Reconciliation of Native Species Habitat Needs and Trail Design

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The Loop pathway system and regional trails are often landscaped and sometimes irrigated. Constructed, planted, and maintained trail landscapes can provide enhanced and sustainable wildlife habitat in addition to other trail functions. Use of water-harvesting designs save water and reduce erosion. Trails that provide improved ecosystem functions can also facilitate native wildlife diversity and improved wildlife viewing opportunities.

GENERAL HABITAT GUIDELINES FOR TUCSON'S NATIVE WILDLIFE

Provide a variety of plants
- Include native trees, larger shrubs, sub-shrubs, grasses, cacti and flowering plants to give birds and lizards a variety of food sources, basking sites and cover
- Include plant species that will provide support to the base of the food chain, including site-appropriate native and pollinator species for ants and caterpillars. Birds need a varied diet of seeds, berries, nectar and insects

Mass plantings
- Place various sized and seasoned plants close to one another to provide escape cover from predators
- Create a mosaic of open and mass-planted areas, taking cues from nearby natural surroundings regarding which vegetation structure type should be dominant

Provide structural diversity
- Include ground cover, shrubs and trees in planting design
- Plant areas of dense, thorny shrubs (more than 3 feet away from trail edges)
- Allow areas of "unmaintained" vegetation. Allow mistletoe to grow in trees

Include complex structures
- Rock piles, wood piles and brush piles (such as flood debris), and flat tin and boards offer cover, foraging, basking and shelter sites (more than 3 feet away from trails edge for pedestrian safety)
- Leaf and twig litter and organic soil, such as found under mesquite trees or cottonwoods, provide insect and lizard habitat and improve water infiltration; it may also serve as a weed barrier.
- Snags and dead wood provide avian roosting and nesting sites
- "Messy" and "weedy" vegetation areas can provide great cover and forage for wildlife

Use insecticides sparingly
- Lizards and birds can die from eating poisoned insects and may be poisoned indirectly by accident
- Lizards and birds aid in pest control by eating insects and other pests

Sources:
- Where Do Lizards Lounge brochure by Heidi Flugstad & Dennis Caldwell.
- The Wildlife Friendly Garden - Arizona Game and Fish, www.azgfd.gov/w_c/landscaping_wildlife_garden.shtml
- Reptiles of Arizona, by Thomas C. Brennan, www.reptilesofaz.com/
- Desert Bird Gardening, Arizona Native Plant Society, 1997.
- Strategies for integrating pedestrian needs and bird habitat in trail design along secondary watercourse in Tucson, Arizona brochure by Jennifer Patton.
- Tucson Bird Count, www.tucsonbirds.org

PIMA COUNTY
FLOOD CONTROL

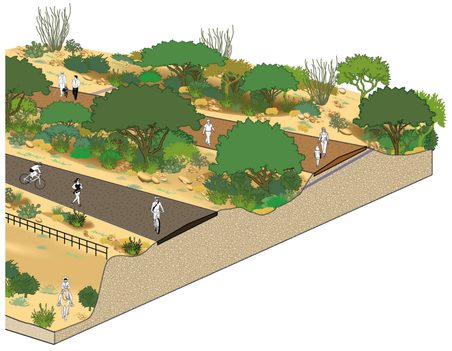
BASIN HABITAT DESIGN AND MAINTENANCE NEEDS

Purposes
- Harvest rainwater for plants
- Capture leaf litter
- Reduce erosion to earthen trail

Features
- Sized to allow for 100% infiltration in 48 hours
- Self-mulching (aids in water infiltration)

Design Notes
- Supplemental irrigation can have moisture sensor controls
- Rock spillways or drains are optional if basins are appropriately sized and maintained
- Locate plants in appropriate basin positions

Maintenance
- Minimal pruning for public safety: preserve connection from grasses up to tree canopy
- Preserve leaf litter, logs, flat tin or boards, stick piles and rock piles in bottom of basin
- Remove any excess dirt in bottom of basin and at drains after catastrophic floods (especially pre-vegetation establishment)
- Avoid use of insecticides; let the natural predators do this work



LIZARDS

Hydro/Mesoriparian Lizards

GIANT SPOTTED WHIPTAIL *Aspidoscelis burti stictogramma*
CLARK'S SPINY LIZARD *Sceloporus clarkii*
SONORAN SPOTTED WHIPTAIL *Aspidoscelis sonorae*
NORTHERN TREE LIZARD *Urosaurus ornatus*
MADREAN ALLIGATOR LIZARD *Elgaria kingii*
SOUTHERN PRARIE (COWLES FENCE) LIZARD *Sceloporus [undulatus] cowlesi*

Habitat Needs
- Strong structural diversity and high plant density
- Diverse native species including grasses and vines
- Substantial, though not 100% canopy cover in trees, plus shrubs and sub-shrubs in irregular clusters or clumps
- More than 120-feet-long continuous vegetated segments/basins (with narrow gaps for safety/maintenance needs only)
- Permanent rock/log piles and flat rocks for foraging and cover

Diet Needs
- Forage by digging in leaf litter and under logs, wood piles and rocks; and chasing in the open for insects including ants, termites, beetles and caterpillars. They also eat a variety of spiders

Meso/Xeroriparian Lizards

CLARK'S SPINY LIZARD *Sceloporus clarkii*
DESERT SPINY LIZARD *Sceloporus magister*
SONORAN SPOTTED WHIPTAIL *Aspidoscelis sonorae*
NORTHERN TREE LIZARD *Urosaurus ornatus*
ZEBRA-TAILED LIZARD *Callisaurus draconoides*
WESTERN BANDED GECKO *Coleonyx variegates*

Habitat Needs
- Abundance of tall native trees
- Mixture of shrubs of all sizes
- Varied ground condition including rock/log piles, boards, rocks and leaf litter

Diet Needs
- Beetles, ants, caterpillars, wasps, moths, butterflies, grasshoppers, bugs, aphids, cicadas, crickets, spiders and some plant material such as wolfberry (*Lycium*) fruit

Mixed Riparian/Upland Lizards

SONORAN SPOTTED WHIPTAIL *Aspidoscelis sonorae*
WESTERN BANDED GECKO *Coleonyx variegates*
ZEBRA-TAILED LIZARD *Callisaurus draconoides*
ELEGANT EARLESS LIZARD *Holbrookia elegans*
LONG-TAILED BRUSH LIZARD *Urosaurus graciosus*
COMMON SIDE-BLOTCHED LIZARD *Uta stansburiana*
DESERT IGUANA *Dipsosaurus dorsalis*
REGAL HORNED LIZARD *Phrynosoma solare*
LONG-NOSED LEOPARD LIZARD *Gambelia wislizenii*
GILA MONSTER *Heloderma suspectum*

Habitat Needs
- Mosaic of vegetation structures, dominance based on local observations
- Strong vertical areas with dense plantings
- Areas of open ground with widely spaced or no trees and scattered sub-shrubs
- Open areas with significant grasses, shrubs, and sub-shrubs and/or cactus
- Varied ground condition including sandy areas, boards, rock/log piles and leaf litter

Diet Needs
- Varies by species; may include insects, spiders, plants, other lizards, snakes and plant materials such as flowers, buds and small fruits, plus nestlings and the eggs of birds and reptiles

BIRDS

Hydro/Mesoriparian Birds

ABERT'S TOWHEE *Pipilo aberti*
BELL'S VIREO *Vireo bellii*
WESTERN YELLOW-BILLED CUCKOO *Coccyzus americanus occidentalis*

Habitat Needs
- Mesquite bosques and cottonwood-willow forests
- Dense, shrubby understory of varying heights

Diet Needs
- Diet varies by species; may include insects, frogs, berries and seeds

Meso/Xeroriparian Birds

RUFOUS-WINGED SPARROW *Aimophila carpalis*
ABERT'S TOWHEE *Pipilo aberti*

Habitat Needs
- Thorny shrubs along wash banks
- Grassy areas scattered with thorny and/or dense shrubs

Diet Needs
- Insects, grass and weed seeds

Mixed Riparian/Upland Birds

CACTUS FERRUGINOUS PYGMY OWL *Glaucidium brasilianum cactorum*
GAMBEL'S QUAIL *Callipepla gambelli*
PYRRHULOXIA *Cardinalis sinuatus*
PHAINOPEPLA *Phainopepla nitens*
CARDINAL *Cardinalis cardinalis*

Habitat Needs
- Dense, woody thickets including thorny shrubs and trees
- Variety of desert tree species
- Trees and cacti large enough to provide nesting cavities

Diet Needs
- Varies by species; may include insects, berries and seeds; the pygmy owl diet includes insects, birds and lizards

Open Space/Barren Area Birds

BURROWING OWL *Athene cunicularia*

Habitat Needs
- Open areas interspersed with grasses, such as grasslands, prairies and open areas caused by human disturbance

Diet Needs
- Feeds on insects, small rodents, lizards, and birds

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