Least Bell's Vireo

THREATS

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Threat

"a situation or an activity that could cause harm or danger" *MacMillan Dictionary Online*

- Direct – To the species itself
- Indirect – To any resource the species relies on; e.g., habitat, food resources, etc.

Least Bell's Vireo: Willow Riparian Obligate

WATER & WILLOW RIPARIAN VEGETATION

LEAST BELL'S VIREO

Bottom Line Up Front: Birds Need Water

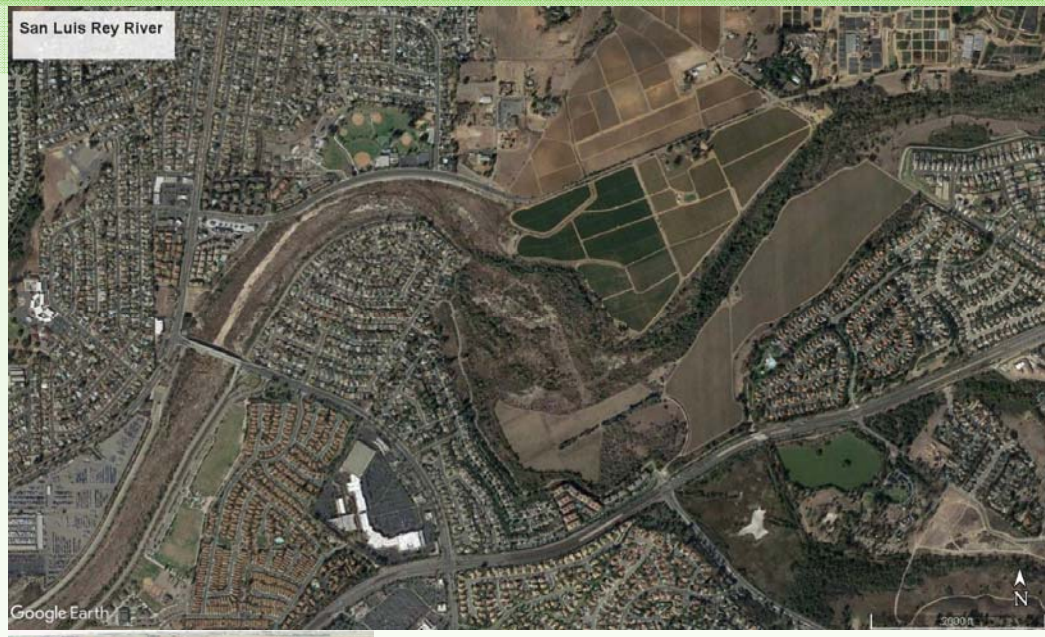
WATER → WILLOW RIPARIAN VEGETATION → LEAST BELL'S VIREO

Threats to Least Bell's Vireos

- Draft 5-Year Review (2013)
  - 5 Factor Analysis
    - Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range
    - Overutilization for Commercial, Recreational, Scientific, or Educational Purposes
    - Disease or Predation
    - Lack of Existing Regulatory Mechanisms
    - Other Natural or Manmade Factors Affecting its Continued Existence

Vireo Habitat Threats

- Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range
- Development Activities
  - Direct Floodplain Impacts
    - Urban Development
    - Agricultural Development
  - Direct Loss of Habitat

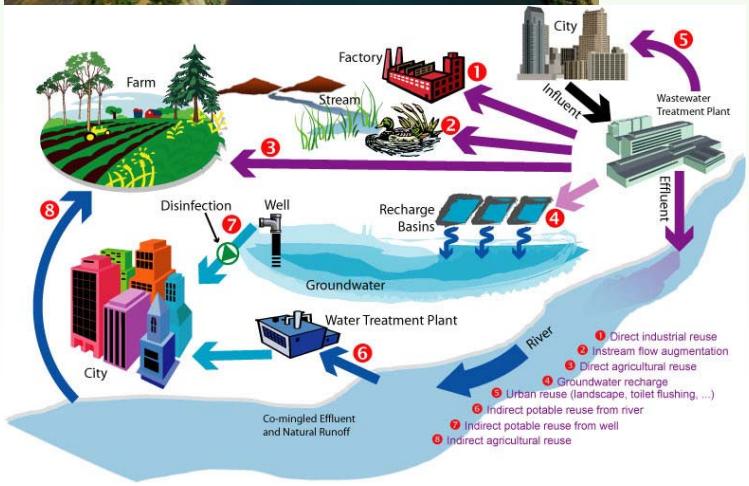


Vireo Habitat Threats

- Development Activities
  - Flood Risk Management ("Flood Control") / Channelization
    - Redirects / Intensifies Flows
    - Alters Fluvial Processes
    - Associated Vegetation Control
    - Associated Sediment Control
  - Reduces habitat quantity & quality

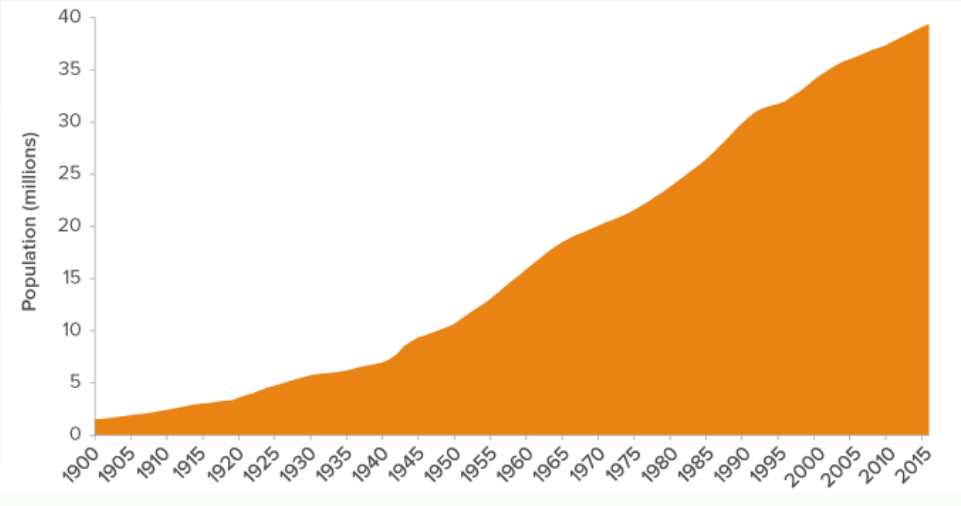
Vireo Habitat Threats

- Development Activities
  - Water Development
    - Water Diversion and/or Extraction
    - Wastewater Reclamation
    - Vegetation (Phreatophyte) Control
  - Decreased Water Availability
  - Habitat Degradation & Loss



Vireo Habitat Threats

- Development Activities
  - Intensity of the threat reduced through regulatory mechanisms
    - ESA, Clean Water Act, CA State Laws
  - Threat remains due to ongoing demand for land and water
    - California's population continues to increase



Vireo Habitat Threats

- Livestock Grazing
  - Habitat Degradation & Loss
  - Soil compaction
    - Reduces recruitment of new plants
  - Alteration of hydrological & fluvial processes
- Threat reduced through regulatory mechanisms, changes to grazing practices, and changes in land use

Vireo Habitat Threats

- Non-native invasive plants
  - Compete with native plants
    - Reduced quantity of habitat
  - Lower ecological "value" to the riparian species
    - Reduced quality of habitat
  - May alter vegetation community permanently
    - "type-conversion"
  - Alter hydrological & fluvial processes
  - Increase fire risk
- Threat reduced through site-specific management actions
  - What is lurking around the corner?

Vireo Habitat Threats

- Off-road vehicle activity
  - Damages and degrades native vegetation
  - Fragments habitat
  - Compacts soil
  - Alters hydrological & fluvial processes
  - Creates noise & visual disturbance
- Threat reduced through site-specific management, regulatory mechanisms, and other factors.

Vireo Habitat Threats

- Climate Change - Pierce et al. 2013
  - Higher Temperatures
  - Lower average winter/spring precipitation
  - More concentrated precipitation events
    - Larger flood events
  - Shift in precipitation timing
    - Possibly more summer rain

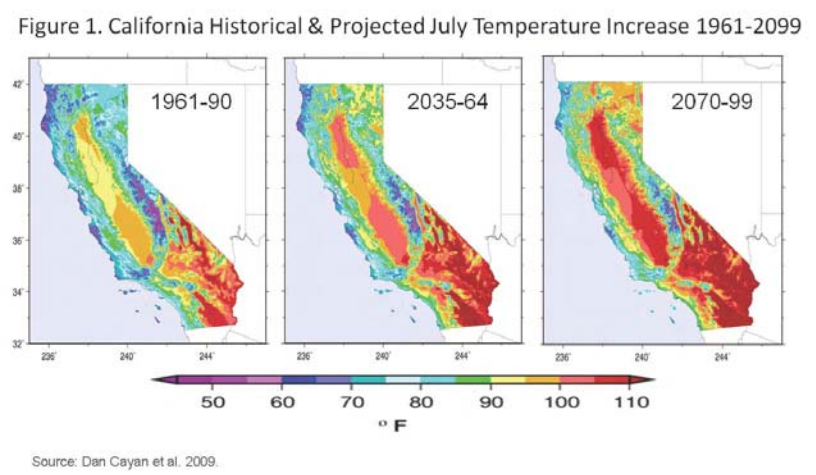


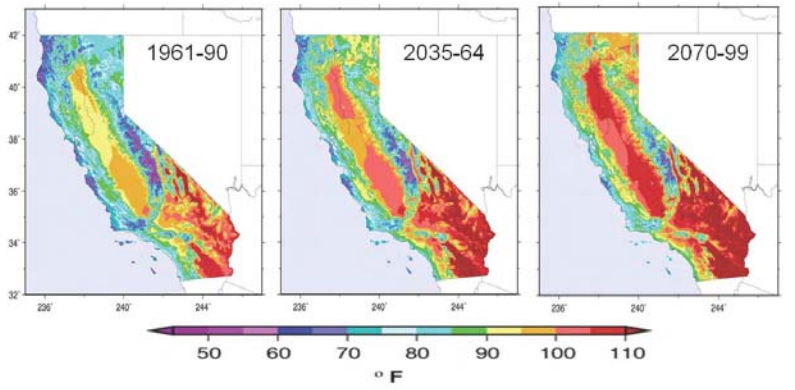
Figure 1. California Historical & Projected July Temperature Increase 1961-2099

Source: Dan Cayan et al. 2009.

Vireo Habitat Threats

- Potential climate-mediated impacts
  - Increased evapotranspiration
  - Higher plant stress
  - Reduction in riparian habitat quantity & quality
  - Lowered food availability
  - Heat stress (birds)
  - Increased human demand
    - Competition for remaining water

Figure 1. California Historical & Projected July Temperature Increase 1961-2099

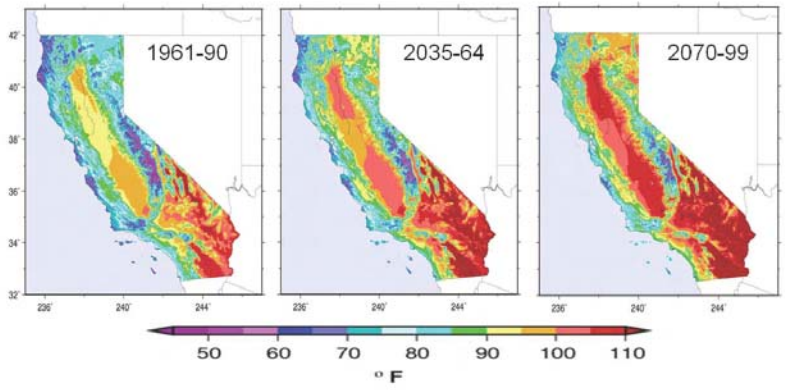


Source: Dan Cayan et al. 2009.

Vireo Habitat Threats

- Climate Change
  - Threat likely to increase as a function of climate change. Threat amplifies all other factors that may negatively affect habitat.

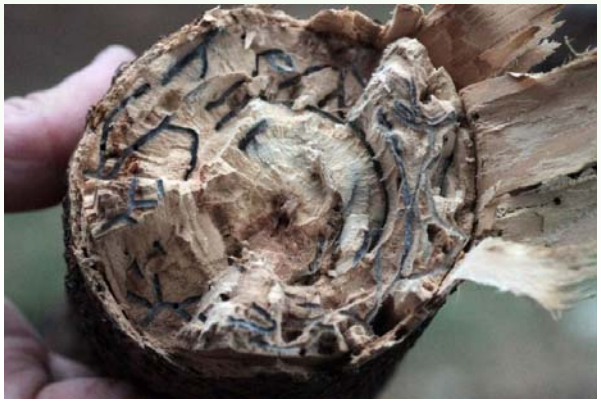
Figure 1. California Historical & Projected July Temperature Increase 1961-2099



Source: Dan Cayan et al. 2009.

Vireo Habitat Threats

- Shot-hole Borer
  - Polyphagous & Kurushio shot hole borers (Beetles) + *Fusarium* sp.(Fungus)
  - Non-native pest species
    - Short term habitat degradation
    - Long term habitat loss/type conversion?
- Amplifies other threats affecting habitat. This is a growing threat with uncertain range-wide impacts and no certainty of containment.



Vireo Habitat Threats

- Direct Floodplain Impacts ↔
- Flood Risk Management ↔
- Water Development ↑
- Livestock Grazing ↓
- Non-native invasive plants ↔
- Off-road vehicle activity ↓
- Climate Change ↑↑
- Shot-hole Borer ↑↑?

Summary ↑ Still substantial threats

Other Threats

- Overutilization for Commercial, Recreational, Scientific, or Educational Purposes
  - No threats identified
- Disease or Predation
  - West Nile Virus
  - Mesopredator Release – Habitat Fragmentation
  - Non-native Argentine Ants
  - Uncertain impacts, but not considered to be major threats at this time

Other Threats

- Lack of Existing Regulatory Mechanisms
  - **Federal**
    - Endangered Species Act
    - Clean Water Act
    - Sikes Act
    - Migratory Bird Treaty Act
    - National Environmental Policy Act
  - **State**
    - California Endangered Species Act
    - California Environmental Quality Act
    - The Natural Community Conservation Planning Act
    - Lake and Streambed Alteration Program
  - While all of these regulatory mechanisms contribute to improved status, Federal ESA listing is the linchpin that is the primary support for conservation.

Other Threats

- Other Natural or Manmade Factors Affecting its Continued Existence
  - Brown-headed Cowbird Brood Parasitism

  - Although controlled in some locations, cowbird parasitism remains a substantial threat.
  - Complete removal of cowbird control would likely reverse population gains since listing.
  - We need a coordinated, range-wide cowbird management strategy.

Threats Summary

- Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range
- Overutilization for Commercial, Recreational, Scientific, or Educational Purposes
- Disease or Predation
- Lack of Existing Regulatory Mechanisms
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Threats to the Least Bell's Vireo

- Major Threats
  - Habitat Loss & Degradation
    - Increasing Water Demand
    - Human Development
      - More development will require more water
    - Climate Change
      - Climate change will put increasing demands on water extraction and reclamation
    - Shot-Hole Borer
  - Cowbird Parasitism

Bottom Line After Powerpoint : Birds Need Water

WATER → WILLOW RIPARIAN VEGETATION → LEAST BELL'S VIREO