

TERNWATCHERS



SAN DIEGO AUDUBON

Presented by: Rebecca Schwartz, Conservation Program Manager at San Diego Audubon
Presented to: San Diego Management and Monitoring Program monthly coordination meeting
February 24, 2016

Ternwatchers

Volunteer predator monitoring in Mission Bay, San Diego



Fostering the protection and appreciation of birds, other wildlife, and their habitats...



Presentation Outline

- About SD Audubon
- Mission Bay conservation planning
- Ternwatchers
 - Goals, activities
 - Training, field protocol
 - Results
- Next steps



*California least tern (with band)..
Photo: B. Struck*



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About San Diego Audubon

- Mission: Protection and appreciation of birds, other wildlife, and their habitats
- Vision: Appreciate, understand, and actively protect the natural world



Black and White Warbler. Photo: K. Strauss



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About San Diego Audubon

- 6 full time staff
- Programs:
 - Education
 - Sanctuaries
 - Outreach
 - Conservation



Volunteers clearing coastal dune habitat. Photo: SDAS



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About San Diego Audubon:

Our Programs

- Education
 - Hands on environmental education
 - Mostly underserved schools
 - Outdoor Explore
 - Open space nearby schools
 - >10,000 experiences in nature, 1,000 students this year
 - Silverwood Science Discovery
 - Naturalist-guided field trips
 - Meets curriculum standards



*Students on a field trip at Silverwood Wildlife Sanctuary.
Photo: SDAS*



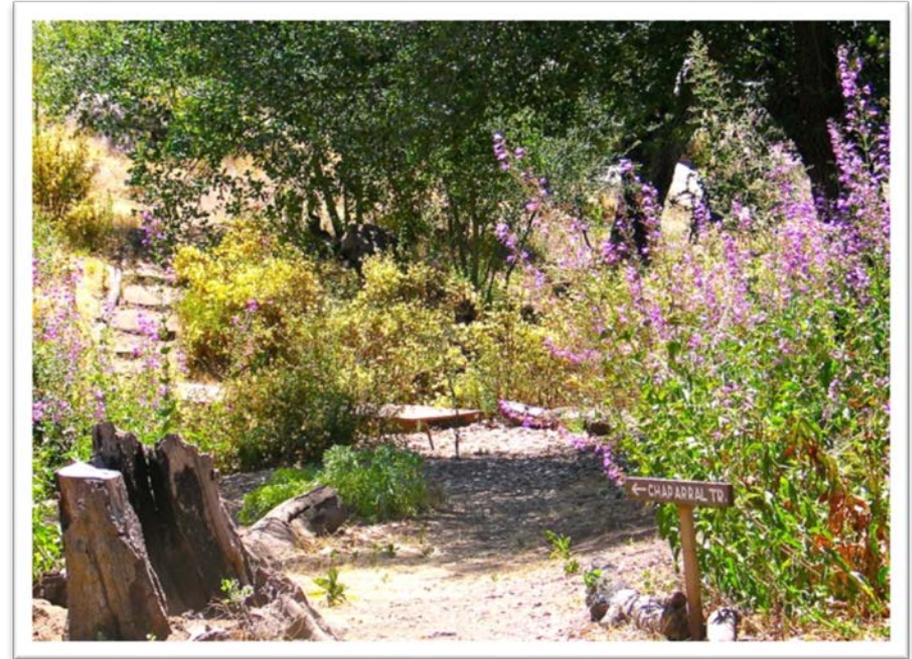
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About San Diego Audubon:

Our Programs

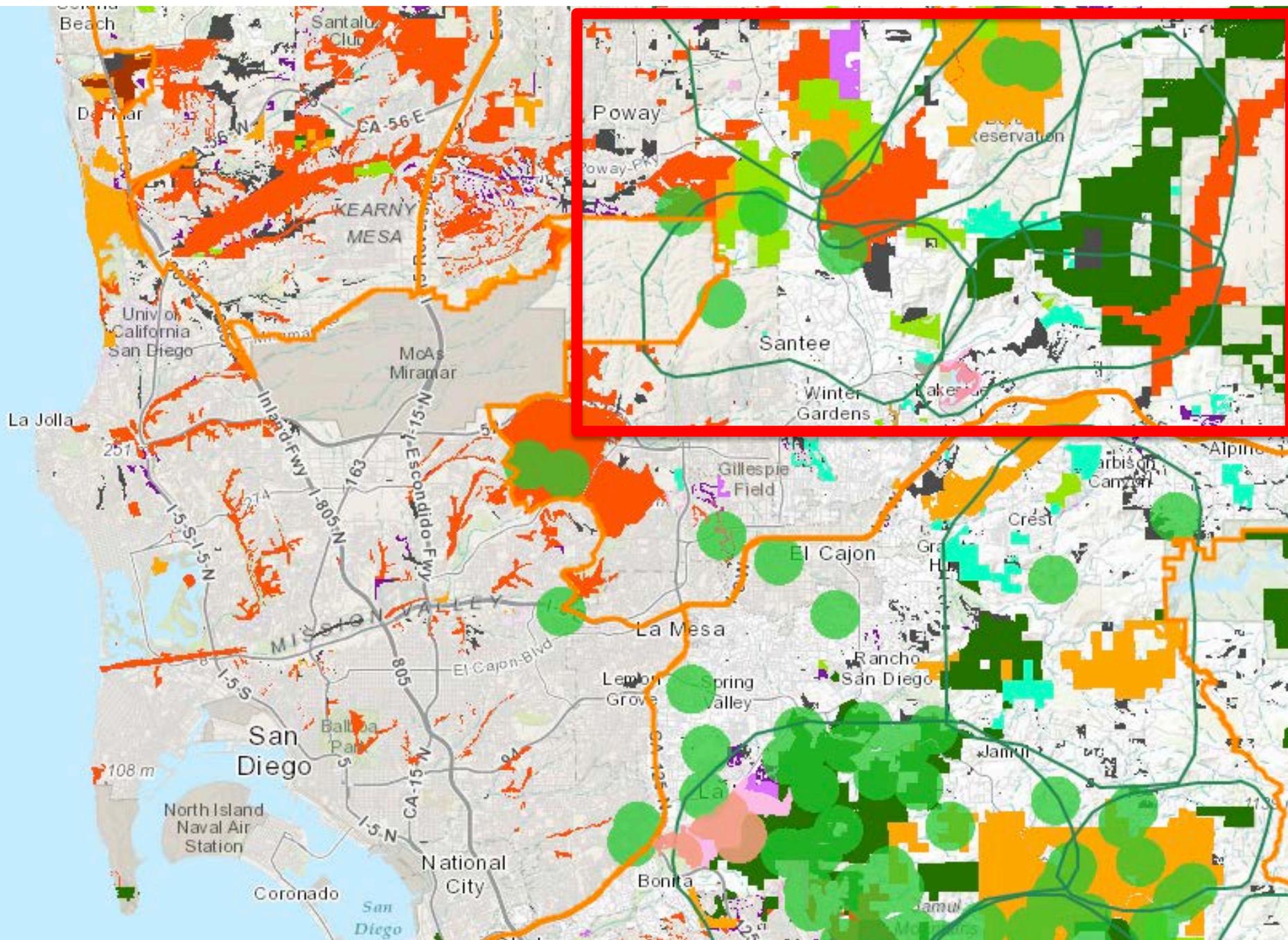
- Education
- Sanctuaries
 - Silverwood Wildlife Sanctuary
 - 787 acres in Lakeside, CA
 - Chapparal and riparian, >320 native plant species, 124 bird species
 - Anstine-Audubon Nature Preserve
 - 11 acres in Vista, CA
 - Coastal Sage Scrub, Southern Willow Riparian Forest, and Coast Live Oak Woodland

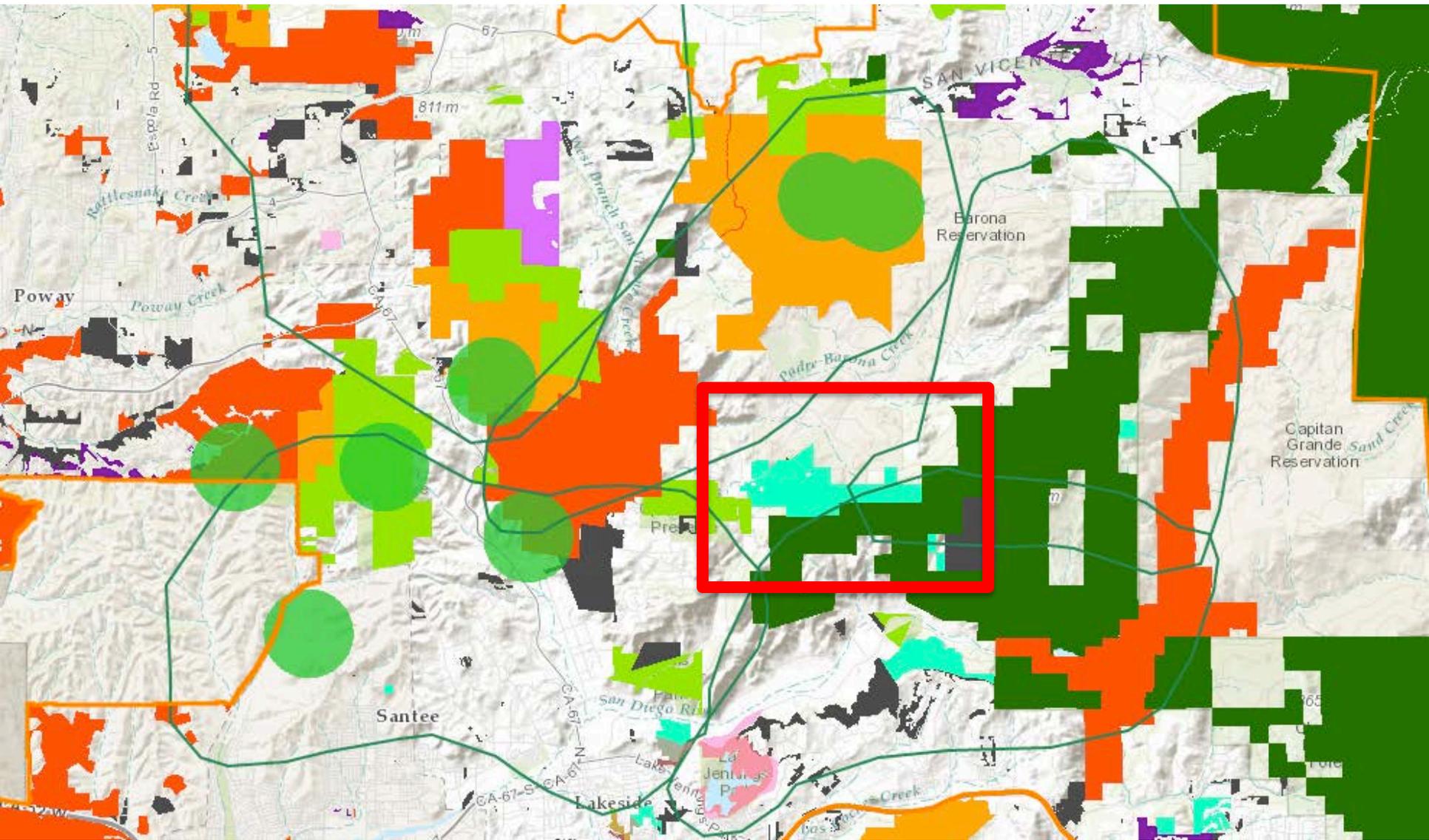


Silverwood Wildlife Sanctuary. Photo: SDAS



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About San Diego Audubon: **Our Programs**

- Education
- Sanctuaries
- Outreach
 - >50 free guided bird walks per year
 - San Diego Bird Festival
 - >700 attendees in 2015
 - Dozens of workshops
 - >1,200 field trip participants



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About San Diego Audubon:

Our Programs

- Education
- Sanctuaries
- Outreach
- Conservation
 - Habitat restoration (mostly in MB), conservation planning, environmental advocacy
 - >2,300 habitat restoration hours donated in 2015



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About Mission Bay

Audubon California
Mission Bay Important Bird Area



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Intro to Mission Bay



Mission Bay c. 1920

- Formerly: 4000+ acre estuary system
- 150+ years of large-scale alteration
- Created “Mission Bay Park”, largest aquatic recreational park in US
- Today: Highly altered, wetlands replaced



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Intro to Mission Bay:

From Bahia Falsa to Mission Bay Park

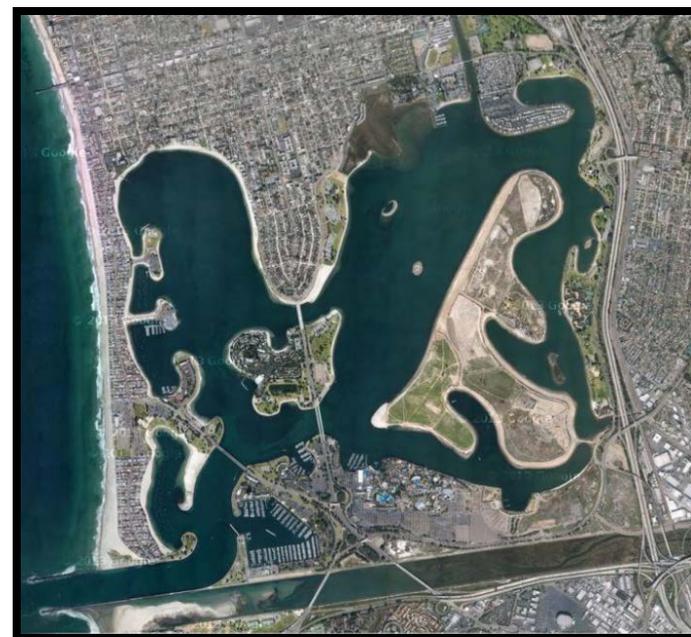
c. 1930



1948



2014



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About Mission Bay:

Natural Resources

- Supports thousands of waterfowl, shorebirds
- Threatened and endangered species
- Salt marsh, eelgrass beds, sandy beaches, mudflats, open water
- Global Important Bird Area (IBA)



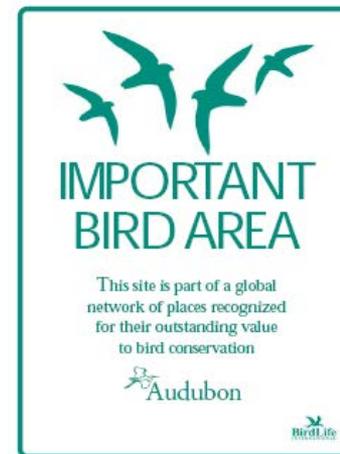
*Belding's savannah sparrow (top left), CA least tern (top right)
Light footed clapper rail (bottom left), brant (bottom right).
Photos: L. Wan, W. Dalton, M. Stinnett*



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Conservation Planning

- MB is a a Global Important Bird Area
- 2011 IBA assessment
- 24 stakeholders from across 12 organizations
- Identified conservation targets and threats
- Action plan and working groups



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Conservation planning in MB:

Targets

Light-footed Ridgway's Rail



Nuttall's Lotus



California Least Tern



Salt marsh



Coastal dunes



**Migratory shorebirds/
mudflats**

Eel Grass Beds



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Conservation planning in MB:

Biggest Results



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UNIVERSITY



SAN DIEGO MANAGEMENT & MONITORING PROGRAM



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Conservancy



SOUTHERN CALIFORNIA
**WETLANDS
RECOVERY
PROJECT**



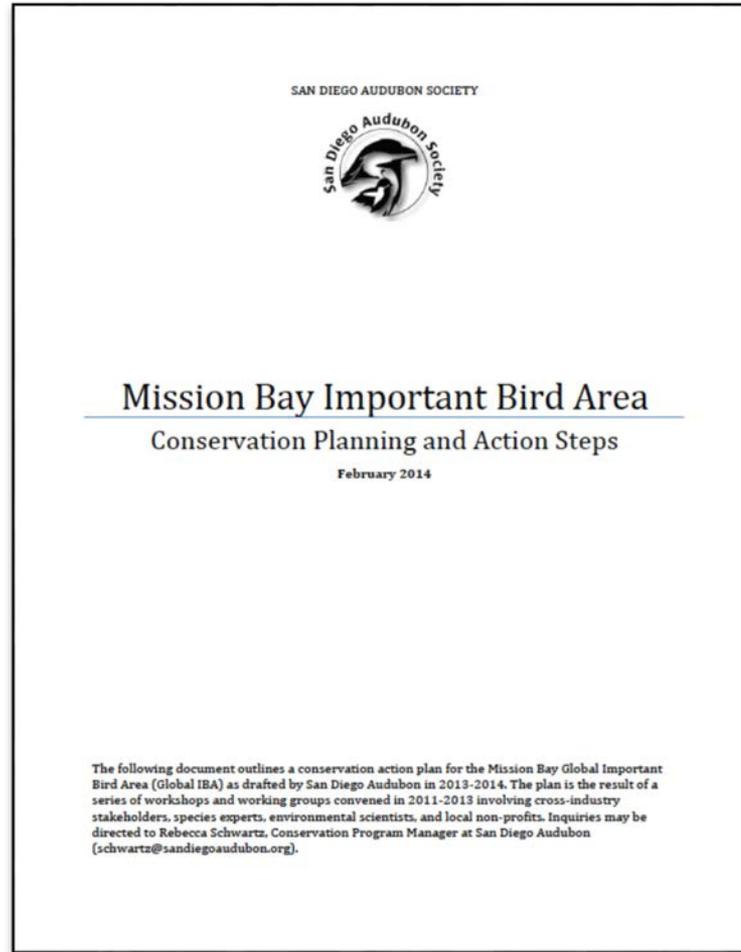
- **Relationships** with city/state/fed agencies, land managers, non profits
- **Conservation Action Plan**
- **Over \$700,000 funding** for MB since 2011
 - **Wetlands restoration**
 - **CA Least Tern management**



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Conservation planning in MB:

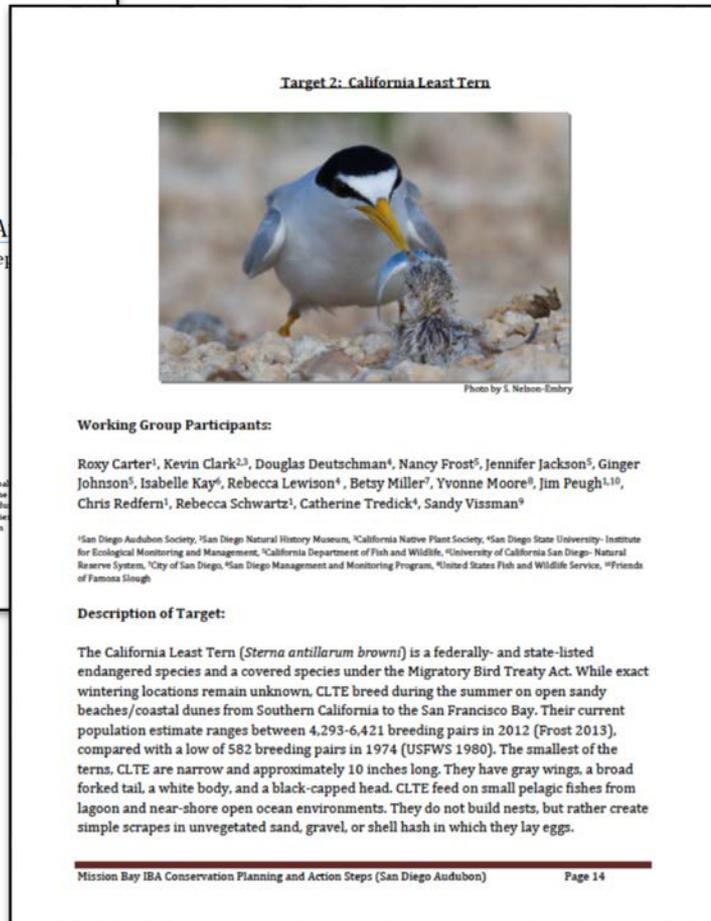
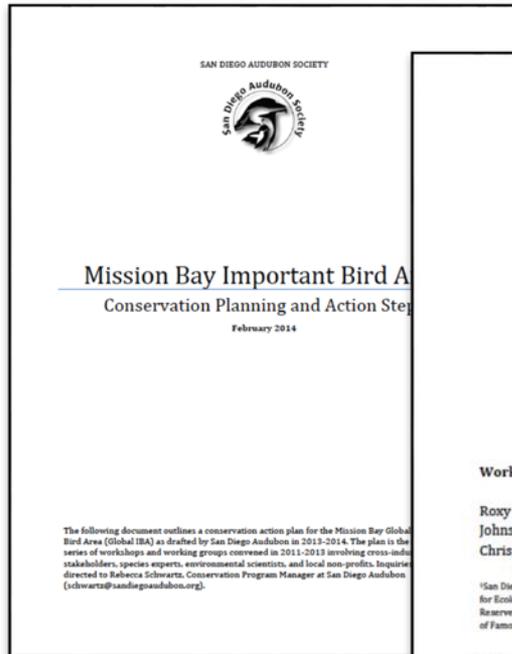
Action Plan



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Conservation planning in MB:

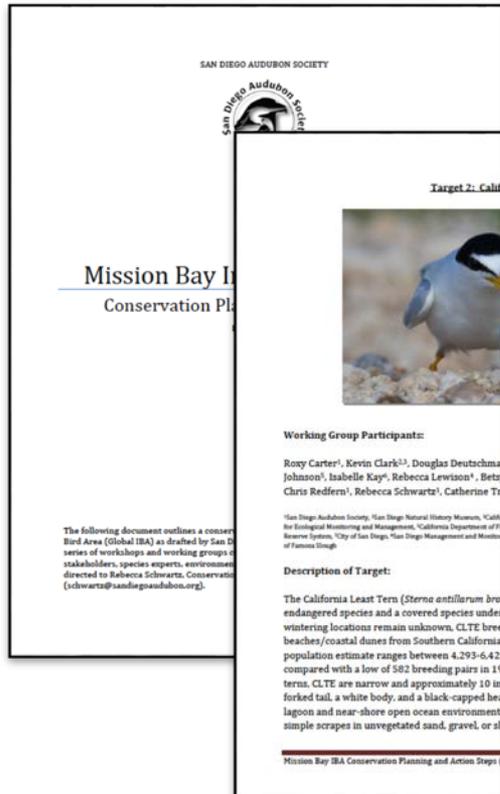
Action Plan



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Conservation planning in MB:

Action Plan



Major Threats:

High

- Heavy foot traffic
- Invasive plant species
- Light and noise pollutions
- Excessive native vegetation cover
- Predation

Medium

- Boat traffic
- Limited/fragmented habitat
- Impaired sand transport

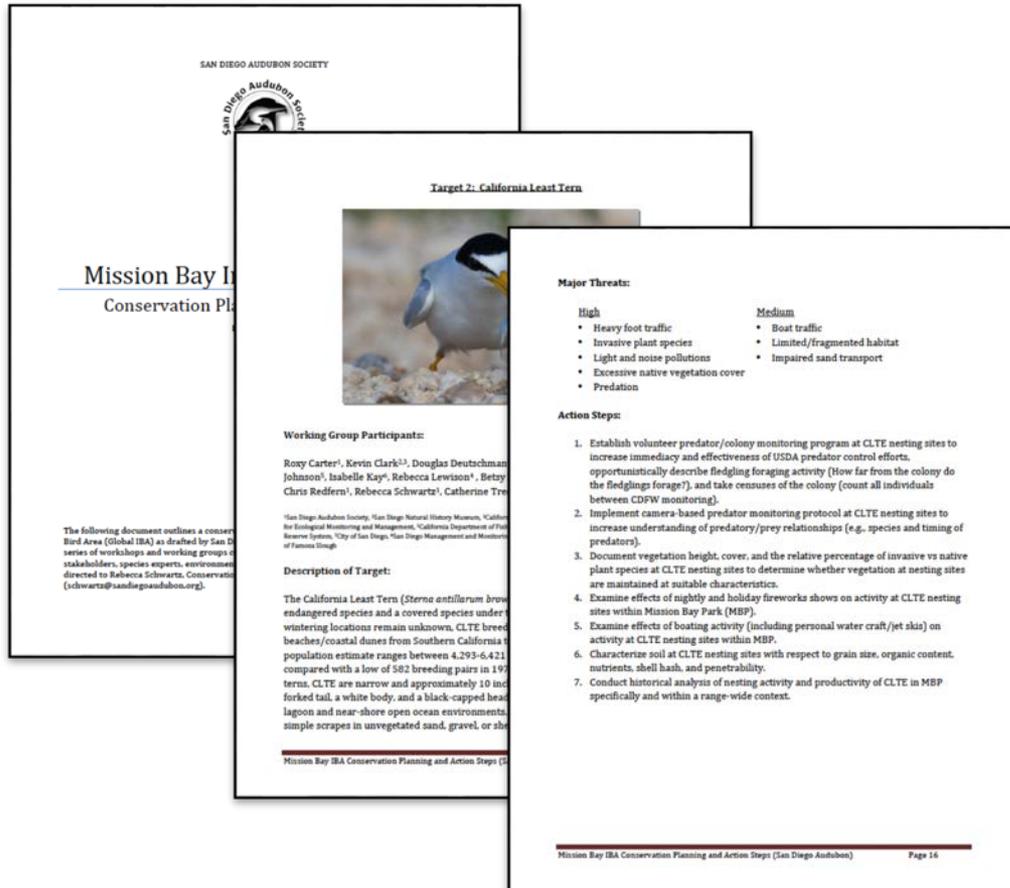
Action Steps:

1. Establish volunteer predator/colony monitoring program at CLTE nesting sites to increase immediacy and effectiveness of USDA predator control efforts, opportunistically describe fledging foraging activity (How far from the colony do the fledglings forage?), and take censuses of the colony (count all individuals between CDFW monitoring).
2. Implement camera-based predator monitoring protocol at CLTE nesting sites to increase understanding of predator/prey relationships (e.g., species and timing of predators).
3. Document vegetation height, cover, and the relative percentage of invasive vs native plant species at CLTE nesting sites to determine whether vegetation at nesting sites are maintained at suitable characteristics.
4. Examine effects of nightly and holiday fireworks shows on activity at CLTE nesting sites within Mission Bay Park (MBP).
5. Examine effects of boating activity (including personal water craft/jet skis) on activity at CLTE nesting sites within MBP.
6. Characterize soil at CLTE nesting sites with respect to grain size, organic content, nutrients, shell hash, and penetrability.
7. Conduct historical analysis of nesting activity and productivity of CLTE in MBP specifically and within a range-wide context.



Conservation planning in MB:

Action Plan



Action Step #1:
“Establish volunteer predator/colony monitoring program at CLTE nesting sites to increase immediacy and effectiveness of USDA predator control efforts”



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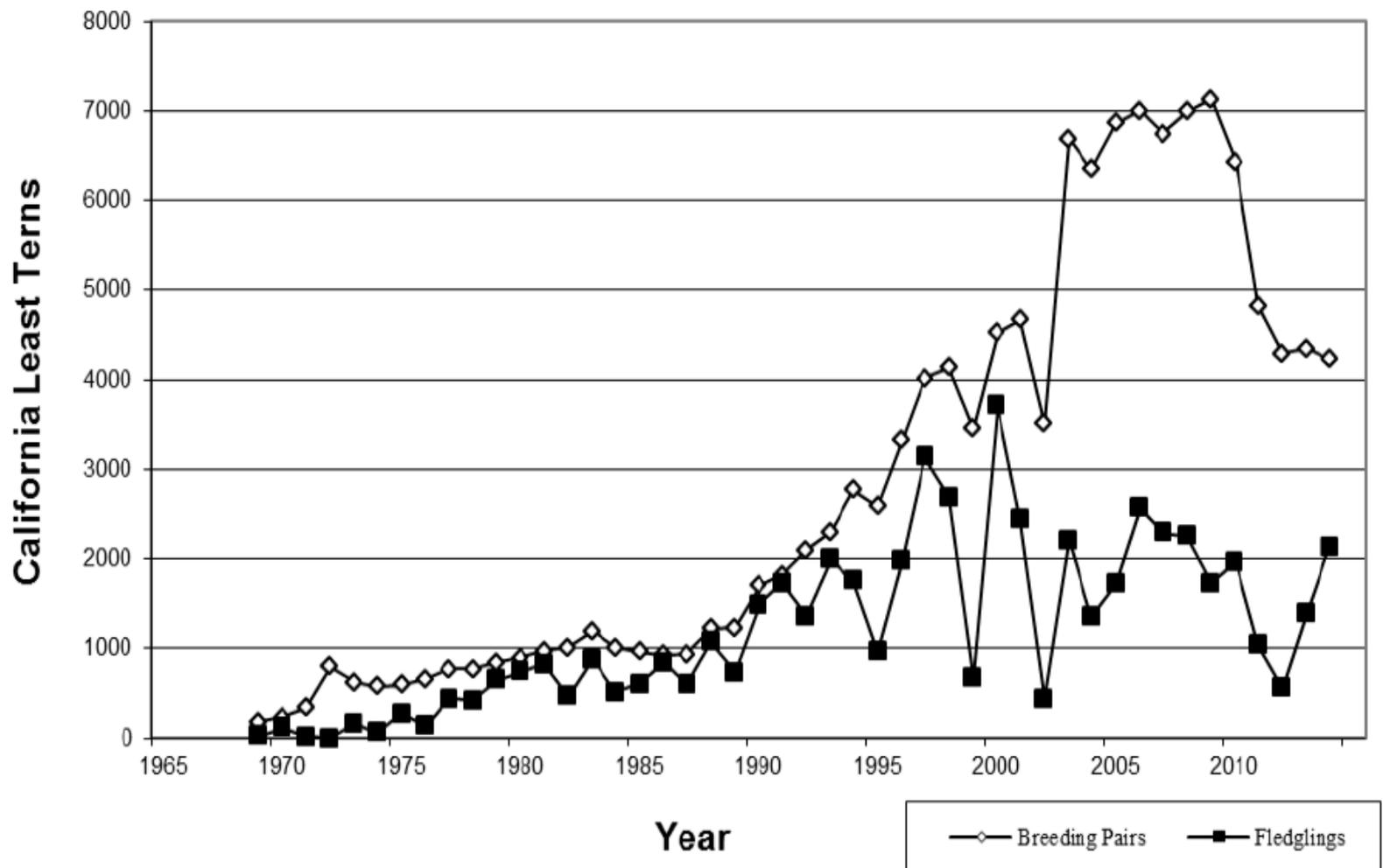


Figure 2. Minimum number of documented California least tern breeding pairs and fledglings in California during annual surveys, 1969-2014 (data from: Craig 1971; Bender 1974a, 1974b; Massey 1975, 1988, 1989b; Atwood *et al.* 1977; Jurek 1977; Atwood *et al.* 1979; Collins 1984, 1986, 1987; Gustafson 1986; Johnston and Obst 1992; Obst and Johnston 1992; Caffrey 1993, 1994, 1995b, 1997, 1998; Keane 1998, 2000, 2001; Patton 2002, 2004 unpublished table; Marschalek 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012; Frost 2013, 2014).

TERNWATCHERS



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Ternwatchers



*SDAS staff and Ternwatcher volunteers at Mariner's Point.
Photo: Katie Schoolov*

- SANDAG 2013 grant
 - Vol. pred. monitoring program
- Goals:
 - Inc fledgling per pair ratio from 0.20 to 0.40
 - Inc ratio of predator control effort-hours to predators removed from 0.35 to 0.50
 - Recruit 30 volunteers over each 18 week nesting season
 - Provide timely predation reports to USDA staff
 - Record predation events by species, CLTE age class, time



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Ternwatchers



*SDAS staff and Ternwatcher volunteers at Mariner's Point.
Photo: Katie Schoolov*

- 2013 TransNet grant
- Goals:
 - Inc fledgling per pair ratio from 0.20 to 0.40
 - Inc ratio of predator control effort-hours to predators removed from 0.35 to 0.50
 - Recruit 30 volunteers over each 18 week nesting season
 - Provide timely predation reports to USDA staff
 - Record predation events by species, CLTE age class, time



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Ternwatchers:

Program Details

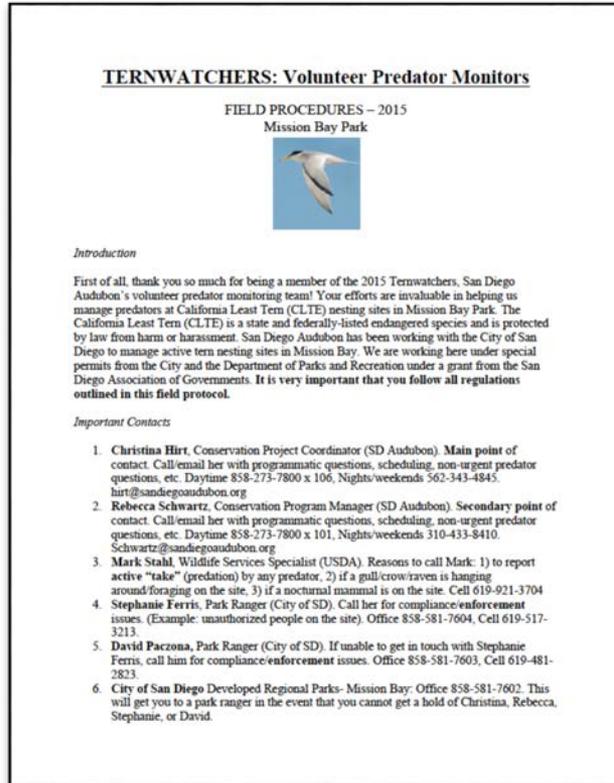
- Trained volunteers conduct 2-4 hr shifts at CLTE nesting sites
- Volunteers observe from outside colony fence
- Record data
- Call WS for active “take”, send weekly batched data sheets



*CA least tern in Mission Bay
Photo: B. Struck*



Ternwatchers: Training and Field Protocol



- 2 hour in-office training
 - Program history
 - CLTE life history
 - Bird ID
 - Thoroughly review field protocol
- All first time volunteers paired with experienced



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Ternwatchers:

Results to date

- 2014:
 - 27 volunteers
 - 384 hours
 - [KPBS coverage](#)
- 2015:
 - 26 volunteers
 - 10 returners
 - 368 hours



*CA least tern in Mission Bay
Photo: E. Henry*



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Ternwatchers:

Results to date

- From WS:
“Tern Watchers...were instrumental in advising WS of potential avian predators actively hunting all Mission Bay tern sites.”
- 2013 (pre TW)
 - 205 birds, 3 raptors
 - 0.37 predator per hr
 - 0.003 raptors per hr
- 2014
 - 187 birds, 13 raptors
 - 0.19 PPH
 - 0.013 RPH
- 2015
 - 84 birds, 6 raptors
 - 0.22 PPH
 - 0.007 RPH



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Ternwatchers:

Results to date

- From WS:

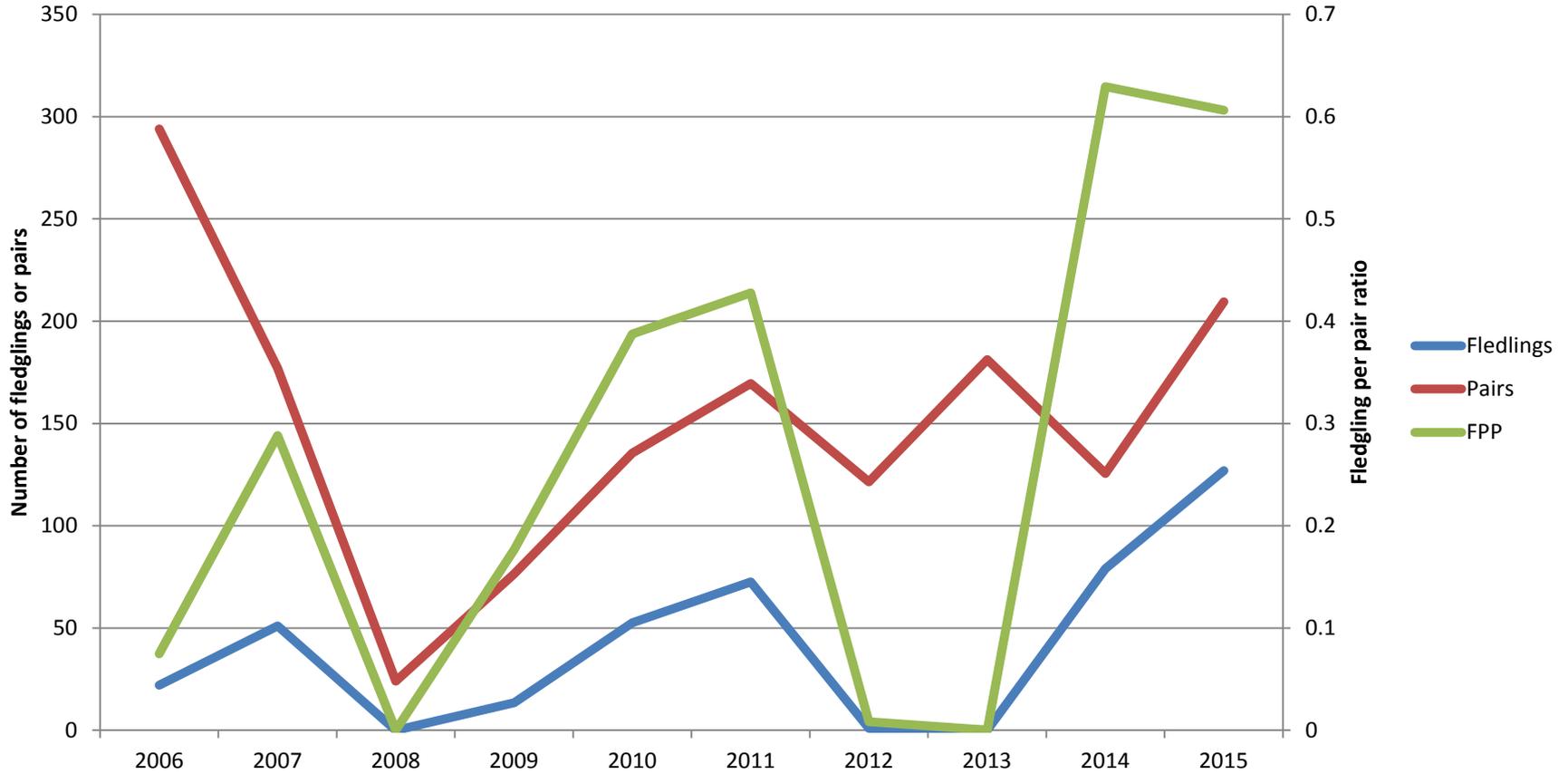
“Tern
Watchers...were
instrumental in
advising WS of
potential avian
predators actively
hunting all
Mission Bay tern
sites.”

- Mariner’s Point fledgling per pair ratio*
 - 2006-2013: 0.31
 - 2014-2015: 0.65
- Both years of TW has had double FPP ratio

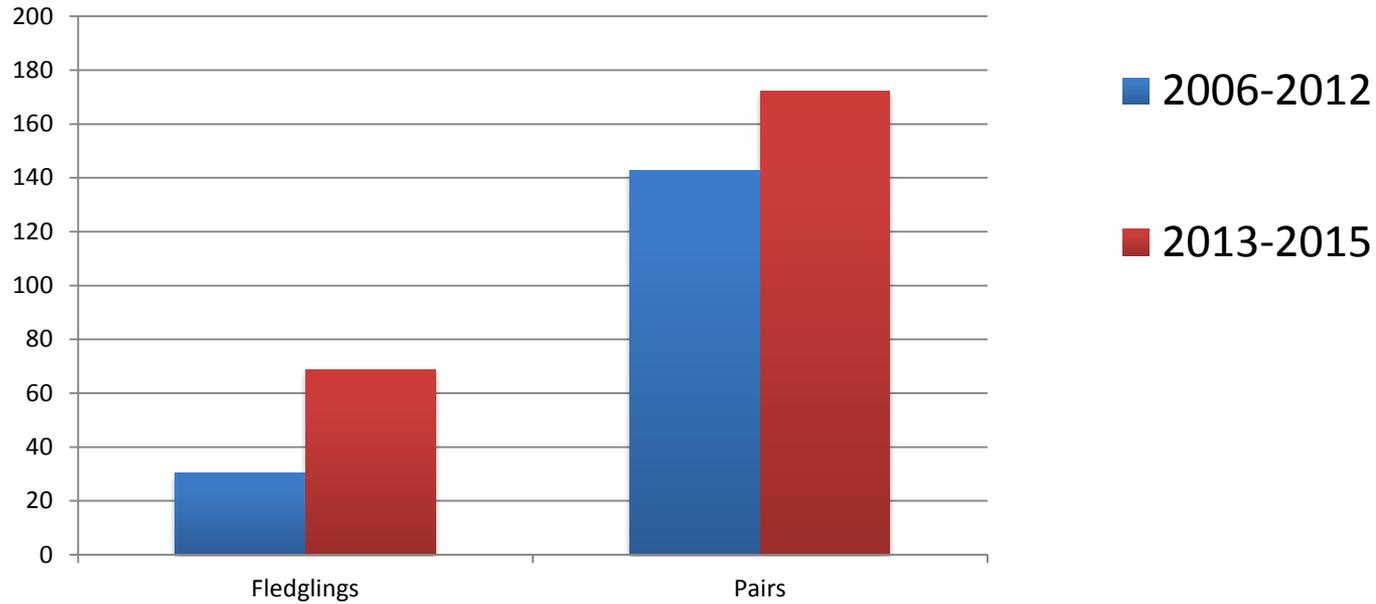
* fledglings and pairs is average of min and max



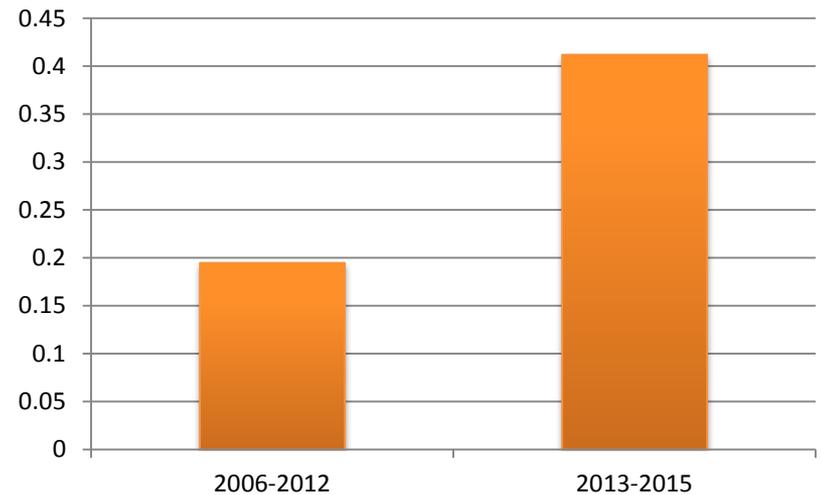
Nesting Productivity in Mission Bay



CLTE productivity pre/post TW and gap funding



Fledgling per pair ratio



Ternwatchers:

Overall take aways

- Requires significant staff coordination of volunteers
- Fewer, more highly trained volunteers are better
- Great “entry” to conservation



*CA least tern with chick in Mission Bay
Photo: B. Whiteside*



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Ternwatchers:

Overall take aways

- Confirmed negatives are highly valuable
- Success of program dependent on USDA's Wildlife Services (funded by SANDAG and City of SD)
- Increase in FPP also coincides with SANDAG gap funding



*CA least tern with chick in Mission Bay
Photo: B. Whiteside*

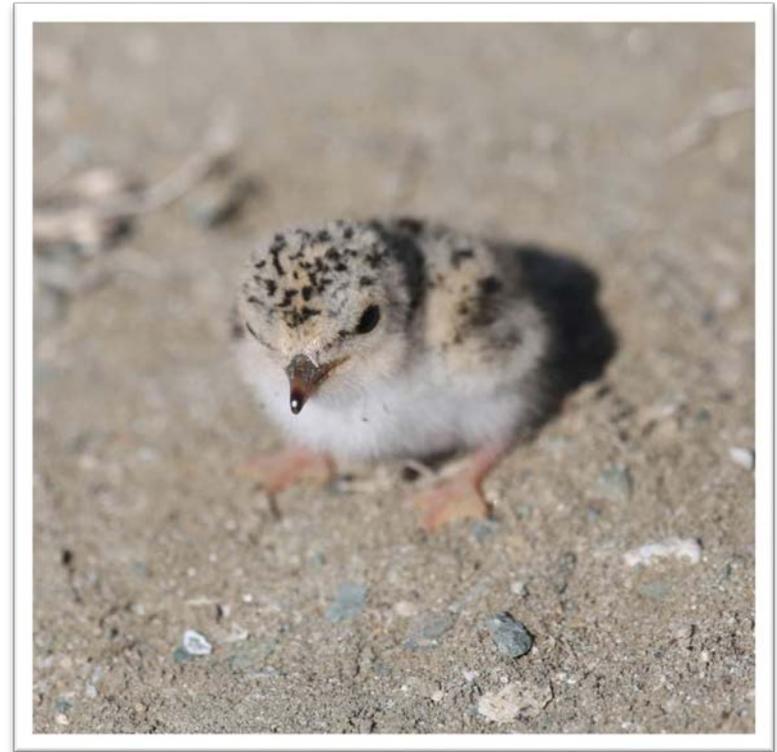


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Ternwatchers:

Next steps

- Night time/camera monitoring
- Analyze predator data
- Funding expires after 2016 nesting season
 - Very high priority to find sustainable funding sources
- Program is easily replicated



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Acknowledgements



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Natural Reserve System
UNIVERSITY OF CALIFORNIA



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Questions?



*CA least tern chick (with band) spreads its wings.
Photo: Bruno Struck*