



## Adaptive Management Working Group (AMWG) Science Plan for Piping Plover Predator Management at Off-Channel Sand and Water (OCSW) Sites

### I. INTRODUCTION

The Governance Committee (GC) made the decision to focus on off-channel habitat for tern and plover nesting. As carrying capacity of these sites is reached, it is unrealistic to expect productivity to continue to rise above that which the habitat can support, placing a premium on protecting the reproductive investment of those breeding pairs that are able to nest on Platte River Recovery Implementation Program (PRRIP or Program) managed sites. Several PRRIP off-channel nesting sites had high losses to predation in 2018 and 2019, reducing annual fledge ratios and raising concerns over the impact predation may have on productivity and the Program's ability to meet its management objective for these species. As a result, the impact of predation on piping plover productivity and the ability of the Program to effectively reduce these impacts were suggested as an area where additional information would be helpful in managing off-channel sites to improve piping plover productivity in the future. In 2020 the Program conducted a Predator Management Pilot study implementing fencing and lighting to mitigate impacts of both terrestrial and avian predators. No avoidance of either fencing or lighting was demonstrated by either species. Moving forward the Executive Director's Office (EDO) would like to ramp up the treatments to reduce losses at sites with high predation while gaining information about predation that will contribute to more effective future management. We would like to expand additional predator management to four sites with a fixed experimental design allowing balanced comparisons between control and treatment sites to better evaluate effectiveness of fencing and lighting in reducing predation's impact on tern and plover productivity. The objective is to address predation through the implementation of management practices in a systematic way that allows the Program to quantify the impacts of predation on productivity and the Program's ability to mitigate those impacts.

H<sub>1</sub>: Complete enclosure of sites and strobe lights on fences will reduce avian and mammalian predator presence at OCSW nesting sites compared to control sites.

H<sub>2</sub>: Complete enclosure of sites and strobe lights on fences will reduce losses of plover eggs and chicks attributed to predation at OCSW nesting sites compared to control sites.

H<sub>0</sub>: Control sites will not differ from treatment sites in number of predators registered or losses of plover eggs and chicks attributed to predation.



## II. TREATMENTS

- 4 Control sites (Lexington, Cottonwood Ranch, Blue Hole, and Newark East)
  - current management with peninsula panel fencing and outside trapping
- 4 Treatment sites (Dyer, Broadfoot Kearney South (Figure 1), Newark West, Leaman)
  - enclosed with predator fencing + strobe lights attached to fence line + current management as above



**Figure 1.** Proposed predator fencing alignment at Broadfoot Kearney South in relation to piping plover (black) and least tern (pink) nest locations, 2015-2021.

## III. RESPONSE VARIABLES

- |  |                                     |
|--|-------------------------------------|
| • nests  | • breeding pairs                    |
| • hatch ratio  | • nest success                      |
| • daily nest/brood survival                          | • fledge ratio                      |
| • failed-predated nests and broods                   | • failed-unknown nests and broods   |
| • number of predators registered/effort              | • number of predation events/effort |
| • identification of predators responsible for losses |                                     |



#### IV. MEASUREMENT OF RESPONSE VARIABLES

- panel-wing cameras/video at land bridge (n=3 per fence)
- site-level cameras/video (1/4 acres)
- outside monitoring following current protocols
- shoreline cameras/video (1/500 lf)
- nest cameras/video (n=8 per site)
- real-time video monitoring

#### V. MOVING FORWARD

- Broadfoot Kearney South in 2021 – Additional 3 sites for 2022
- Fixed 5-year treatments versus annually rotating experimental design
- Few, highly variable sites and annually variable species responses pose limits on testing impacts and effectiveness
- Camera vs. video monitoring
- Camera/video placement to capture more predation
- What other predator management options should be considered, especially for avian predators?