in mind. Management Area 35 – Promote desired forest structure including goshawk and MSO habitat. Protect species that utilize the lake while limiting human disturbance and improving wildlife viewing. Management Area 36 – Maintain the two MSO PACs, maintain large tracts of unfragmented habitat in primitive to semi-primitive motorized areas for disturbance sensitive species including bear and turkey. Management Area 33 – Promote desired forest structure including goshawk and MSO habitat. Maintain large tracts of primitive to semi-primitive motorized and unfragmented habitat for disturbance sensitive species including bear and turkey. Management Area 38 – Maintain large tracts of primitive to semi-primitive motorized and unfragmented habitat for disturbance sensitive species including bear and turkey. Avoid or limit disturbance to rare species like peregrine falcon.

Kaibab National Forest Land Management Plan (Kaibab LMP)

Relationships to Other Plans

- Required by Renewable Resources Planning Act (RPA) and National Forest Management Act

Goal: Coordinate with AGFD to fulfill Arizona State Wildlife Action Plan and Management Plan for Grand Canyon National Game Preserve

Open Spaces

Goals: Identify and protect Research Natural Areas.

Corridors

Issues Addressed: Transportation – to close 1550 miles of road.

Wetlands/Watersheds

Issues Addressed: Watershed – 350,000 acres of unsatisfactory watershed on Kaibab NF, plan improves 40% of these.

Goals: Inventory all riparian areas, maintain woody riparian or shrub and herbaceous dominated riparian areas at least at satisfactory condition, eliminate unsatisfactory watershed areas by 2020 with restoration.

Guidelines: In managing MSO habitat, prevent damage to riparian areas while working to improve degraded areas.

Habitat

Purpose: Protect productivity of lands, consider relative values of resources, recognize interrelationships of resources, protect forest and range from pests.

Issues Addressed: Timber – incorporate habitat diversity standards, reduce commercial timber acreage, stand rotation at least 210 yrs, set standards for specific habitat features like snags; Firewood – concentrate in pinyon-juniper woodland, increase substitution of pine slash for oak and aspen; Range; Wildlife Habitats – maintain diversity, old-growth, focus on successional species, direct improvement through burning, seeding/planting, water improvements, wildlife openings, surveys, change in Habitat Diversity Index +13.6%, old growth +105,625 acres; Wilderness and Special Areas – establishes Garland Prairie Research Natural Area (300 acre bunchgrass system).

Goals: Improve understanding and protection for species habitats, improve habitat for TES and work toward delisting, identify and protect areas with TES working with USFWS to mitigate impacts on species, prevent and contain noxious and invasive plants and pests.

Standards: maintain grazing at a level that protects and promotes recovery of TES, allocate at least 20% of each forested ecosystem management area to old growth, manage old growth at the landscape level for a flow of functions and interactions at various scales, use landscape percentages rather than acres.

Guidelines: Identify key ungulate management areas usually within ¼ to 1 mi from water on productive soils and level or on slight slopes and accessible to livestock, these could be 20-500 acres or smaller for example on high mtn meadows with perennial streams, in these areas monitor key species to assess allowable use, work with USFWS set site-specific forage use levels.

Species

Goals: Restore and protect habitat for Mexican Spotted Owls.

Standards: Provide "protected" (delineated PACs with 40% slope mixed con/pine-oak where harvest has not occurred in 20 years and reserved areas), "restricted" (other mixed con/pine-oak and riparian areas), and other forest (all ponderosa pine, spruce-fir, woodland and aspen areas) for Mexican spotted owl, allow only fuelwood harvest and fire abatement within PACs, evaluate with USFWS all destroyed PACs and consider salvage logging or declassification, allow only fire abatement in all areas meeting protected criteria, limit human activity in PACs during breeding, consult with USFWS where activities potentially affect TES in protected or restricted areas, monitor changes in population or habitat for delisting.

Guidelines: Allow low impact fuelwood harvest while retaining oaks, snags and downed logs, harvest conifers <9 in diameter where fuel abatement occurs, in high fire risk areas treat 10% of PACs with known nest sites. Retain woody debris >12in, snags, broad-leafed vegetation, and hardwoods >10in. For restricted areas: manage to ensure sustained and evenly distributed nest/roost/prey habitat, create replacement habitat where appropriate, use at least 200 yr rotation for even aged stands, save all trees >24in dbh, retain and promote large oaks, encourage wildland and prescribed fire with thinning from below to manage fire risk, retain habitat characteristics, management should improve and not harm riparian areas, implement forage utilization standards to maintain prey and beneficial fire conditions while promoting owl habitat and maintaining good to excellent range conditions, implement plan old growth standards and guidelines, apply landscape management for diversity and disturbance, for monitoring and evaluation involve FS regional and forest offices, FWS Ecological Service Field Office and Regional Office, Rocky Mountain Research Station, the recovery team and recovery unit working group.

Northern goshawk: Guidelines and standards apply to forests and woodlands outside MSO management areas (MSO has management priority).

Standards: manage for uneven aged stands, retain snags and downed wood, maintain landscape level diversity in structure and composition while providing food and cover for prey spp, limit human activity in nesting areas during breeding season, protect soils and hydrology against compaction etc, consult with USFWS where management actions conflict with other

TES, prioritize Kaibab pincushion cactus and *Pediocactus paradinei* management in goshawk habitat.

Guidelines: Emphasize protection and restoration of riparian areas following plan riparian standards and guidelines, action should improve degraded areas as soon as possible, refer to USDA Forest Service General Technical Report RM-217 for goshawk ecology and management, supplemental info in The Northern Goshawk: Ecology and Management by Cooper Ornithological Society as Studies in Avian Biology No.16, management should be evaluated from fine- to landscape-scale, leave at least 2 snags, 3 logs, and 5-7 tons woody debris per acre, in woodlands provide uneven aged stands and a mosaic of vegetative densities, age and species diversity, provide for snags, downed logs, and woody debris. Within nesting area: use Table 5 of RM-217, preferred treatment is thinning from below with uneven spacing using hand tools and fire, lopping and scattering preferred where fire cannot be used, limit debris piling, minimize compaction and harm to forest floor, do not grapple or Dozer debris piles, manage roads at lowest possible density using permanent skid trails rather than roads, Limit human disturbance in PFAs and nest sites during breeding season (March 1 – Sept 30), low intensity fires but not crown fires are acceptable in PFAs and nest areas, avoid burning an entire home range in one year, prepare management plans for fires in occupied nest areas to minimize nest abandonment (minimize smoke and crown fire risk by burning away from nest with prevailing winds), use skid trails to maintain low road density, limit debris piles and use hand piling to avoid compactions, limit dozer use to protect herbaceous layer.

Interagency Management Plan for Gunnison's Prairie Dogs (GPD) in Arizona

Relationships to Other Plans

- GPD protected under Endangered Species Act
- Conservation Strategy (2006) guides state management plans
- EPA regulates poisoning
- Black-footed ferret and burrowing owl plans (especially for translocations) – See Appendix I for all associated species; Grazing, consider GPD when determining grazing leases

Open Spaces

Recommendation: Coordinate with urban planners to protect GPDs and provide areas for translocations.

Corridors

Goal: Identify and encourage protection of corridors.

Habitat

GPD are keystone grassland species that benefit black-footed ferrets, pronghorn, bison, etc. Habitat requirements (pp3-4);

Goals: Assess threats, work with local planner to avoid fragmentation, produce a state GIS map of colonies and potential habitat and land use, ground-truth potential sites, manage noxious weeds in potential habitat, research and consider juniper removal where grassland encroachment is a threat, pursue federal funds and grants, research effects of energy development, develop landowner incentives, research effects of agricultural conversion, fire, grazing management practices, and vegetation composition on GPD.

Species

Gunnison's prairie dog: (Unlisted federally; AZ state Species of Greatest Conservation Need); Natural history (pp1-8); Human interactions (pp8-17); Distribution and surveys (pp17-23); Hunting

season closed May 1-June 15, poisoning is legal and regulated by Environmental Protection Agency; Appendix IV monitoring protocol.

Recommendation: When feasible and possible, the Dept and the Working Group will consider other grassland species and systems in managing GPD, where drought threatens colonies, reduce other stressors.

Goals: Research and monitor role of disease, mitigate disease spread. Prioritize management areas, protect existing colonies (reevaluate and map every 3 years), expand on federal lands and private where cooperation exists, contribute to range-wide research, create area-specific goals, evaluate mitigation effectiveness, maintain GPD across 75% of 1916 range, identify corrective measures, monitor and evaluate GPD hunting, review state poisoning regulations, create MOU with AGFD and AZ Dept of Ag and Wildlife Services on poisoning, educate and engage the public, research role of drought, list GPD on AGFD Sensitive Elements List for Heritage Funding, develop landowner incentives, research characteristics and management options for urban GPD.

Mitigation for decline of 40% or more: Hunting closures/limits, restrictions on control, disease control (vaccines, flea dusting), land conservation, (re)establishing colonies, habitat enhancement.

Management Recommendations for the Northern Goshawk in the Southwestern United States

Relationships to Other Plans

- Informs Forest Plans

Habitat

Goshawk Nesting Home Range: Range is about 6,000 acres containing nest area, post fledging-family area (PFA), and foraging area. Nest area – 30 acres including several nests, often on northernly aspect in drainage or canyon with water, with old trees and dense canopy, used March through Sept. PFA – 420 acres pair territory used for about 2 months, patchy habitats good for prey. Do not include nest area or openings in PFA acreage. Foraging area – 5,400 acres around PFA with open understory. Prey habitat attributes include snags, downed logs, woody debris, large trees, openings, herbaceous and shrubby understories, mixed structural stages. Prey should be abundant when attributes present, forest has large trees and open understory, openings are small (1/3-2 acres) to medium (2-4 acres), there are patches of dense mid-aged trees, and most forests are "mid-aged" to "old" structurally.

Management Recommendations: Nest area – provide ~30 acres with 3 suitable and 3 replacement nest areas based upon active and historical nest sites within .5 miles from each other where possible. No adverse management should take place in nest areas and human activity should be limited between March 1 and Sept 30. Preferred treatment in suitable nest areas is non-uniform understory thinning for prescribed fire, and hand thinning; in replacement nest areas thin non-uniformly from below in three youngest tree size classes and allow larger trees to increase in density. Range utilization should average 20% by weight and not exceed 40% for grasses and forbes and should average 40% and not exceed 60% for shrubs.

PFA – regeneration of 10% every 20 years, prescribed fire, and thinning may be needed to maintain characteristics. If ponderosa or mixed forest openings are more than 1 acre, leave 3-6 large mature or old trees per acre in groups. If spruce-fir openings are more than .5 acres, leave a group of 6 reserve trees per .5 acres. Encourage aspen and oak regeneration and maintain snags and downed wood. Conduct management activities Oct-Feb. Minimize roads and use skid trails rather than roads. Forage utilization should average 20 percent by weight and not more than 40 percent. Browse should average 40 percent by weight. >50% canopy, canopy and near-ground cover for fledglings in balance with abundant prey habitat (see spp section).

Foraging area – same as PFA except maintain 40% canopy in mid-aged and 40-60% canopy in mature and old forests. Openings should be up to 4 acres in ponderosa and mixed forest and smaller in spruce-fir, maintain diversity of tree size classes and habitat attributes.
Management Objectives: PFAs provide cover for fledglings and prey.
Desired Conditions: Manage for a diversity of tree size classes. Soil should be well developed with organic layers that support mycorrhizae. In mature and old pondersosa pine VSS, cover should be at least 50% (60% in mixed and 70% for spruce-fir), one third of mid-aged has at least 60% cover, and the remainder has at least 50% cover. PFAs have at least 2 large snags (3 in other forest types), 3 large downed logs (5 in other types), and at least 3-5 mature and old trees with interlocking crowns per acre (at least one group of 6 mature trees in mixed and 2 groups in spruce per acre).