



WILDLIFE FRIENDLY DEVELOPMENT

INTRODUCTION

- ⊙ Arizona Wildlife
- ⊙ Laws/Economics/Why Birds Matter
- ⊙ *Burrowing Owls*
- ⊙ Wildlife and the Built Environment – Community Planning, Site Analysis, and Site Management for Habitat Protection and Connectivity
- ⊙ *Great-Horned Owls*
- ⊙ Impacts of Collisions on Bird Populations – Problems with Light Pollution and Glass
- ⊙ Solutions for Light Pollution and Glass
- ⊙ *American Kestrels*
- ⊙ Bird-Friendly Building Standards
- ⊙ LEED Pilot Credit 55 – Bird Collision Deterrence
- ⊙ Human/Wildlife Interaction
- ⊙ *Red-tailed Hawks*
- ⊙ What everyone can do to help

ARIZONA WILDLIFE



JAVELINA



BLACK BEARS



COYOTES



BOB CATS



RAPTURES



WOODPECKERS

MOUNTAIN
LION

BATS

THE LEGAL LANDSCAPE

- ⊙ The Migratory Bird Treaty Act (MBTA)
- ⊙ Makes it illegal to kill a migratory bird without a permit
- ⊙ Anyone causing the death of a migratory bird, even if unintentionally, can be prosecuted.
- ⊙ This can result in fines of up to \$500 per incident and up to six months in prison.
- ⊙ The Bald and Golden Eagle Protection Act, the Endangered Species Act, and the Wild Bird Conservancy Act provide further protection.

ECONOMICS

- ⊙ Arizona provides some of the best wildlife related recreational opportunities in the nation with 900 animal species, 50 million acres of public land
- ⊙ Bird watching, in particular, is one of the fastest growing leisure activities in North America. 1.3 million people participating in wildlife watching activities in Arizona.
- ⊙ The Annual Economic impact is \$2.1 Billion
- ⊙ Promotion and incorporation of natural areas, wildlife, native landscaping and wildlife friendly buildings in community planning and development projects can reap significant financial returns.

WHY BIRDS MATTER

- ⊙ Critical to ecological functions
- ⊙ Birds consume vast quantities of insects, control rodent populations
- ⊙ Which in turn reduces damage to crops and forests, and helps limit the transmission of diseases like West Nile virus and malaria.
- ⊙ Play a vital role in regenerating habitats by pollinating plants and dispersing seeds.

BURROWING OWL



THE BUILT ENVIRONMENT

- ⊙ Sprawling land-use patterns and intensified urbanization degrade the quality and quantity of bird habitat across the globe.
- ⊙ Cities and towns encroach on river banks and shorelines
- ⊙ Suburbs, farms and recreation areas increasingly infringe upon wetlands and woodlands.
- ⊙ Roads and fencing create habitat fragmentation

COMMUNITY PLANNING

Incorporate wildlife planning into:

- ⊙ Regional/comprehensive plans,
- ⊙ Regional transportation and fencing plans
- ⊙ Open space/conservation land system programs

http://www.azgfd.gov/pdfs/w_c/WildlifeFriendlyDevelopment.pdf

SITE ANALYSIS

- ⊙ Identify and preserve/enhance crucial habitats such as: Riparian Areas/Wetlands, Desert Habitat, Hardwood Tree Forests, Grasslands, large trees and snags (dead trees), caves and mine shafts, canyon, ridgelines & mountain foothills.
- ⊙ Identify and protect wildlife species of concern
- ⊙ Ensure habitat connectivity - Wildlife must have adequate habitat resources in large, contiguous swaths of undisturbed natural areas. Fragmentation of wildland blocks reduces wildlife's ability to survive and reproduce.

SITE MANAGEMENT

- ⦿ Preserve open space through compact development, infill, etc.
- ⦿ Create a soil management plan prior to construction to limit disturbance, assist soil restoration efforts, improve flood control and water quality and define the location and boundaries of all vegetation and soil protection zones.
- ⦿ Manage Stormwater runoff (a major source of pollution)

SITE MANAGEMENT

- ⦿ Restore, preserve, and plant appropriate native vegetation that is to contribute to regional diversity of flora and fauna and provide habitat for native wildlife.
- ⦿ Remove invasive species of plants
- ⦿ Conserve water
- ⦿ Protect water quality - dispose of wastes and toxins properly to avoid non-point source pollution.
- ⦿ Reduce urban heat island effect.
- ⦿ Use an Integrated Pest Management plan to reduce or eliminate pesticide/poison usage.

<http://az.audubon.org/education.html>

GREAT HORNED OWL



IMPACT OF COLLISIONS ON BIRD POPULATIONS

- ⊙ Habitat destruction or alteration on both breeding and wintering grounds remains the most serious man-made problem
- ⊙ But collisions with buildings are the largest known fatality threat.
- ⊙ Problems: Glass and Lighting
- ⊙ LEED Pilot Credit 55: Bird Collision Deterrence

FACT: BIRD COLLISIONS WITH BUILDINGS OCCUR YEAR ROUND, BUT PEAK DURING THE MIGRATION PERIOD IN SPRING AND ESPECIALLY IN FALL.

<http://www.abcbirds.org/newsandreports/BirdFriendlyBuildingDesign.pdf>

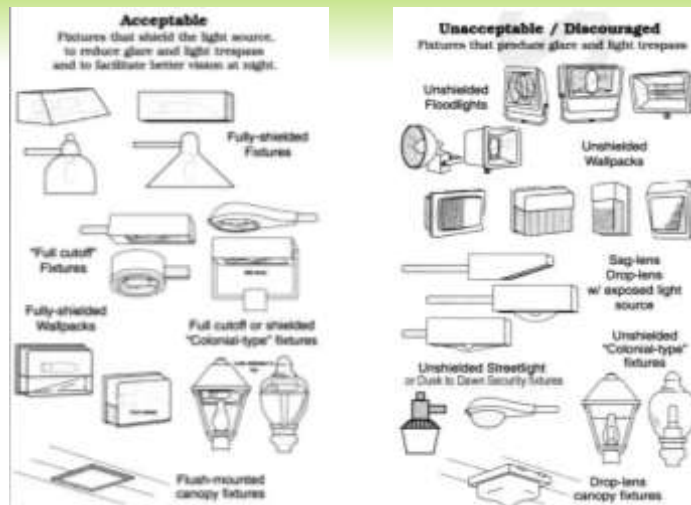
PROBLEM: LIGHT POLLUTION

Effects include:

- ⊙ Disorientation from and attraction to artificial light - which may interrupt natural behaviors, expose individuals to higher predatory levels, or disrupt navigational abilities (and structural related mortality due to disorientation)
- ⊙ Light-sensitive cycles – Many species operate specific internal cycles or rhythms that help them determine when to initiate foraging, migratory, or reproductive behavior. Artificial light at night disrupts the precision of these cycles, thus modifying behavior.

SOLUTION: LIGHT POLLUTION

- ⊙ Reduce exterior building and site lighting, except where needed for safety and security
- ⊙ Do not use spotlights or search lights during bird migration (however, flashing or interrupted lights are better than steady burning lights)
- ⊙ Use green and blue light instead of red or white lights (which attract and confuse birds)
- ⊙ Institute operational strategies to reduce light "trespass" or "spill light" from buildings (e.g. automatic controls, minimize perimeter lighting, draw shades after dark, *Lights Out* programs, etc.)
- ⊙ Using down-lighting rather than up-lighting



Source: Dark Sky Society

PROBLEM: GLASS

- ⊙ Building Location – migration routes, regional ecology, and geography
- ⊙ Properties of Glass – Reflection, transparency, black hole or Passage Effect
- ⊙ Building Design – amount of exposed glass, type of glass used, presence of “design traps”
- ⊙ Collisions are more likely to occur on windows that reflect vegetation
- ⊙ Window strike is the leading source of mortality for 45% of raptor species

AMERICAN KESTREL



SOLUTION: GLASS

- ⦿ Glass treatments can eliminate or greatly reduce bird mortality while minimally obscuring the glass itself.
- ⦿ Researchers have found that patterns covering as little as 5% of the total glass surface can deter 90% of strikes under experimental conditions.
- ⦿ The 2x4 rule - They have consistently shown that most birds will not attempt to fly through horizontal spaces less than 2" high or through vertical spaces 4" wide or less.

SOLUTION: GLASS

- ⊙ Facades, netting, screens, grilles, shutters, exterior shades
- ⊙ UV patterned glass
- ⊙ Patterned, opaque, translucent, etched, frosted stained and glass block
- ⊙ Window Films
- ⊙ Temporary Solutions – Tape, paint or decals
- ⊙ Patterns applied to the outer surface of glass are far more effective than applied to the inner surface.

AMERICAN BIRD CONSERVANCY'S BIRD-FRIENDLY BUILDING STANDARD

- ⊙ At least 90% of exposed façade material from ground level to 40 feet (the primary bird collision zone) has been demonstrated in controlled experiments to deter 70% or more of bird collisions.
- ⊙ At least 60% of exposed façade material above the collision zone meets the above standard.
- ⊙ There are no transparent passageways or corners, or atria or courtyards that can trap birds

AMERICAN BIRD CONSERVANCY'S BIRD-FRIENDLY BUILDING STANDARD

- ⦿ Outside lighting is appropriately shielded and directed to minimize attraction to night migrating songbirds.
- ⦿ Interior lighting is turned off at night or designed to minimize light escaping through windows.
- ⦿ Landscaping is designed to keep birds away from building's façade
- ⦿ Actual bird mortality is monitored and compensated for (e.g., in the form of habitat preserved or created elsewhere, mortality from other sources reduced, etc)
- ⦿ LEED Pilot Credit 55: Bird Collision Deterrence is based on this standard

RED TAIL HAWK



HUMAN/WILDLIFE INTERACTION

- ⊙ Do not feed wildlife! – Songbirds are okay.
- ⊙ Close holes and seal cracks - to discourage homesteading
- ⊙ Keep Trash/Waste Contained
- ⊙ Keep pet food inside
- ⊙ Fence gardens
- ⊙ Screen chimneys and vents
- ⊙ Keep cats indoors

WAYS EVERYONE CAN HELP

- ⊙ Dispose of fishing line properly
- ⊙ Avoid using stringy cobweb decorations
- ⊙ Avoid using plastic bags
- ⊙ Cut up plastic six pack rings
- ⊙ Use non-lead ammunition
- ⊙ Don't try to raise or rehabilitate wild animals on your own!



LIBERTY WILDLIFE

Wildlife-Related Emergencies
480-998-5550

- ⦿ Liberty Wildlife envisions a time when wildlife is recognized as an integral part of our natural world, and a precious natural resource, to be protected and preserved.
- ⦿ Liberty Wildlife envisions being a permanent community resource, a place to instill compassion and stewardship in young minds and a place to reconnect the public with the beauty and benefits of native wildlife and habitat.
- ⦿ Liberty Wildlife envisions a time when the community as a whole participates in the safekeeping of the natural world.

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