



# Managing Systemic Anthropogenic Threats

# Today's Discussion

1. Challenge: Anthropogenic threat management
2. Resolution: Information management
3. A trip down the rabbit hole
4. Current implementation path

Obstacles to effective conservation

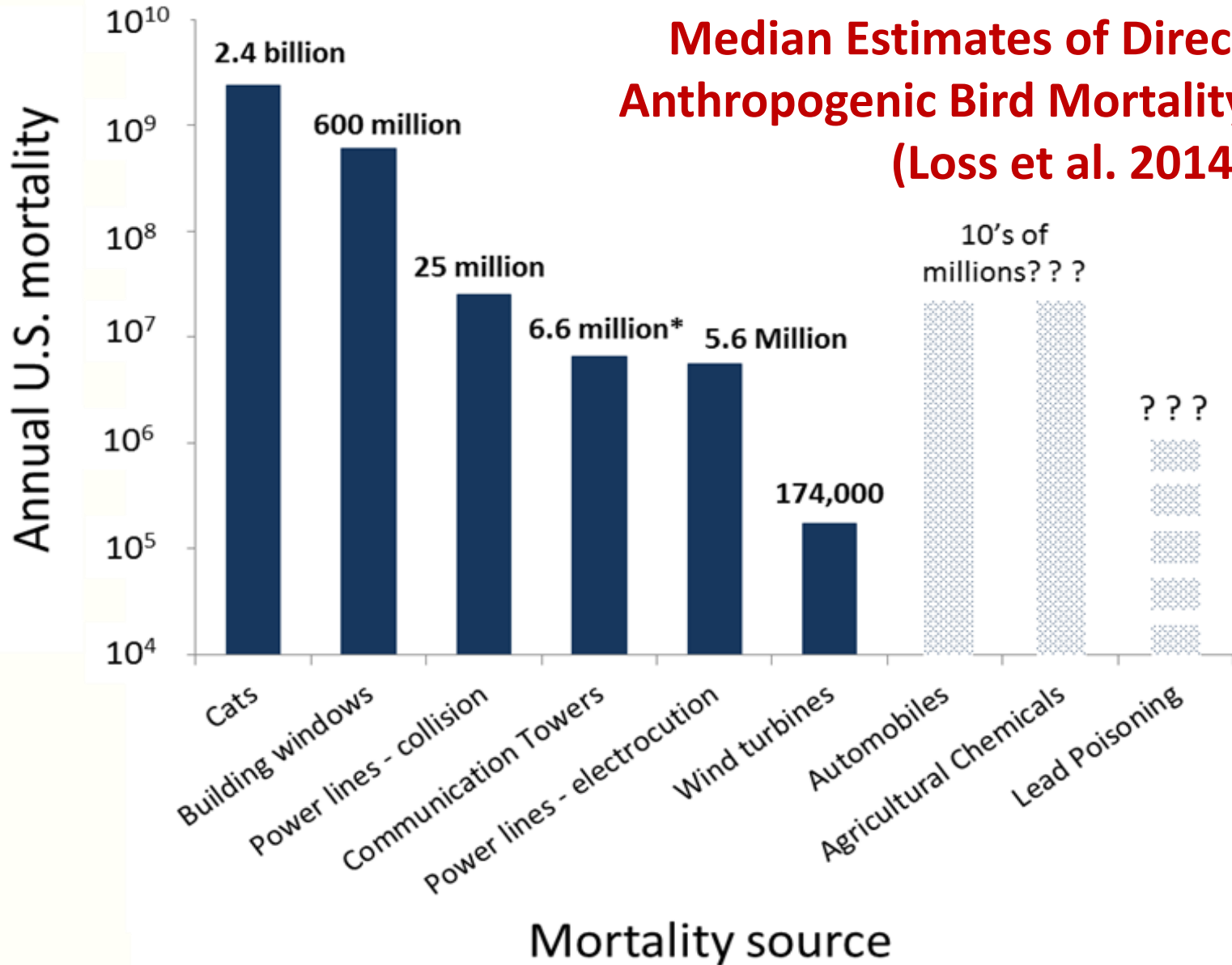
# **ANTHROPOGENIC THREAT MANAGEMENT CHALLENGES**

# Birds in Decline

- Human activities have put increasing pressure on migratory birds and their habitats
- The USFWS is entrusted to protect and conserve these resources

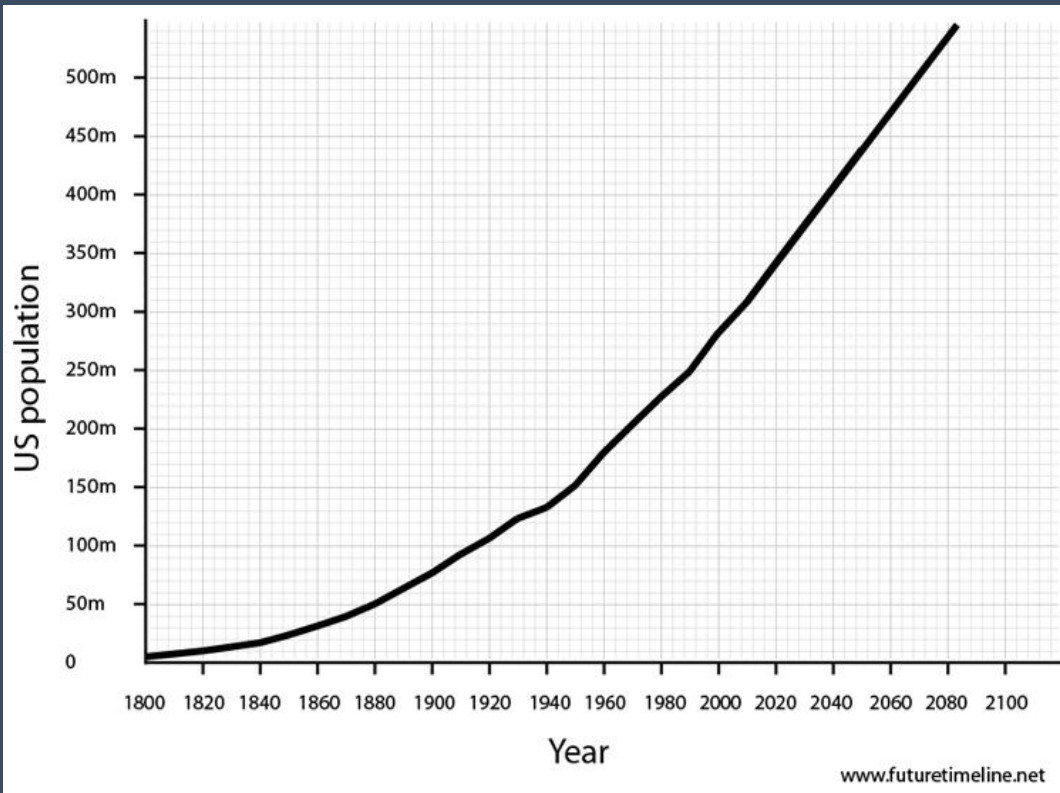


# Median Estimates of Direct Anthropogenic Bird Mortality (Loss et al. 2014)



\*Longcore et al. 2013 - An Estimate of Avian Mortality at Communication Towers in the United States and Canada

# The Future?



# Effects of Climate Change

Exacerbating problem...

Reduced habitat availability

Altered habitat quality

? Adaptive capacity ?

# Migratory Bird Conservation Goal

Protect, repair, and enhance bird populations  
and habitats



# Bird Population Management

## Actions:

- Reducing Bird Impacts
- Offsetting Resource Losses
- Engaging in Strategic Habitat Conservation

## Actors:

- FWS
- Feds
- Industry
- Public

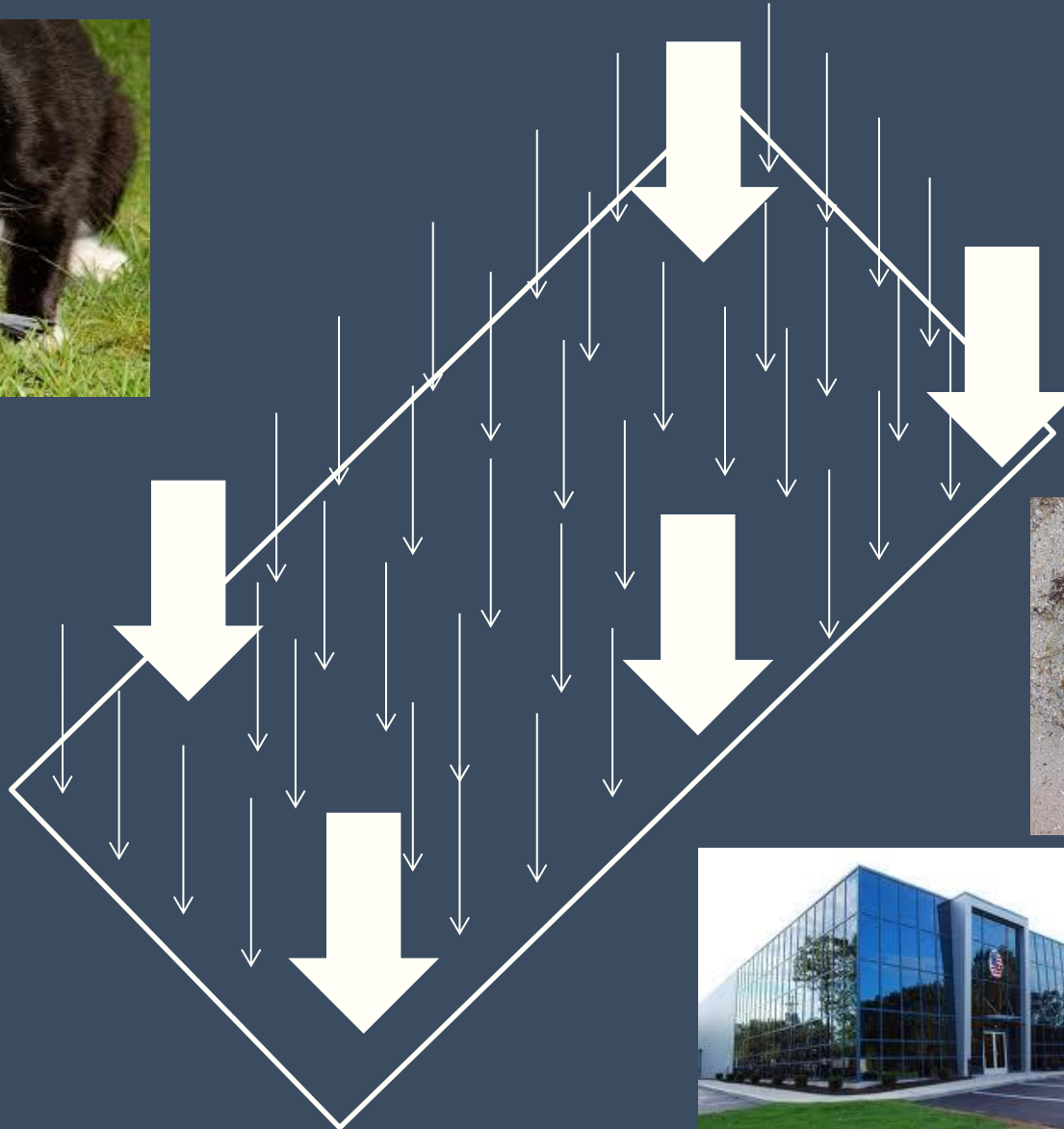


# Threats

1. Climate Change
2. Habitat Degradation
3. Land Conversion
4. Fragmentation
5. Hazardous Attractants



# Current state: "Death by 1,000 Cuts"



# Challenge #1: Biological Interpretation

Problem: One has to know the species to comprehend a threat

- Fragmentation
- Habitat degradation
- Loss of breeding habitat



## Challenge #2: Limited staff

- The USFWS has about 5-10 staff dedicated to Migratory Bird project review.
- The number of projects with impacts far, far, FAR outweighs the number of staff equipped to provide technical assistance.

# Challenge #3: MBTA compliance

Because of the “no take” MBTA standard:

- Compliance bar is high; demand for technical assistance is low
- Project proponents “wing it” privately
  - To seek solutions is to impute yourself
  - Reluctant to invest resources if no assurances
- Compensation and impact monitoring implicate “illegal activity”

**No matter what you do - taking birds still illegal**

$$(I + BR) T = E + C$$

(Impacts + Birds&Resources) time = effects + compensation  
= residual effect

- Advises population-level effect determination
- Advises significant impact determination
- Cannot compensate for incidental take of birds
- Can compensate for incidental take of habitat if federal action
- Therefore, must focus on reducing impacts

# The Result

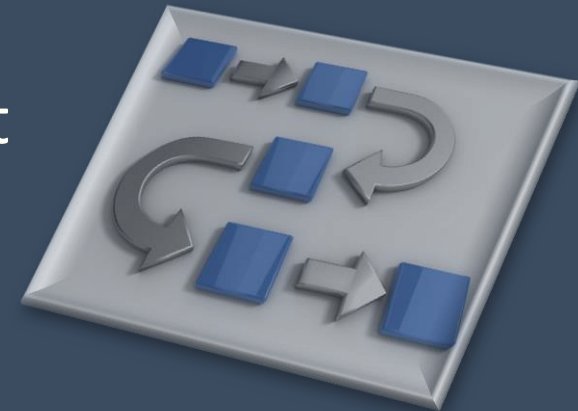
- Systemic threats continue to impair birds and habitats nationwide
- No clear path to systematic conservation available
- Few to no negotiations occur
- Conservation opportunities are lost



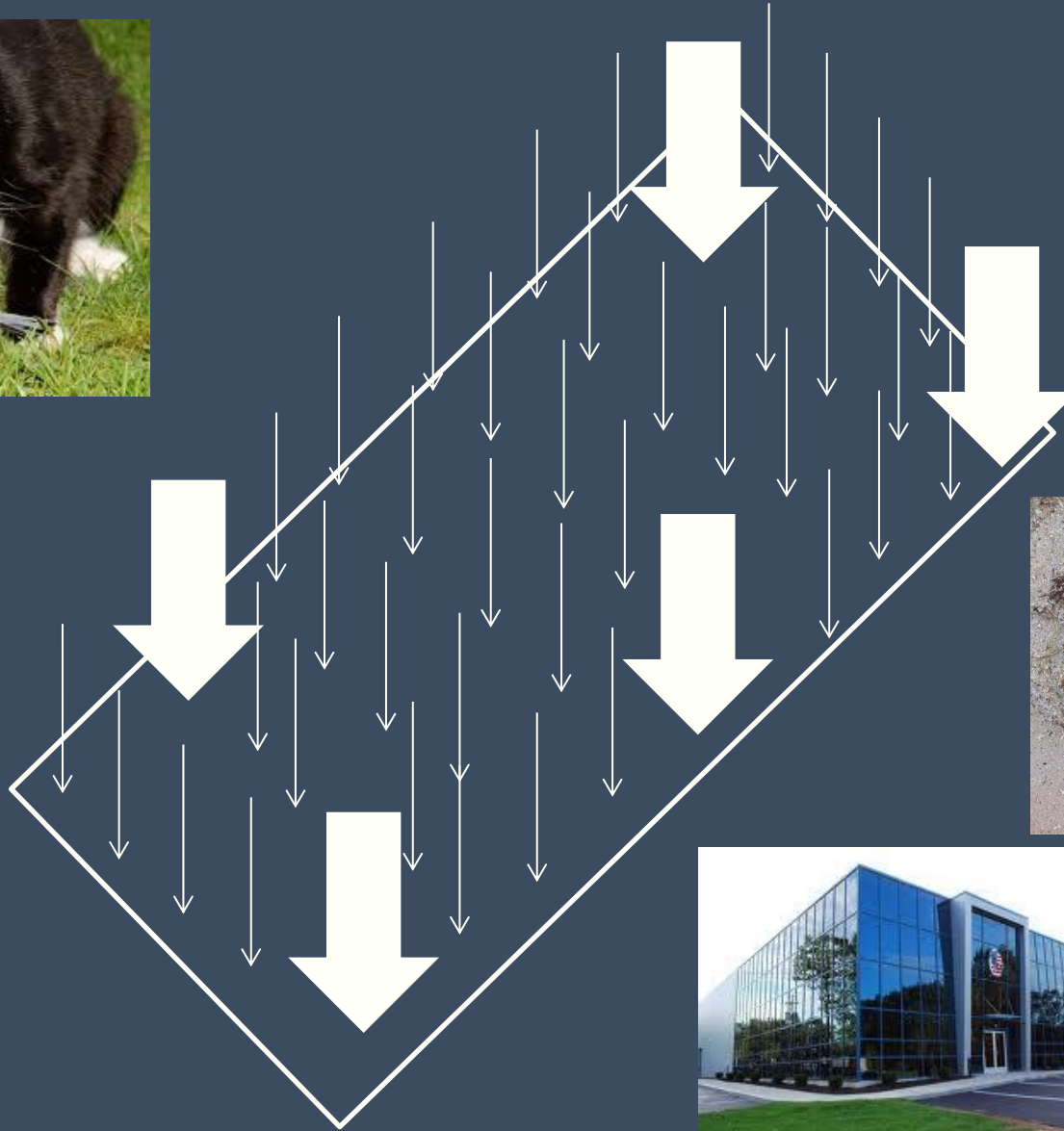


# The Solution: Enable autonomous impact management

- Ensure information is accessible and consumable
  - Information management and delivery
- Empower project proponents with solutions
- Give impact management a clear beginning, middle, and end
  - Non-regulatory impact management



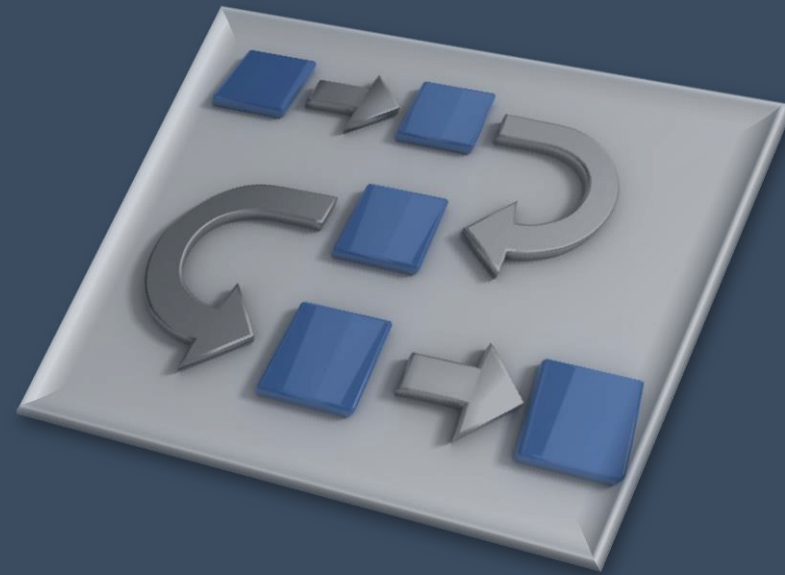
# Current state: "Death by 1,000 Cuts"



# Solution

## Clarify Direction and Expectations of Project Proponents

- Give impact management a clear beginning, middle, and end
- Inform agency field staff
- Enable autonomous impact management



How do we make the *Right* decision the *Easy* decision?

# INFORMATION MANAGEMENT

# Stressor Management

A Solution to Project-related Impacts



# What is a Stressor?

A stressor is any *alteration of* or *addition to* the environment that affects birds and/or their resources



# A Stressor is...

...a clear descriptor that needs little to no interpretation

- *Vegetation Removal* VS Habitat Fragmentation
- *Noise* VS Displacement

Creates a “Plain English” language common to all projects

# Avian Stressors

An Impact Occurs when there is an **Increase** in:

- Light
- Human Presence
- Chemical Release
- Invasive Species
- Noise
- Ground Structures
- Aerial Structures
- Odors (seabirds)





# Avian Stressors

An Impact Occurs when there is a **Decrease** in:

- Vegetation quantity (complete loss)
- Vegetation quality (altered structure)



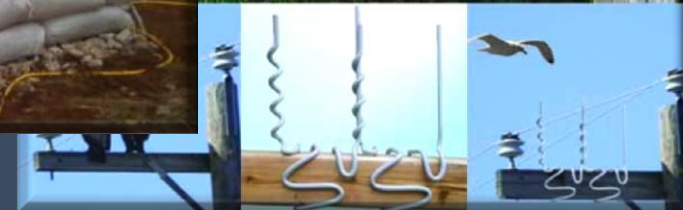
# Why Stressors

- Stressors separate the ***problem*** from the ***activity***
- Regularly, the activity cannot be avoided
- Problems can be avoided or minimized



# Stressors Clarify the Problem

- Finite list of problems
- Tractable list of solutions



A glimpse into the science of stressor management

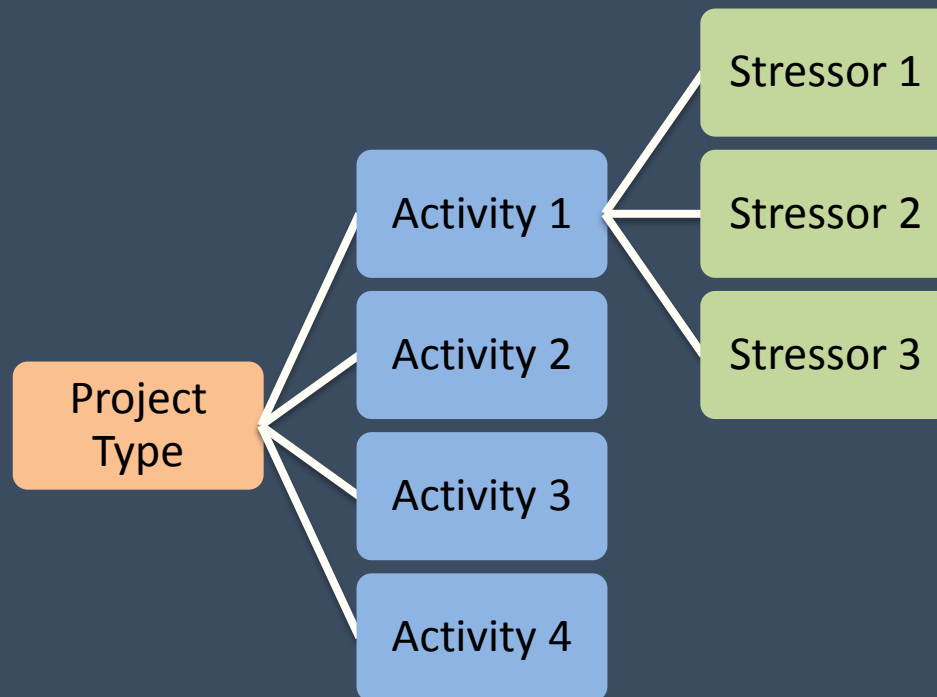
# **THE RABBIT HOLE**

# Stressor Management

- Use Effects Pathway to link cause and effect relationships
  - project activity and bird demography (e.g., survival, fecundity)
- A pro-active approach that advises...
  - Solutions to address the problem before it occurs
  - Rather than managing the consequences (effects)

# How Do You Identify Stressors?

- Deconstruct the action
- A step-wise analysis of the components that produce stressors





Transmission  
Line  
Development

Cement Pad  
Construction

Activity 2

Activity 3

Activity 4

Vegetation  
Removal

Human  
Disturbance

Noise

# Understanding How Stressors Work

## Bird Conservation Needs

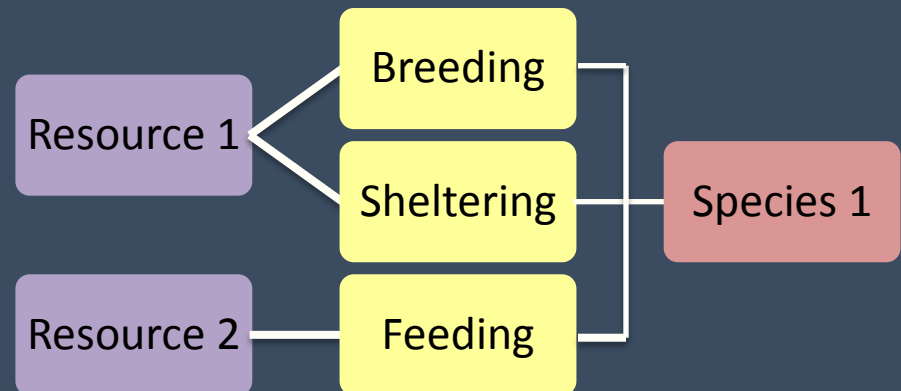
- Breeding
- Sheltering
- Feeding

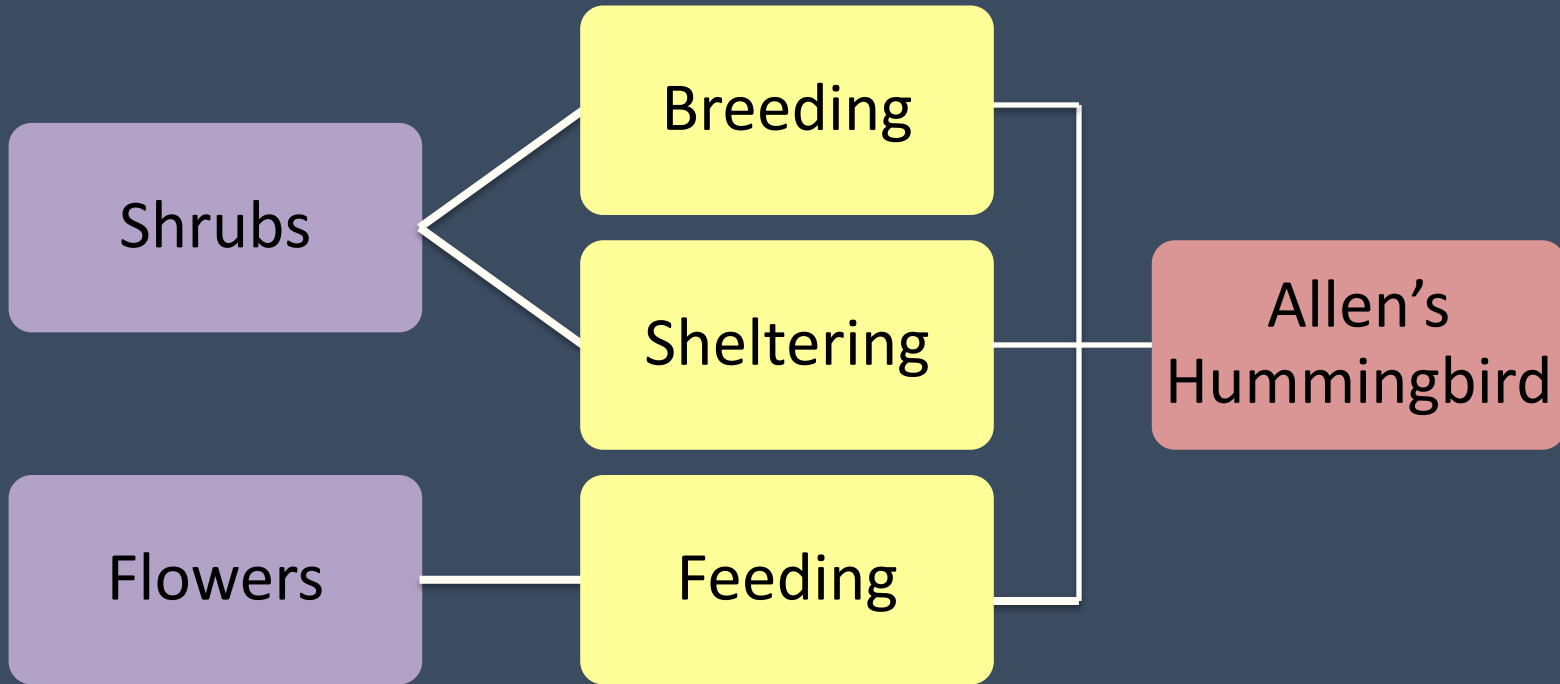




# Resources

- Appropriate Vegetation Structure
  - Nest sites
  - Food
  - Shelter from weather
- “Healthy Space” (natural balance)
  - Predators
  - Parasites
  - Competitors
  - Disease
  - Other Disturbances





# Understanding Exposure and Response

## Exposure

- Interaction between a stressor and a bird or the resources it depends on

## Response

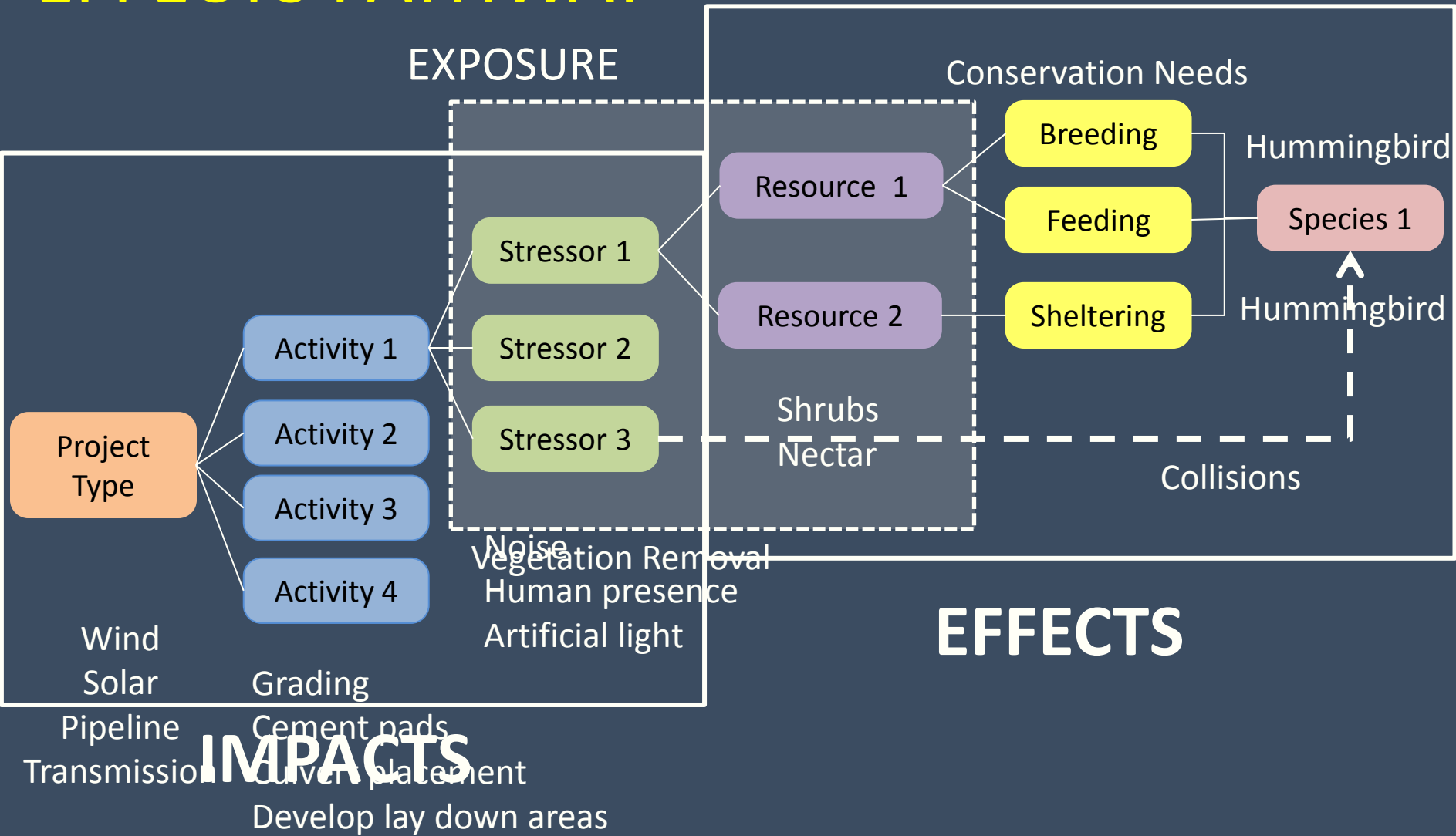
- How a bird behaves once it or its resources are exposed to a stressor

# Determining Effects

Consequences to the Individual or Population

**EXPOSURE + RESPONSE = EFFECT**

# EFFECTS PATHWAY



**FOCUS ON THE IMPACTS**

# Managing Exposure

- We cannot change how species responds to stressors
- But...we may be able to change how they are exposed



# Understanding Exposure

Consider how each stressor may affect the species and/or resources:

- Is the stressor direct, indirect, or both?
- Where will each stressor occur?
- When will each stressor occur?
- How long will each stressor occur?
- What is the frequency of each stressor?
- How intense will each stressor be?

# Conservation Measures

Any action undertaken to address project related stressors/impacts that ultimately improve the conservation status of one or more species of migratory birds  
BEST MANAGEMENT PRACTICES (BMPs), MITIGATION MEASURES

AVIAN MORTALITY MEASURES  
(driven by MBTA)

ECOLOGICAL/HABITAT MEASURES  
(driven by EO 13186)

AVOID

MINIMIZE

REDUCE

RECTIFY

COMPENSATE



# Goal of Conservation Measures

Implement Sequentially...

1. CMs that **AVOID** the impact all together
2. CMs that **MINIMIZE** the production of the stressor or species exposure to the stressor
3. Identify measures that **REDUCE** the impact over time
4. **COMPENSATE** for unavoidable impacts\*\*



# Benefits of this Approach

- Achieve effective take management
  - No biological interpretation is needed
  - Empower project proponents to implement solutions to identified problems
  - Compliance with the intent of MBTA (due diligence)
  - Creates record of decision-making showing the measures implemented to address impacts

# Benefits of this Approach

- Easier to focus on impact production
  - Finite number of stressors vs. infinite effects
  - Cheaper to avoid & minimize stressors vs. dealing with effects after they occur
  - Target clear and effective conservation measures

“It is easier to stay out of trouble,  
than get out of trouble...  
cheaper too!”

Charisa Morris

# Tools to Help

- ECOS – Environmental Conservation Online System
  - LEAP – Landscape-scale Energy Action Plan
    - Siting tool
  - IPaC – Information, Planning, and Conservation
    - Conservation Measure Delivery
  - Project Tracking Module
- AKN – Avian Knowledge Network
  - Access to data, decision support tools

Implementation of the Stressor Management Approach

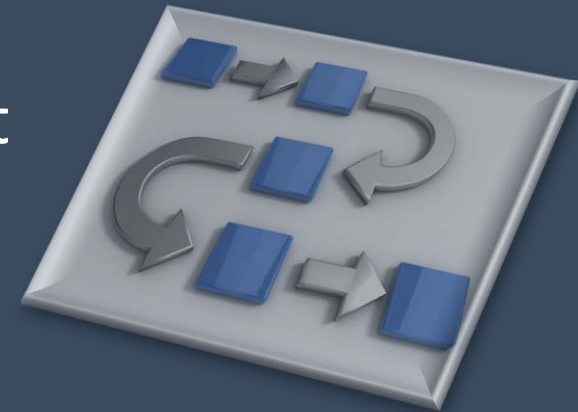
# **CURRENT IMPLEMENTATION**

# Non-regulatory Impact Management: Key Concepts

- No biological interpretation is needed
- Information can be remotely delivered – no staff needed to translate or ferry
- Compliance with intent of MBTA – record of decision that all practicable mitigative measures were incorporated
- Addresses impacts rather than effects
  - Finite number of stressors vs. infinite effects
  - Target clear and effective conservation measures
  - Cheaper to avoid & minimize stressors vs. addressing effects after they occur
- Achieve effective bird conservation

# Resolution

- Ensure information is accessible and consumable
  - Information management and delivery
- Empower project proponents with solutions
- Give impact management a clear beginning, middle, and end
  - Non-regulatory impact management





# IMPLEMENTATION

- Federal Agencies
  - Agency-specific training and MOUs now emphasize impact management
  - NEPA and impact analysis job aids
  - Populating online tools with trust resource info
  - Next steps: clarifying project coordination process
- Field offices
  - Developing job aids to streamline technical assistance