Bird-safe Design and Management for Projects

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Presentation Outline

- **General Background**
  - Birds and buildings
  - Birds and artificial lighting
- **Relevant Avian Biology**
  - Bird migration
  - Local bird movements
- **Approaches to Bird-Safe Design and Management**
  - Building design
  - Lighting design and management
  - Landscape vegetation
  - Anthropogenic food waste management

- **Bird-Safe Design and the Project Approval and Permitting Process**

  Lead agency requirements and guidelines
  - City requirements
  - The California Environmental Quality Act and Bird-safe design and management
  - Regulatory issues associated with nesting birds and project implementation

- **Overview of Project Team Development of Bird-Safe Design**

U. S. Fish and Wildlife Service

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Buildings and Birds

In 2014, the Smithsonian Conservation Biology Institute and the U. S. Fish and Wildlife Service estimated that collisions with windows kill between 365 million and 988 million birds annually in the United States.

This assortment of more than 1500 dead birds, all killed by collisions with Toronto windows, was collected during the 2010 migration season by volunteers from the Canadian Fatal Light Awareness Program. NPR.

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Landscape Reflection

Birds are attracted to vivid images of landscape features–not recognizing the presence of glass

American Bird Conservancy

Transparency

Nocturnal Migration

Artificial Lighting

Artificial building lighting can attract and disorient birds, especially migrating birds and cause significant collision events.

National Audubon Society

ABC News

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Night Lighting into Habitat Areas Impacts Birds and Other Wildlife

Examples of Artificial Light Impacts

1. Fatal attraction
2. Enhanced predation
3. Drive away nocturnal pollinators reducing the ability of plants to fruit and reproduce
4. Change natural communities
5. Disrupt circadian rhythms

Bird Movements

- **Migrating birds**
  - Attracted to artificial light at night.
  - More likely to be flying high above ground level, thus increasing the potential collision surface area on glass buildings during daylight as well.

- **Local birds**
  - Possible to collide, especially at lower levels of buildings reflecting landscape, water features, or sky, or providing see-through areas.
  - Probability increased by highly attractive vegetation (fruiting, flowering) near reflective glazing.

Feature-Related Hazards

A *feature-related hazard* is a potential bird collision hazard hazardous enough to necessitate treatment regardless of a building's location.


American Bird Conservancy

Examples: free-standing clear glass walls, glass corners, glass walls around planted atria, interior plantings that are visible from outside the building, skywalks, greenhouses on rooftops, and glass balconies.

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A qualified ornithologist can determine if project design elements are likely to create a feature-related hazard.

Location-Related Hazards

- A *location-related hazard* is identified when new construction is located in proximity to an open space dominated by vegetation (e.g., within 300 feet of a 2-acre area) and/or open water.
- In addition, high quality habitat areas less than 2 acres may represent potential location-related issues.
- Some cities (e.g., Mountain View) require bird-safe design regardless of location.

- Projects often plant new areas of native habitat on project sites, which creates location-related hazards and increases the recommendations for bird-safe treatments on buildings.
- A qualified ornithologist can determine if and where a location-related hazard is present on a project site.

Project-specific Requirements and Guidelines

1. City-specific requirements and guidelines
2. The California Environmental Quality Act
3. Address additional public and responsible agency comments in final EIR
3. Lead Agency conditions of approval (issued by a lead agency with the project's permits)
4. LEED bird-safe credit requirements
5. The project proponent's own standards or guidelines

The Development of Bird-Safe Building Guidelines

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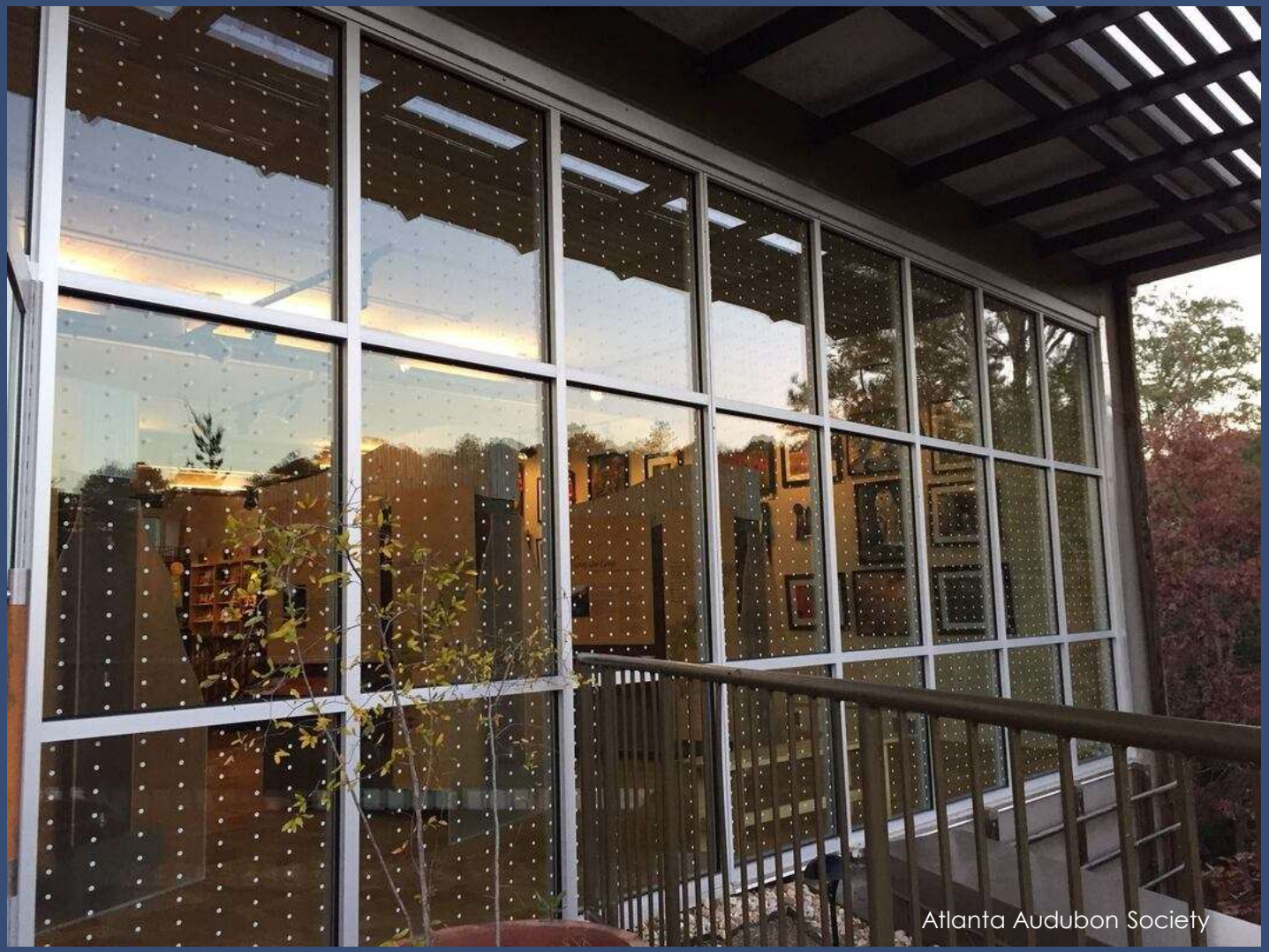
American Bird Conservancy Tunnel Testing Glass Treatment

Bird-Safe Glass Treatment



Bird-Safe Glass Treatment

Bird-Safe Treatment Guidelines

- **Bird-safe glazing treatments may include:**
  - fritting, netting, permanent stencils, frosted glass, blinds or screens that are lowered during the day
  - physical grids placed on the exterior of glazing
  - ultraviolet patterns visible to birds.
- **Vertical elements of the patterns should be at least ¼-inch wide at a minimum spacing of 4 inches**
- **Horizontal elements should be at least ⅛-inch wide at a minimum spacing of 2 inches (the 2" x 4" "rule").**

Bird-Safe Treatment Guidelines

- Hummingbirds represent a special issue and for hummingbird safety, a 2-inch by 2 inch minimum spacing both vertically and horizontally, is recommended. This is typically up to the project proponent.
- It is recommended that the reflectance of glazing used on facades where there is a bird-safe concern be 15% or lower.


Cornell University

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Bird-Safe Treatment Guidelines

- Treatment is required, in some cases (S.F. and Mountain View for example) on building facades that face location-related hazards such that no more than 10% of the areas from 0-60 feet above grade and 0-60 feet above a landscaped green roof have untreated glazing.
- LEED Bird-safe credit façade calculations divide building into 2 zones: below 36 feet and above 36 feet.

Examples of Bay Area Cities with Bird-Safe Standards/Guidelines

- San Francisco
- Oakland
- Mountain View
- Sunnyvale
- San Jose

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Building Bird-Safe Lighting

- **Building lighting design**
  - Avoid uplighting
  - Avoid light spillage
  - Use green to yellow lighting if possible
- **Lighting management**
  - Building lights out program (dusk or 10 pm to dawn)
  - Close window blinds in areas requiring light at night
  - Use motion sensors to light only areas being actively used at night

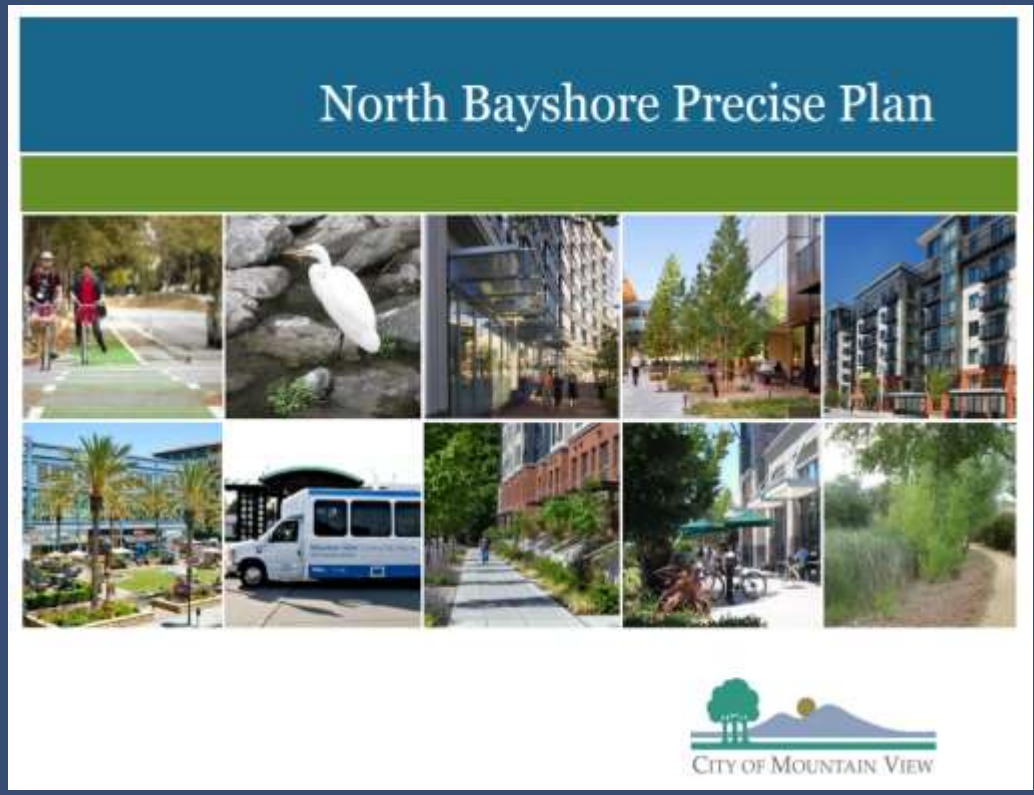
Landscape Bird-Safe Lighting

- **Landscape lighting**
  - Minimize outdoor lighting to the extent possible
  - Avoid uplighting vegetation or buildings
  - Direct light downwards and shield fixture from the top
  - Avoid light spillage, especially into natural habitats
  - Use green to yellow lighting if possible


Lighthouse landscape lighting

Exceptions

Most cities will allow exceptions (waive or reduce bird-safe design requirements) based on analysis by a qualified ornithologist that indicates that doing so would not increase the risk to birds.



Bird-Strike Monitoring Plan

Some cities require a monitoring plan to be approved and implemented (e.g., Mountain View, Oakland).

LEED Pilot Credit Bird Collision Deterrence requirement is to "Develop a 3-year post-construction monitoring plan to routinely monitor the effectiveness of the building and site design in preventing bird collisions"

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Food Waste Management

Appropriate handling of food waste should be incorporated into the project's long-term maintenance plan to reduce the attraction of nuisance species, including those that feed on eggs and young of native songbirds such as ravens and crows.

- Wildlife-proof waste receptacles
- Educational signage

- ✓ **Do not feed wildlife**
- ✓ **Do not leave food waste where wildlife can have access.**

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Collaborative Design Process

- Initial overview of bird-safe issues and project approaches with project team
- Present and review alternative approaches to bird-safe features to the project design team, typically an iterative process
- Review glass samples and mock ups for potential effectiveness
- Provide project bird-safe documentation for submittals to City and any necessary permits (CEQA, COAs)

Questions and Thank You!

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