

# 2021 Northern Harrier (*Circus hudsonius*) Surveys Across Western San Diego County



Conducted by: AECOM

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San Diego Association of Governments

San Diego Management and Monitoring Program



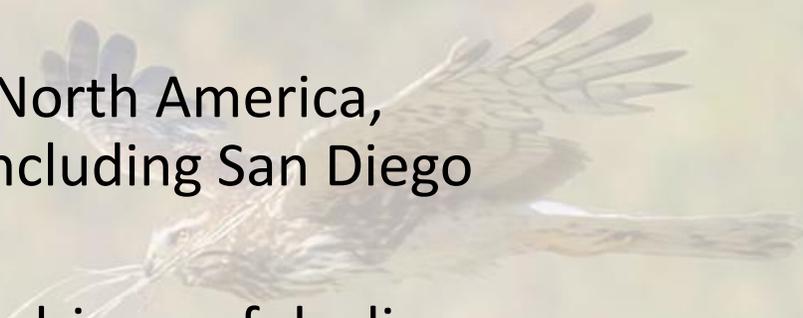
# Overview

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## Background: Rationale for Surveys

- Historically, northern harriers (NOHA) were common throughout San Diego County
- NOHA population has been declining across North America, most rapidly in southern portions of range, including San Diego County
- Loss of wetlands and grasslands likely largest drivers of decline
- NOHA is now California Species of Special Concern
- SDMMP wants to develop management strategy to facilitate NOHA recovery in western San Diego County; surveys 1<sup>st</sup> step



## Background: Biology and Natural History of NOHAs

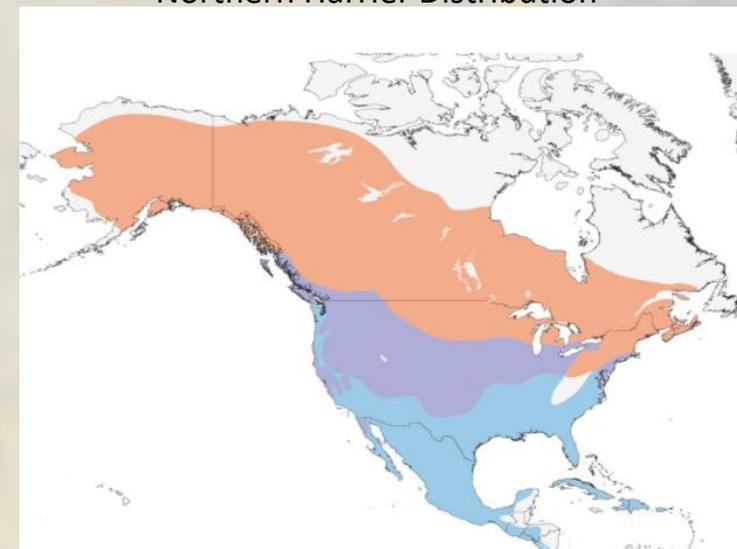
- NOHA found throughout North America in grasslands and marshes
- Population in Southern CA/Baja represents southernmost breeding population
- Ground nesters; prefer nesting in vegetation (grasses, rushes, reeds) >1 meter tall
- Territory size highly variable; breeding can be semi-colonial (polygynous) in areas with high food abundance
- Eat small mammals, birds, lizards, snakes, amphibians, and insects
- Nesting typically begins in April/May and can continue into July



Male Northern Harrier  
Photo credit: Loren Merrill

Source: All About Birds,  
Cornell Lab of Ornithology

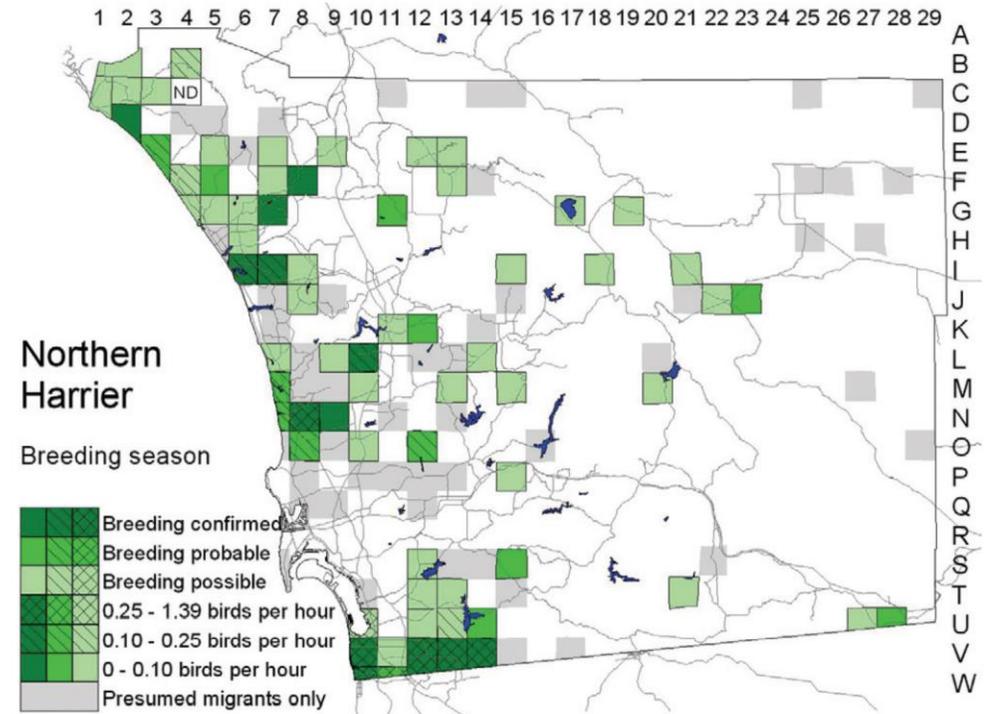
Northern Harrier Distribution



# Survey Sites

- Site Selection

-Sites on conserved lands that had breeding NOHA records from state and federal agency documents, iNaturalist, eBird, San Diego County Bird Atlas



Breeding sites 1997-2001  
Source: San Diego County Bird Atlas

# Survey Sites

- GIS polygons generated for each survey area
- Access permits obtained from land-owners/managers



## Field Protocol-Avian Surveys

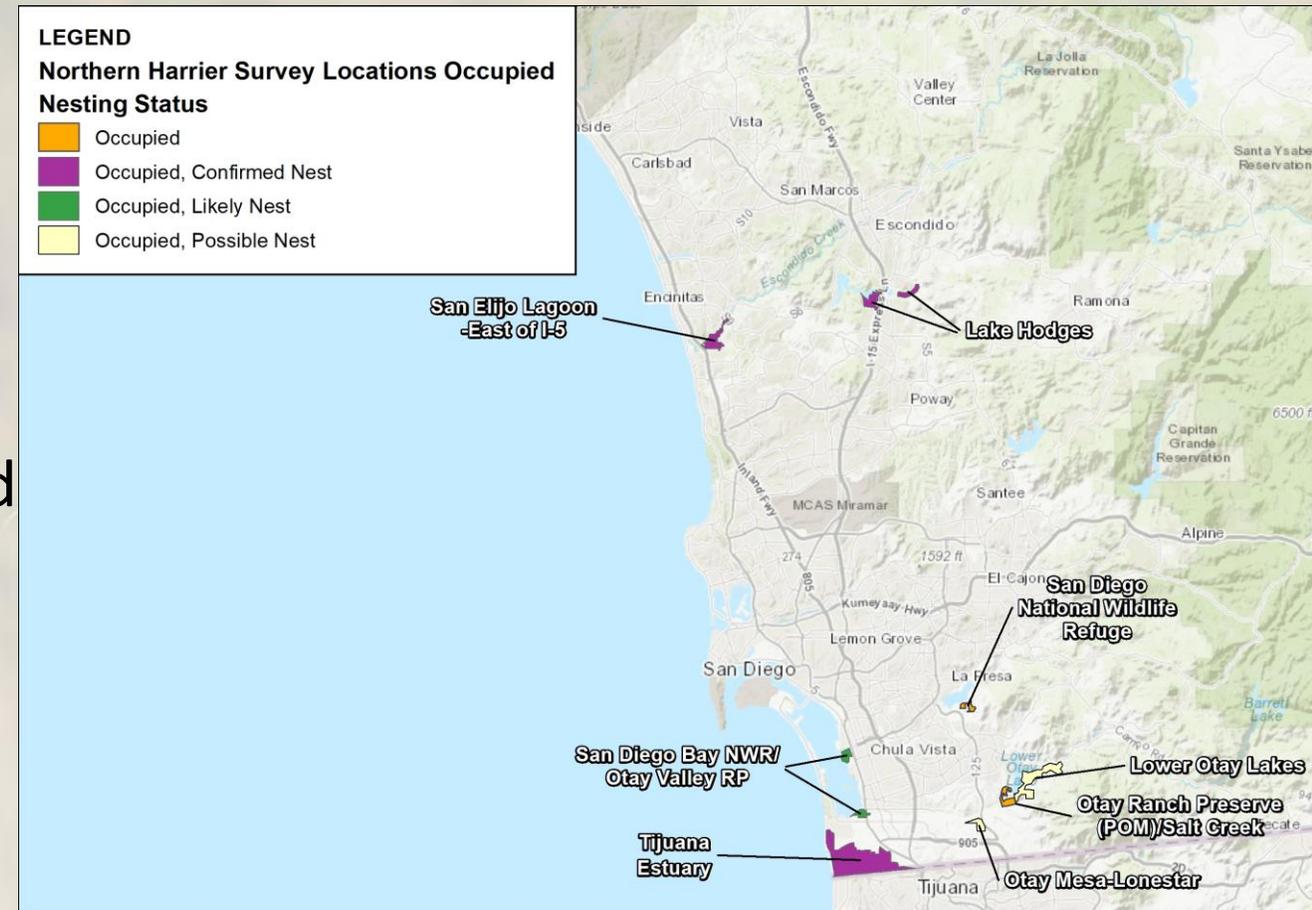
- Walk survey area using trails/roads or survey from elevated area with good viewshed
- Record presence/absence
- If present look for evidence of breeding (aerial displays, male feeding female/nestlings/fledglings, female carrying nesting material, fledglings)
- If no evidence of breeding, how using habitat
- If evidence of breeding in Round 1 surveys, follow-up surveys to assess breeding success
- Round 2 surveys conducted in June and July to determine if nest still active or if fledglings present in the vicinity of nest

## Field Protocol-Habitat Assessment and Threats

- In survey areas with potentially suitable breeding habitat, create subpolygons outlining different areas of suitable habitat
- Enter info on habitat characteristics (e.g. nonnative grassland, emergent vegetation, wild mustard)
- Identify possible threats to NOHA and the habitat: predators, sources of anthropogenic disturbance, presence of invasive plants, risk from ag, etc.
- Take photos of suitable habitat(s)

# Survey Results

- Surveys conducted April 25 – July 27, 2021
- 27 survey areas surveyed (+1 addition)
- 26 had potentially suitable habitat for nesting
- 8 survey areas occupied by NOHA
- 3 survey areas had confirmed nests, 1 had a likely nest\*, and 2 had possible nests:
- Tijuana Estuary had 3 confirmed nests and 1 possible
- Lake Hodges had 1 confirmed nest
- San Elijo Lagoon had 1 confirmed nest
- 3 nests successful to at least fledgling/big nestling stage
- Tijuana Estuary 2 nests
- San Elijo Lagoon 1 nest



# Survey Results

- NOHA nests were located in the following vegetation:
  - thick emergent vegetation in a marsh
  - lush tall grass in a floodplain
  - tall nonnative grassland
  - chaparral/coastal scrub
  - disturbed habitat dominated by dead mustard stalks



# Management Recommendations

Survey Areas With NOHA but No Breeding	Assessment for Why No Breeding
Lower Otay Lakes	Vegetation in most areas too short/sparse for nesting
Otay Mesa/Lonestar	Possible nest activity potentially depredated by common raven (very common in the area); vegetation very dry on plateau and possibly too short in most places
Otay Ranch Preserve (POM)/Salt Creek	Areas of suitable habitat may be too small/narrow
San Diego NWR	Lots of human activity along trails; vegetation dry in most places
San Diego Bay NWR/Otay Valley RP	Nest confirmed by other consult group failed prior to AECOM surveys (close to restoration work); likely nest observed but never located. Many transients, feral animals

## Management Recommendations

- Tall vegetation necessary (60-100+ cm); if area needs to be managed for fire, allow patches to persist unless annual growth rapid enough to meet height requirements
- If using grazers to control vegetation in areas with NOHA, consider goats (less impactful than cattle)
- NOHA likely need minimum suitable breeding habitat size requirements and distance from trees, habitat edges (needs additional study)
- Manage for prey; small mammals (esp voles) likely most important resource for nesting success
- If habitat transitioning to thick scrub, consider rotational system of bush-hogging every few years to maintain open habitat in different stages of growth

## Conclusions

- Very few successful NOHA nests in western San Diego County in 2021
- Tijuana Estuary is the most important area for NOHA in western San Diego Co.
- Very dry conditions likely affected prey populations and vegetation condition
- Some potentially suitable areas not used for breeding; why not?
- Further study likely needed:
  - surveys after wet winter
  - prey assessment (esp small mammals)
  - habitat characteristics around nest

# Acknowledgements

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Thank you!

Questions?

