



CALIFORNIA UPLAND GAME PROGRAM GRANT AGREEMENT NUMBER: P1680048 – PROGRESS REPORT

INTRODUCTION AND BACKGROUND

(a) Knoxville Wildlife Area (KWA) is a very popular wildlife area for hunters targeting upland game birds, black-tailed deer, wild pig, and even offers limited waterfowl hunting opportunity. However, as with many of California's rural lands, large expanses of KWA are infested with invasive exotic plant species. The two main culprits being yellow star-thistle (*Centaurea solstitialis*) and medusa head (*Taeniatherum caput-medusae*). Yellow star-thistle (YST) is a very aggressive invasive that contains a large taproot extending 2-3 feet below the soil surface. This allows YST to out-compete native annual species and dominate entire sections of the landscape. The recent drought has amplified YST's stronghold in many areas. Medusa head (MH) is also a strong aggressor that out-competes native annuals. Once established, MH can create densities of 1,000-2,000 plants per square meter, not only eliminating native grasses and forbs but also creating high fire danger. YST and MH serve very little wildlife value due to their homogenous thick cover and un-palatable plant bodies. The National Wild Turkey Federation, in partnership with CDFW and the California Deer Association, plan to restore a 60 acre section of vital upland game bird habitat back to native annual grasses and forbs on Knoxville Wildlife Area.

(b) After recently experiencing the most impactful drought on record in the state of California, the effects of climate change are becoming increasingly known. With rising global temperatures and severe unpredictable weather patterns, effects on wildlife habitat and suitability are constantly in question. KWA contains large tracts of high quality upland game bird habitat that supports several species, mainly California quail, wild turkey, and mourning dove, and is very popular among upland game bird hunters. However, due to KWA's location in the upper reaches of a watershed and its rugged mountainous terrain, high quality habitat becomes fragmented due to the scarcity of water for approximately 3 months of the year (September – November) during years of average precipitation. Average daily temperatures during this period at KWA typically range between a high of 90-100 degrees Fahrenheit. The recent drought has only made things more difficult for wildlife on the area. This severe reduction in a limiting resource handicaps upland game bird populations, and highly limits their range expansion into otherwise very suitable habitat. The National Wild Turkey Federation, in partnership with CDFW, plan to purchase and install two 1,000 gallon water guzzlers in water-limited areas on KWA that help to benefit upland game birds, black-tailed deer, and many other diverse species of wildlife throughout the year.



ACTIVITIES

(a) In the summer of 2016, CDFW staff coordinated with CAL FIRE to implement a prescribed fire over the project site, which removed the standing thatch and exposed the bare soil. CDFW then treated the site with herbicide in the fall of 2016 and the spring of 2017 to rid the site of any growing invasives. The herbicide treatment was funded through funds from California Deer Association. CDFW then mowed the site in the fall of 2017 in preparation for seed drilling. The entire project area was seed drilled in November and December of 2017. CDFW first drilled in cereal crops of triticale surrounding the project site as a buffer between invasive plant species and the restoration. They then planted the native seed mix purchased with the funds from California Deer Association as well as the seed purchased through this grant. All native seed was purchased from Hedgerow Farms in Winters, CA and the seed was harvested locally to the project site in both Napa and Yolo counties. The planted seed mix can be seen at the end of this report. Throughout the next several years CDFW plans to spot-treat any undesired plant species within the project boundary through the use of herbicide. This type of intensive management will give the native grasses and forbs the best chance of long term establishment, as well as the greatest overall benefit to upland game bird species.

(b) Originally, NWTF and CDFW staff planned to install the guzzlers in the spring of 2017. However, the record rainfall that we had in the 2016-2017 water year greatly impacted many of KWA's roads, which delayed access into the guzzler sites. Once the access roads were repaired, we were faced with high fire danger during the summer months, A zone deer season then extended into the late summer/fall, more high fire danger concern, and then eventually too wet of conditions. The guzzlers have been purchased and will be delivered to KWA this coming February. Once soil conditions dry out enough, NWTF will select a subcontractor to complete the work.



COSTS LIST FOR GRANT

| California Upland Game Program | | | | | |
|---------------------------------------|---|------------------|-----------|----------------|------------------|
| Knoxville WLA Project | | | | | |
| Agreement # P1680048 | | | | | |
| | | Start Date | 5/19/2017 | | |
| | | End Date | 6/30/2018 | | |
| | | | | Date | 11/7/2017 |
| 43500-1-07-27-0002 | | | | | |
| | | | FY 18 | FY 19 | Remaining |
| Account Number | Budget Item | Budget | Expenses | Expenses | Budget |
| 79501-1-07-27-0002 | NWTF District Biologist (40 hours @ Actual Rate) | 1,648.40 | | 824.20 | 824.20 |
| 79502-1-07-27-0002 | Travel (800 miles @ \$0.535/mile) | 428.00 | | 164.25 | 263.75 |
| 79503-1-07-27-0002 | Supplies, Equip, Misc, etc | | | | |
| | A Guzzler (2 @ \$2,806.75 each) | 5,613.50 | | 5750.00 | (136.50) |
| | B Ground shipping cost (2 guzzlers @ \$150 each) | 300.00 | | 472.00 | (172.00) |
| | C Roofing (16 @ \$15/each) | 240.00 | | | 240.00 |
| | D Collection Frame (2 @ \$300/each) | 600.00 | | | 600.00 |
| | E Native Grass Seed (47.5 acres @ \$630/acre) | 29,925.00 | | | 29,925.00 |
| 79506-1-07-27-0002 | Subcontractor | | | | - |
| | A Backhoe (16 hours @ \$110/hour) | 1,760.00 | | | 1,760.00 |
| | B Subcontractor Supervisor (20 hours @ \$50/hour) | 1,000.00 | | | 1,000.00 |
| | C Subcontractor Laborer (20 hours @ \$20/hour) | 400.00 | | | 400.00 |
| | D Equipment Mobilization (2 hours @ \$1000/hour) | 2,000.00 | | | 2,000.00 |
| 79510-1-07-27-0002 | Indirect 20.18% | 7,820.74 | | 1455.07 | 6,365.67 |
| 41636-1-04-24-0002 | | 51,735.64 | - | 8665.52 | 43,070.12 |



Project site just after drilling in the native seed.



Germination of the cereal crops that were drilled in November 2017.



DISCUSSION

- (a) The grassland restoration portion of this project is complete. The site was prepped by CDFW, native seed was purchased by NWTF through this agreement, and the seed has been drilled into the soil. CDFW will maintain the site with any needed herbicide follow-up. This site will now contain high quality foraging, nesting, and brood-rearing habitat for upland game birds as well as a multitude of other wildlife species. CDFW Environmental Scientist, Stacy Martinelli, has already noticed a drastic increase in the usage of the site by mourning dove and wild turkeys since the site prep has begun.
- (b) The guzzler portion of this project will need to be postponed until this spring when the saturated roads begin to dry out. The wildlife guzzlers have been purchased, they just need to be hauled to the sites and installed. This portion of the project is still expected to be completed by end of this contract on 6/15/2018.



Hedgerow Farms, Inc.
 21905 County Road 88
 Winters, CA 95694
 Ph: (530) 862-8847
 Fx: (530) 862-2753

Date: 11/9/2017
Customer: CA Fish and Wildlife
Contact: Stacy Martinelli
Tel: (707) 576-2968
Cell:
Email: stacy.martinelli@wildlife.ca.gov
From: e.allen@hedgerowfarms.com
Email: Emily Allen

Project: Knoxville Wildlife Area Seeding
Notes: Drill seeding using McLaughlin Drill
 Funding from National Turkey Federation
 harsh soils
 not ideal weed control but some has been done
 would like flowers

Estimated Project Date: fall 2017

| | |
|-----------------------------------|--------------------|
| Seed mix subtotal: | \$27,541.53 |
| Subtotal for Asclepias eriocarpa: | \$360.00 |
| Seed Subtotal: | \$27,901.53 |
| Tax (7.25%): | \$2,022.86 |
| Estimated Total: | \$29,924.39 |

SEED QUOTATION

Acres for Mix: 36.1651

| Botanical Name | Common Name | Ecotype/Origin | Approximate Live Seeds/ PLS Lb. | Approximate Live Seeds/ Square foot | PLS lbs/acre | PLS lbs for area | Cost/ PLS lb | Cost/ Acre |
|--|---------------------------|---------------------------------------|---------------------------------|-------------------------------------|--------------|------------------|----------------------------|---|
| <i>Stipa pulchra</i> | purple needlegrass | Fiske Creek, Yolo Co. | 70,000 | 10 | 6.00 | 216.99 | \$43.00 | \$258.00 |
| <i>Poa secunda</i> ssp. <i>secunda</i> | one sided bluegrass | Upper Fiske Creek, Yolo Co. | 800,000 | 28 | 1.50 | 54.25 | \$36.00 | \$54.00 |
| <i>Elymus glaucus</i> | blue wildrye | Anderson, Yolo Co. | 122,000 | 11 | 4.00 | 144.66 | \$20.00 | \$80.00 |
| <i>Bromus carinatus</i> | California brome | Arastradero Preserve, Santa Clara Co. | 70,000 | 2 | 1.50 | 54.25 | \$18.00 | \$27.00 |
| <i>Festuca microstachys</i> | three weeks fescue | Fiske Creek, Yolo Co. | 430,000 | 15 | 1.50 | 54.25 | \$22.00 | \$33.00 |
| <i>Elymus multisetus</i> | big squimetail | Tehama Co. | 95,000 | 2 | 0.75 | 27.12 | \$105.00 | \$78.75 |
| <i>Hordeum brachyantherum</i> ssp. <i>californicum</i> | California barley | Bear Valley Serpentine, Colusa Co. | 220,000 | 10 | 2.00 | 72.33 | \$45.00 | \$90.00 |
| <i>Melica californica</i> | California oniongrass | Fiske Creek, Yolo Co. | 260,000 | 4 | 0.75 | 27.12 | \$50.00 | \$37.50 |
| <i>Amsinckia menziesii</i> | small flowered fiddleneck | Esparto, Yolo Co. | 125,000 | 1 | 0.25 | 9.04 | \$32.00 | \$8.00 |
| <i>Phacelia imbricata</i> | imbricate phacelia | Colusa and Yolo Cos. | 275,000 | 1 | 0.10 | 3.62 | \$75.00 | \$7.50 |
| <i>Clarkia unguiculata</i> | elegant clarkia | Rumsey Canyon, Yolo Co. | 1,400,000 | 8 | 0.25 | 9.04 | \$48.00 | \$12.00 |
| <i>Eschscholzia californica</i> | California poppy | Lodoga Hills, Colusa Co. | 350,000 | 4 | 0.50 | 18.08 | \$40.00 | \$20.00 |
| <i>Achillea millefolium</i> | yarrow | Cache Creek Watershed, Lake Co. | 3,000,000 | 10 | 0.15 | 5.42 | \$64.00 | \$9.60 |
| <i>Eriophyllum lanatum</i> | wooly sunflower | Rumsey Canyon, Colusa Co. | 1,150,000 | 3 | 0.10 | 3.62 | \$120.00 | \$12.00 |
| <i>Calandrinia menziesii</i> | red malds | North of Winters, Yolo Co. | 850,000 | 4 | 0.20 | 7.23 | \$94.00 | \$18.80 |
| <i>Plantago erecta</i> | dotseed plantain | North of Winters, Yolo Co. | 250,000 | 3 | 0.55 | 19.89 | \$28.00 | \$15.40 |
| subtotals: | | | 116 | 116 | 20.10 | 726.91 | cost/acre: \$761.55 | subtotal for 36.1651 acre: \$27,541.53 |

Milkweed to sow in wetter area with little weed competition.

| Botanical Name | Common Name | Ecotype/Origin | Approximate Live Seeds/ PLS Lb. | Approximate Live Seeds/ Square foot | PLS lbs | Cost/ PLS lb | Subtotal |
|----------------------------|-----------------|--------------------------------------|---------------------------------|-------------------------------------|---------|--------------|----------|
| <i>Asclepias eriocarpa</i> | Indian milkweed | McLaughlin Natural Reserve, Lake Co. | 27,500 | | 1.00 | \$360.00 | \$360.00 |

Quote does not include Tax or Shipping, Prices good for 30 days, Subject to availability



Rainmaker Products, LLC
 PO Box 31697
 Bellingham WA 98228
 360-739-6361

tim@rainmakerwildlife.com
 www.RainmakerWildlife.com

NWTF Ship To:
 9848 Berryessa Knoxville Rd
 Napa, CA 94558

Account Number 2543
 Quote Number 25432155
 Issue Date 11/16/2017
 Due Date 12/1/2017

| Date | Project/Item | Order | QTY | Price | Taxes | Total |
|-------------------|--------------------------------------|-------|-----|----------|-------|-------------------|
| 11/16/2017 | DT-1000 Dome-Top 1000 Gallon Guzzler | | 2 | 2,875.00 | | 5,750.00 |
| 11/16/2017 | Freight | | 1 | 472.00 | | 472.00 |
| Sub-Total: | | | | | | \$6,222.00 |
| Total: | | | | | | \$6,222.00 |
| Balance Owing: | | | | | | \$6,222.00 |

QUOTE ONLY

You also have the option to pick up at the Sacramento Freight Terminal. Cost \$426.