

Unit 9 Bird Nesting Survey

Biological Summary Report

Monte Vista NWR, SLV Refuge Complex, CO

May 2015

Prepared By:

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Purpose:

This is the second year of the proposed 3 year survey project in Unit 9 of the Monte Vista NWR to look at breeding and nesting birds that use wet meadow/ wetland vegetation habitat found in this unit.

Unit 9 has traditionally been known as a high nest production unit for waterfowl ([ref.1](#)) and requires less intense habitat maintenance, compared to other units, due to the unit's ability to recycle nutrients through water management. However, in recent years water volume that is needed for proper water management has been limited, for a number of reasons to include drought and funding shortages for pumping of wells. This has resulted in poor recycling of nutrients (i.e. breaking down of decadent vegetation), and encroachment of invasive plants species such as Tall White-top (*Lepidium latifolium*) and Canadian Thistle (*Cirsium arvense*).

Proposed management action called for a prescribed burn in this unit in attempts to: 1) remove decadent residual vegetation that is restricting new current year growth plants; 2) attempt to set back encroachment of invasive plant species that is occurring; 3) to allow for maintenance of irrigation infrastructure throughout the unit. The primary question that was raised was if the unit was burned, what would be the effects (if any) on nesting birds, and how long would the effect last? Other questions that were raised were, what "other" bird species are using this habitat, other than waterfowl, and what are their habitat requirements, and are they similar to waterfowl? A proposed 3 year survey project, (pre-burn year survey, burn year survey, and post-burn year survey), was developed to look at these questions.

Methods:

There were four survey periods. Survey period #1 was during the week of May 18th. Survey period #2 was during the week of June 1st. Survey period #3 was during the week of June 15th. Survey period #4 was during the week of June 29th. Given the size of the survey areas and number of staff available for surveying, typically it would take 3 days to complete the surveys. Two types of surveys would be utilized in this project; Transects and Rope Dragging, in an attempt to detect bird nests. Standard scheduling had the transect surveys to be performed at the beginning of the week and lasting only one day. The rope dragging surveys would be done during the following two days with two plots surveyed each day. Survey times were between sunrise and approximately 1300 hours. Later times were used but were highly discouraged due to birds being off nest for foraging.

- Rope dragging – There were four survey plots, (Plot A, B, C, D), ranging in sizes from 11 acres up to 17 acres, totaling 53 acres (fig 2). The plots were drug going in an east to west and west to east pattern. A ½ inch diameter rope with snap clip buckles attached to each end would be snapped to D-rings on a belt which the surveyors wore. Surveyors (also known as rope draggers) would spread out 100 ft. apart and drag the rope (on foot) across the vegetation in attempt to flush birds off of nests. Draggers would use bike flags planted at each end of the plot to aid them in keeping a straight line. At least one surveyor (walker) would be behind the rope to spot for flushing birds and to detect nests. Two walkers were ideal for this, but three or more walkers seem to be excessive for the 100 ft. span. Detecting nests was accomplished by either flushing a bird off the nest or by visually finding the nest as surveyors traversed the survey plot. When a bird would flush, the walker(s) would pinpoint the spot of the flush and hold that point while draggers would attempt to identify the bird as it flew. Then the walker(s) and draggers would converge on the flush point and attempt to locate the nest. Once the nest was located, data was collected using Nesting Data Sheets (NDS). Roble Pole readings (ref.2) (four cardinal directions) were also taken and recorded on the NDS. The nest location was then flagged with 36" pin flags and placed 4 meters (Robel pole rope length) to the east of the nest. In situations where the location of the flag would be in heavy cover or deep water, the flag would be placed 4 meters to the west of nest. This standardization of flag location allowed surveyors to consistently know where and how to approach a nest upon future site visits. Minimum information that was written on the flag was nest #, date, species, # of eggs, direction of nest location, and surveyor's initials. During the final survey period, no new flagging was placed at new nests and all old flagging was removed from the field.

- Transects – Surveyors would walk previously established transect lines (fig 3) (ref 1) in 1 mile increments. Ten transects were walked (89-107). Surveyors would attempt to locate all nests while staying on transect. Once a nest was detected, either by a flushing bird or by

visually finding a nest, data would be collected the same as was described for rope dragging. However, the placing of the pin flagging was different. The pin flagging was placed along the transect line and 10 ft. to the south or 10 ft. to the north, depending on direction of travel. This was done so surveyors could find the pin flags more easily upon future surveys. In addition, the perpendicular distance to the nest from the transect line was recorded for Distant Sampling Analysis.

Site Description/Condition:

The proposed prescribed burn was accomplished during the early spring of 2015. There was approximate 90% fuel consumption with only a few small patches of wet vegetation (mostly cattails) in the SW corner and SE corner of the unit.

Water resources for Unit 9 were severely lacking or nonexistent at the beginning of the field season (April). A fairly dry winter had left little residual fall water and no snow cover on the unit. At the beginning of May, the Empire Canal (primary water source for Unit 9) came on and the unit started to receive water. By mid-May, some water (~ 7 cfs) was making its way into the west and northwest sections of the unit. During the week of May 18th, the water volume raised significantly to approximately 30 cfs. However, during the first days of survey period # 1 (May 18th), little to no water had made it to the survey plots (fig.2), but by the end of that week, water had made it completely across the unit from a 4-6 inch sheeting of water. As the season progressed, good water volume continued to be ran into the unit and finally tapered off during the last half of June. This quality of water amount and duration resembled water conditions from back in the late 1990's and early 2000's (ref. 3).

It was also noted that incidental sheep grazing occurred in some parts of the unit during period #1, but it was felt that it had minimal effects on nesting and overall habitat use.

Results:

There were 157 nests found between all surveys and all survey periods combined. Of those nests, 102 nests were found during transect surveys and 55 nests found during rope dragging surveys. Upon reviewing of the data, it was discovered that 10 individual nests were listed as unknown species. Thus totaling 147 nests were found and identified. Total numbers of nests found in each survey period (transects and rope dragging combined) were 0 nests found in period # 1, 48 nests found in period # 2, 58 nests found in period # 3, and 55 nests found in period # 4 (fig 1 and table 1).

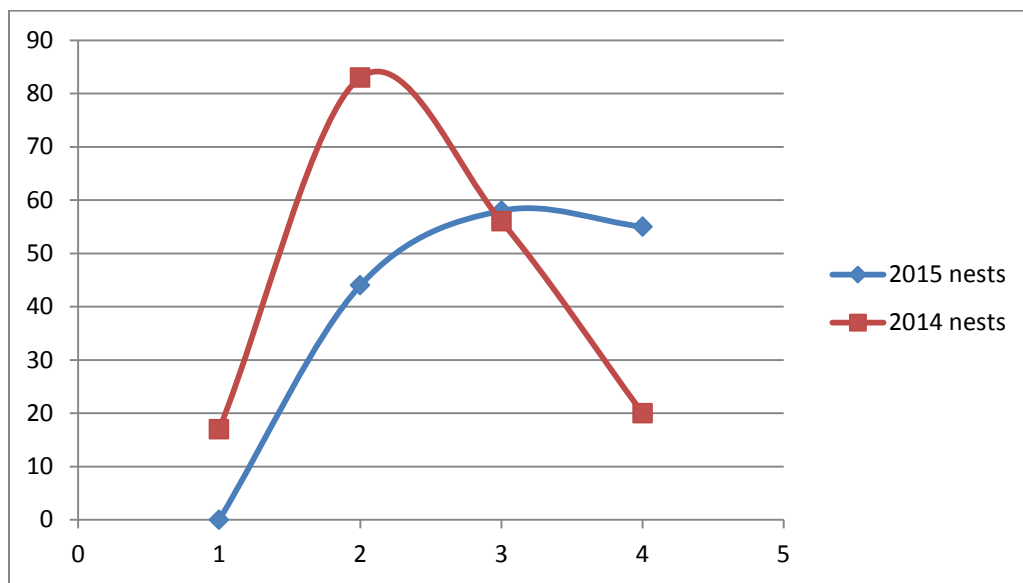


Figure 1: Nests found per week. X-axis = number of nests, Y-axis = weeks

| | 2014 rope | 2014trans | Total | 2015rope | 2015trans | Total |
|--------|-----------|-----------|-------|----------|-----------|-------|
| week 1 | 10 | 7 | 17 | 0 | 0 | 0 |
| week 2 | 71 | 12 | 83 | 13 | 31 | 44 |
| week 3 | 41 | 15 | 56 | 17 | 41 | 58 |
| week 4 | 16 | 4 | 20 | 25 | 30 | 55 |
| | | | 176 | | | 157 |

Table 1: Comparing number of nests found during each survey period between 2014 and 2015.

There were 10 species of birds found in this year's survey where compared to 16 species found in the 2014 survey, which is a 38% decrease in species occurrence. There was also a striking difference in the number of waterfowl species and waterfowl nests found in 2015 compared to 2014 surveys. There were only 3 waterfowl species found in 2015 compared to 5 species found in 2014 surveys, and only 12 waterfowl nests found in 2015 compared to 43 nests found in 2014 surveys. This is a 72% decrease in waterfowl nests found between 2015 and 2014. There was a slight decrease in the number of shorebirds and secretive marsh bird nests and species found in the 2015 surveys. There was 5 species found with 41 nests in 2015 compared to 6 species found with 45 nests in 2014 surveys. (table 2 & 3)

Table 2: 2014 List of bird species nests, from highest to lowest.

| | |
|----------|-----------|
| REDWING | 60 |
| YELLHEAD | 22 |
| MALL | 19 |
| SNIFE | 15 |
| AVOCET | 12 |
| TEAL | 10 |
| GAWDAL | 9 |
| SORA | 7 |
| PHALO | 6 |
| MEADLARK | 4 |
| VRAIL | 4 |
| PINTAIL | 3 |
| REDHD | 2 |
| SPARR | 2 |
| COOT | 1 |
| GOOSE | 1 |

Table 3: 2015 List of bird species nests, from highest to lowest.

| | |
|----------|-----------|
| REDWING | 58 |
| YELLHEAD | 36 |
| AVOCET | 13 |
| COOT | 13 |
| PHALO | 11 |
| MALL | 6 |
| GAWDALL | 4 |
| SNIFE | 3 |
| TEAL | 2 |
| KILLDEER | 1 |

The vegetation types predominately used for nesting was Baltic rush (*Juncus balticus*) 45%, followed by Cattails (*Thypa latifolia*) 15%, and Bulrush (*Cyperaceae*) 12%. Various mixes of vegetation types made up the rest. (table 4)

Robel pole measurements (RP) were taken at each nest. The average RP reading was 35.86 cm. (this included the 10 unknown species).

Table 4: Dominant live vegetation at nest site.

| Live veg @ nest | # of nests |
|---------------------|------------|
| Baltic | 71 |
| Cattail | 24 |
| Bulrush | 19 |
| saltgrass | 12 |
| Baltic/cattail | 6 |
| baltic/whitetop | 5 |
| cattail/bulrush | 3 |
| none | 3 |
| whitetop | 3 |
| baltic/thistle | 2 |
| baltic/bulrush | 2 |
| Thistle | 2 |
| foxtail | 2 |
| baltic/lamb | 1 |
| baltic/lamb/cattail | 1 |
| baltic/foxtail | 1 |

Discussion:

With multiple environmental events affecting Unit 9 at the beginning of the field season, (Rx burn, low snowpack, lack of irrigation water), it was believed that this year's survey results would be very minimal. However, it turned out to be quite productive. It started out in period # 1 of the survey that there were no nests found, but with the arrival of an optimal river runoff and the lack of decadent residual vegetation choking out new growth, Unit 9 was able to flourish and be highly productive. Due to these environmental events, the timing of nesting season seemed to have shifted later into period's #3 and #4 as compared to period's #2 and # 3 in 2014 (fig1). We expected to see less nest numbers, which we did, but it was insignificantly lower. With 157 nests being found, compared to 176 nests found in 2014, bird species seemed to have adapted to the conditions and continued to utilize the habitat. We also expected to see less species of birds, 10 species compared to 16 species in 2014, but of the species we found, they consisted of species that would maximize the habitat that would be available after an Rx burn. Species that do not require thick or dense residual cover or species that only use minimal vegetative structure for nest building such as Redwing blackbirds, Wilson's Phalaropes, and American Avocets. It is difficult to compare data from the two years of doing this survey due to

the Rx burn and the extraordinary water year we had in 2015. Combined with the lack of vegetative structure, nesting was difficult at the beginning. Several Red-wing blackbird nests that were initiated at the beginning of the nesting season were observed leaned over, some as much as 90', later into the season as the vegetation grew. This was thought to be the result of the lack of residual vegetation providing nest support and structure. Other species, such as Wilson's snipe, struggled to adapt to the high water that sheeted across the unit. Only three Wilson's snipe nests were found compared to 15 nests in 2014. Many other nests were "built up" so to escape flooding or excessive moist soil conditions (fig 4).

It was noted that at the end of period # 4, there were quite a few new nests still being found. It was appearing that the nesting season was not ending, at least not as abruptly as in 2014. Thoughts were given to surveying for a 5th period to try and document the ending of the nesting season; however that would have been out of the survey protocol and surveyors work schedules wouldn't have allowed for it.

Recommendations:

Throughout the survey there were some lessons learned or areas of concern to pay closer attention to. Training was a noted lesson learned. Assuring that good training occurred before conducting the surveys was vital. Even with training, mistakes were still made from time to time. However, with every mistake made, there was a good training opportunity and lesson to be learned by all. Some of the common learning curves were: how to line up and follow transects, how to identify bird species and nests, how to keep spacing/slack in rope, how to line up bike flagging, how to use Robel poles, how to use GPS units, reviewing nest data sheets daily to determine accurate and complete data and if follow-up visits were needed (i.e....species ID).

It is recommended that on each rope dragging crew, there be at least 2 walkers behind the rope. Having 1 walker was sufficient, but having 2 was optimal.

References:

- (1) – Response of Nesting Ducks to Habitat and Management on the Monte Vista National Wildlife Refuge, Colorado by David W. Gilbert, David R. Anderson, James K. Ringleman, and Michael R. Szymczak No. 131 January
- (2) - Relationships between Visual Obstruction Measurements and Weight of Grassland Vegetation
Author(s): R. J. Robel, J. N. Briggs, A. D. Dayton and L. C. Hulbert Source: Journal of Range Management, Vol. 23, No. 4 (Jul., 1970), pp. 295-297
- (3) – Personal observations and discussions with Scott Miller (Refuge Biologist) and Dean Lee (Refuge Bio-Tech).

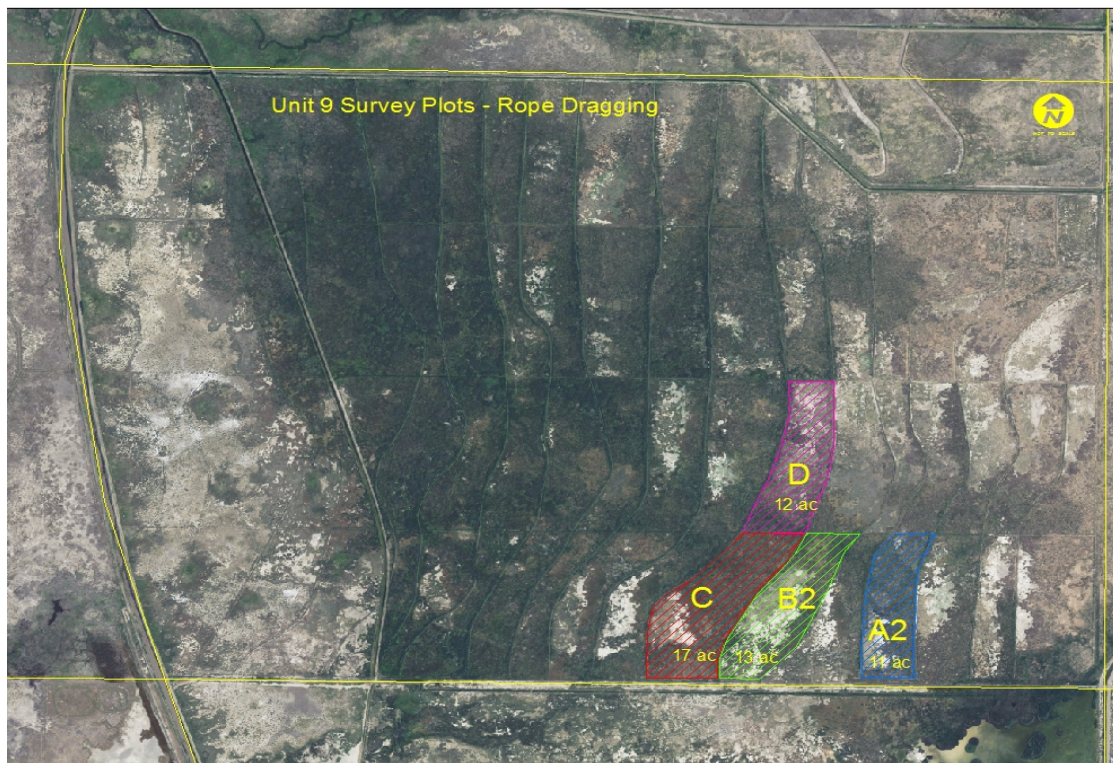


Figure 2: Unit 9 Survey Plots (53 acres) - Rope Dragging - MVNWR



Figure 3: Unit 9 Transects - MVNWR

Nesting Data Sheet

Nest #: _____ Date: _____ Time: _____ Observer: _____

Management Unit: _____

Nest location (UTM – NAD 83) _____ E _____ N

Bird species: _____ Number of eggs/chicks: _____ Incubation stage: _____

* Soil Surface (circle one): dry moist flooded * Avg depth of water in area: _____ (cm)

* Distance from shrub land (circle one) < 20 m 21 – 50 m 51 – 100 m > 100 m

* Aerial vegetation coverage (over nest) 0% < 25% 25 – 50% 51 – 75% > 75% 100%

* Height of nest above **water**: _____ (cm) * Height of nest above **ground**: _____ (cm)

* Approx. distance to nearest surface water: _____ * Average shrub height _____ (cm)

* Plant **live/dead** ratio: _____ * Average **dominant live** graminoid height _____ (cm)

Dominant live plant type/species in area: _____

Dominant live plant type/species at nest: _____

Dominant residual plant type/species at nest: _____

Robel Pole reading at nest (**south side**) (4 cardinal directions): _____, _____, _____, _____ = _____

Distance of nest from center line (**ft** and **in** and **direction**): _____

Location of flag: _____

Notes: (describe surrounding vegetation, soil conditions, nest position in vegetation, other descriptors):



Figure 4: Elevated American Avocet nest - Unit 9 MVNWR 2015

Photo by Dean Lee, USFWS



Figure 5: Robel Pole measurements - Unit 9 – MVNWR 2015

Photo by Dean Lee, USFWS



Figure 6: Transect Pole - Unit 9 south boundary – MVNWR 2015

Photo by Dean Lee, USFWS