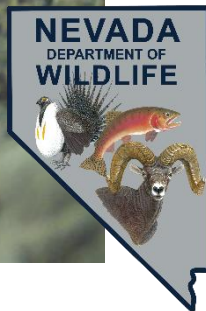


Raven Removal for the Protection of Greater Sage Grouse

Sagebrush Ecosystem Council 8/26/2026

Joe Bennett, Predator Staff Specialist, Nevada Department of Wildlife.



AB 70

- Developing and implementing an annual program for the lethal removal of predatory wildlife; or
- Developing and implementing an annual program for the improvement of wildlife habitat and research or management activities beneficial to non-predatory game species.



Budget Summary

- \$1,138,260 revenues from 2025 game tag draw
- $\$1,138,260 \times 63\% = \$722,529$ (Lethal Removal)
 - 108,529 projected to be included for reserve
- $\$1,138,260 \times 37\% = \$415,731$ (HRM)



Sources of Funding for Raven Removal

- Began supplementing with Upland Gamebird Stamp Funding in FY26

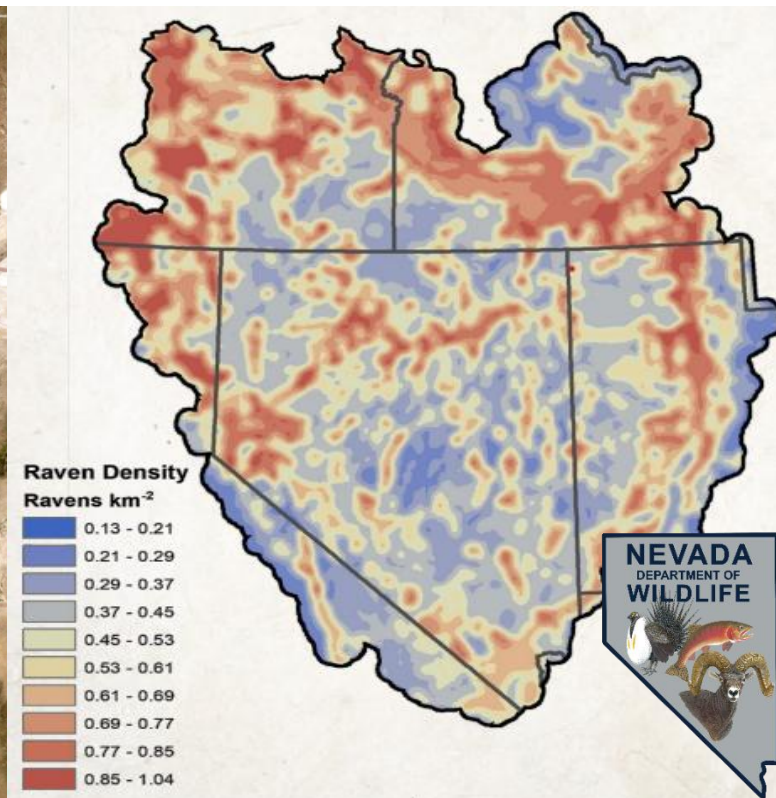
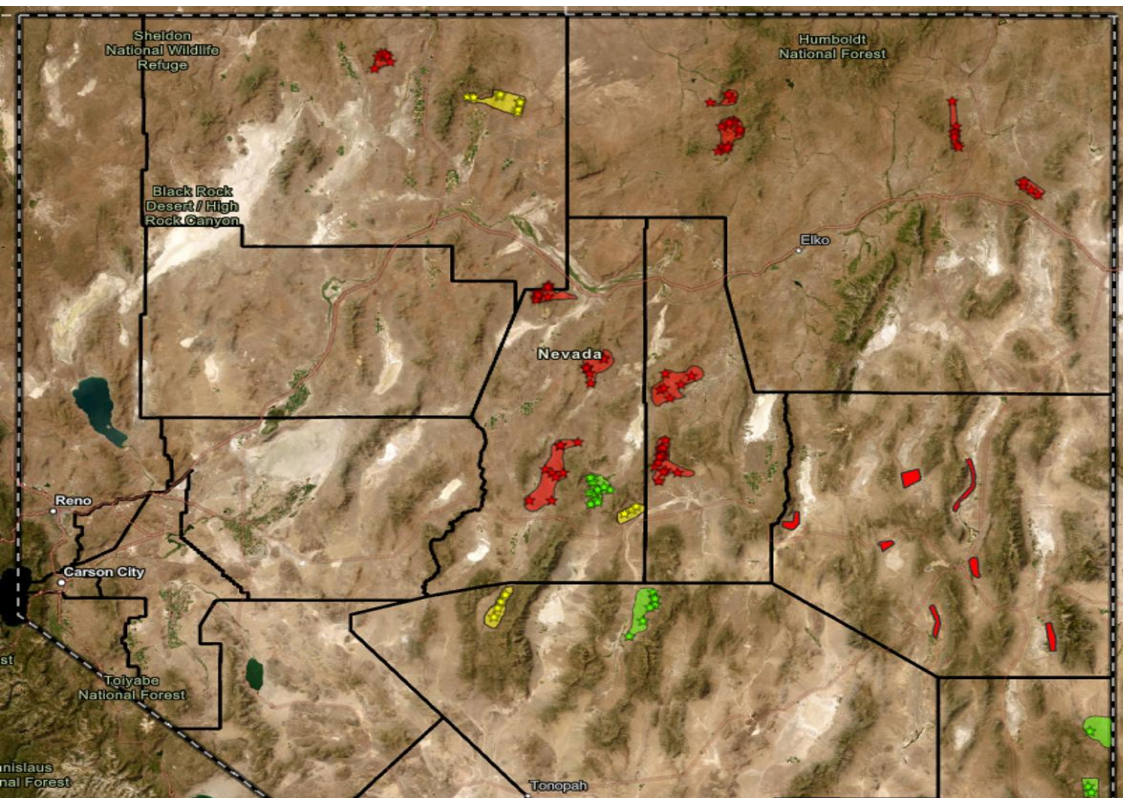
Previous Budgets and Expenditures

Year	Budget Proposed	Expenditures
2023	\$175,000	\$150,465
2024	\$175,000	\$221,216
2025	\$175,000	\$143,022
2026	\$212,500	\$149,579
2027	\$90,000	TBD



Environmental Assessment

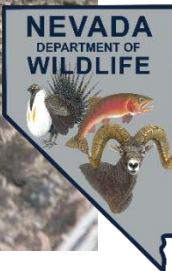
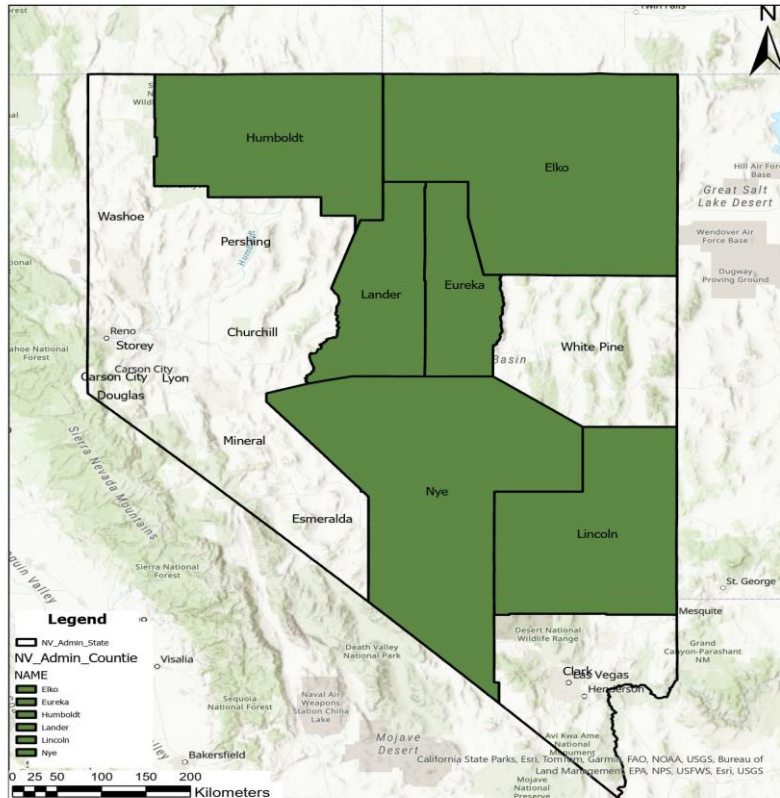
- Increase take from 2,500 to 12,500
- Data from USGS, NDOW and WS informed the SMaRT tool to demonstrate the need
 - Raven Density, Habitat associations and demographic research projects are all data points that inform the SMaRT tool.



Implementation of Raven Removal

- Timing
 - Adjust some treatments to winter congregations adjacent to priority areas
 - Continue to complete spring treatments

Project 21



Raven Removal since Environmental Assessment

- USDA Wildlife Services removed 3,973 raven during the winter/spring of 2025 (73 were directly removed and 3,900 were taken through egg baits)
 - 8859 egg baits were placed
 - 7894 eggs were taken of which 965 were recovered
- During the winter/spring of 2026 removed an estimated 7,500 ravens





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USDA-APHIS-Wildlife Services 2026 Common Raven Management Field Season Update



**Mark Ono
Nevada State Director
(775) 322-3217
mark.ono@usda.gov**

- 
- A background image showing two albatrosses on a sandy beach. One albatross is in the foreground, facing right, with its head down. The other is slightly behind and to the right, also facing right. In the background, there are mountains and a cloudy sky.
- **Objectives**
 - **Methodologies/strategy**
 - **2026 Results**
 - **Planned future activities**
 - **Future research**

Primary Objectives



Sage-grouse nest depredation
Photo credit: USGS

**Protecting eggs
and fledglings only**

**Reduce density of
ravens during the
nesting season
within 8 km of leks
sites to allow eggs
to hatch and
chicks to fledge**



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Methodologies

- **DRC-1339 egg treatments**
- **Opportunistic shooting - focus on nesting pairs within 2 km of lek sites (blinds, decoys, calls)**
- **Nest/egg destruction**
- **Document predator attractants, raven nest sites, sage grouse locations**

RESTRICTED USE PESTICIDE	
DUE TO HIGH ACUTE INHALATION TOXICITY AND EYE AND SKIN CORROSIVENESS TO HUMANS; HIGH ACUTE TOXICITY TO NONTARGET BIRDS AND AQUATIC INVERTEBRATES; AND THE NEED FOR HIGHLY SPECIALIZED APPLICATOR TRAINING For sale and transfer to, and use only by certified USDA APHIS and Nevada Department of Agriculture applicators or persons working under their direct supervision for those uses covered by their certified applicator credential.	
FIFRA SECTION 24(c) SPECIAL LOCAL NEED LABEL FOR DISTRIBUTION AND USE ONLY WITHIN NEVADA	
This product may only be used for the control of American crows (<i>Corvus brachyrhynchos</i>), Chihuahuan ravens (<i>Corvus cryptoleucus</i>), common ravens (<i>Corvus corax</i>), and black-billed magpies (<i>Pica hudsonia</i>) that a) prey on or are suspected of preying on the eggs or the young of Federally-designated Threatened or Endangered Species or on other species designated to be in need of special protection by Federal or State wildlife agencies; b) nest, roost, or loaf at landfills, deadfalls, dump site locations or on utility poles, electrical line towers, communication towers, or other man-made structures and cause fire threat, or that feed on the contents of silage/fodder bags or that pose a threat to human health and safety, threat to sensitive wildlife species or damage to structures.	
This label is valid until December 31, 2024 or until otherwise amended, withdrawn, canceled or suspended.	
COMPOUND DRC-1339 CONCENTRATE – LIVESTOCK, NEST & FODDER DEPREDACTIONS – NEVADA	
EPA Reg. No. 56228-29 EPA SLN No. NV-150001	
ACTIVE INGREDIENT:	DRC-1339 3-chloro-p-toluidine hydrochloride 97.0%
OTHER INGREDIENTS:	3.0%
TOTAL:	100.0%
KEEP OUT OF REACH OF CHILDREN	
DANGER-PELIGRO POISON	
	
ENDANGERED SPECIES CONSIDERATIONS	
- Before undertaking any control operations with the product, consult with local, State, and Federal Wildlife authorities to ensure the use of this product presents no hazard to any Threatened or Endangered Species. - DO NOT apply in areas where toxic baits may be consumed by Threatened or Endangered Species unless special precautions are taken to limit such exposures. Such precautions shall include observation of baited sites and hazing tactics to frighten away Threatened or Endangered species that otherwise might feed upon baits. The Threatened and Endangered species potentially at risk from use of this product are listed below.	
THREATENED AND ENDANGERED SPECIES:	
- Piping plover (<i>Charadrius melodus</i>) - Yellow-billed cuckoo (<i>Coccyus americanus</i>)	
EPA SLN No. NV-150001 EPA Est. 56228-ID-1	Page 1 of 4 Version March-19-2020

DRC-1339 Avicide

- ✂ 3-chloro-p-toluidine hydrochloride
- ✂ Denver Research Center - 1,339th trial
- ✂ Very pale yellow, crystalline powder that is highly soluble in water
- ✂ Slow action avicide used for corvids, European starlings, blackbirds, and other spp.
- ✂ Causes renal failure; most birds succumb within a few days after ingesting lethal dose
- ✂ Little risk of secondary poisoning to nontargets





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DRC-1339 Egg Baits



**Raven LD50 =
5.6mg/kg**

**Average adult
raven = 1.2-
1.47 kg (2-3
lbs)**

**Need 6.72-
8.23mg to kill
one raven**



**One ml of 2% solution =
0.02g (20mg) of DRC-
1339 in each egg**

**Enough DRC-1339 in one
egg to kill one raven**



Control Strategy

Site_ID	Density	stddev	Score	SGCA	Score	Tier	Score	Nest_sink	Score	Total_Score	PRIORITY LEVEL
Independence_Vly_Rev_2023	0.56	0.06	1	TRUE	1	3	1	HIGH	2	5	HIGH
Cortez_2023	0.44	0.06	1	TRUE	1	3	1	HIGH	2	5	HIGH
3_Bar_2023	0.40	0.05	1	TRUE	1	3	1	HIGH	2	5	HIGH
West_Tolyabe_Rev	0.44	0.06	1	TRUE	1	3	1	MODERATE	1	4	HIGH
Paradise_Martin_2023	0.43	0.06	1	TRUE	1	3	1	MODERATE	1	4	HIGH
Bull_Run_Basin_Rev_2023	0.42	0.05	1	TRUE	1	3	1	MODERATE	1	4	HIGH
Battle_Mtn_Dump_Rev_2023	0.62	0.08	1	TRUE	1	3	1	LOW	0	3	MODERATE
Shoshone_2023	0.43	0.07	1	TRUE	1	3	1	LOW	0	3	MODERATE
Ackerman_Rev_2023	0.42	0.05	1	TRUE	1	3	1	LOW	0	3	MODERATE
South_Grass_Valley_Rev_2023	0.35	0.04	0	TRUE	1	0	0	HIGH	2	3	MODERATE
Monitor_Rev_2023	0.29	0.03	0	TRUE	1	0	0	HIGH	2	3	MODERATE
Reese_River	0.37	0.06	0.5	TRUE	1	0	0	MODERATE	1	2.5	LOW
Jackpot_Transfer	0.86	0.09	1	FALSE	0	3	1	LOW	0	2	LOW
18_mile	0.56	0.09	1	FALSE	0	3	1	LOW	0	2	LOW
Barrys_Lek	0.53	0.06	1	FALSE	0	3	1	LOW	0	2	LOW
Hamlin_Valley_Rev_2023	0.35	0.03	0	TRUE	1	0	0	MODERATE	1	2	LOW
Spring_Valley	0.34	0.05	0	TRUE	1	0	0	LOW	0	1	LOW

Prioritized control areas
Raven density ≥ 0.4 km²
Sage grouse source-sink habitats
“Protect core areas”



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Data Collection



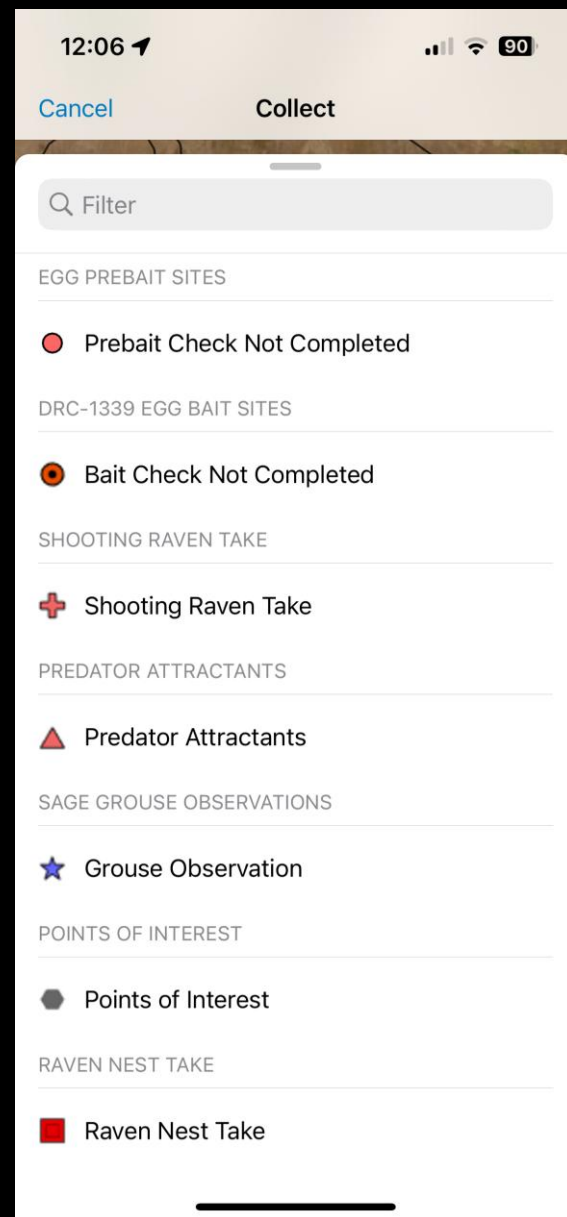
ESRI Field Maps app
Mobile real time data entry

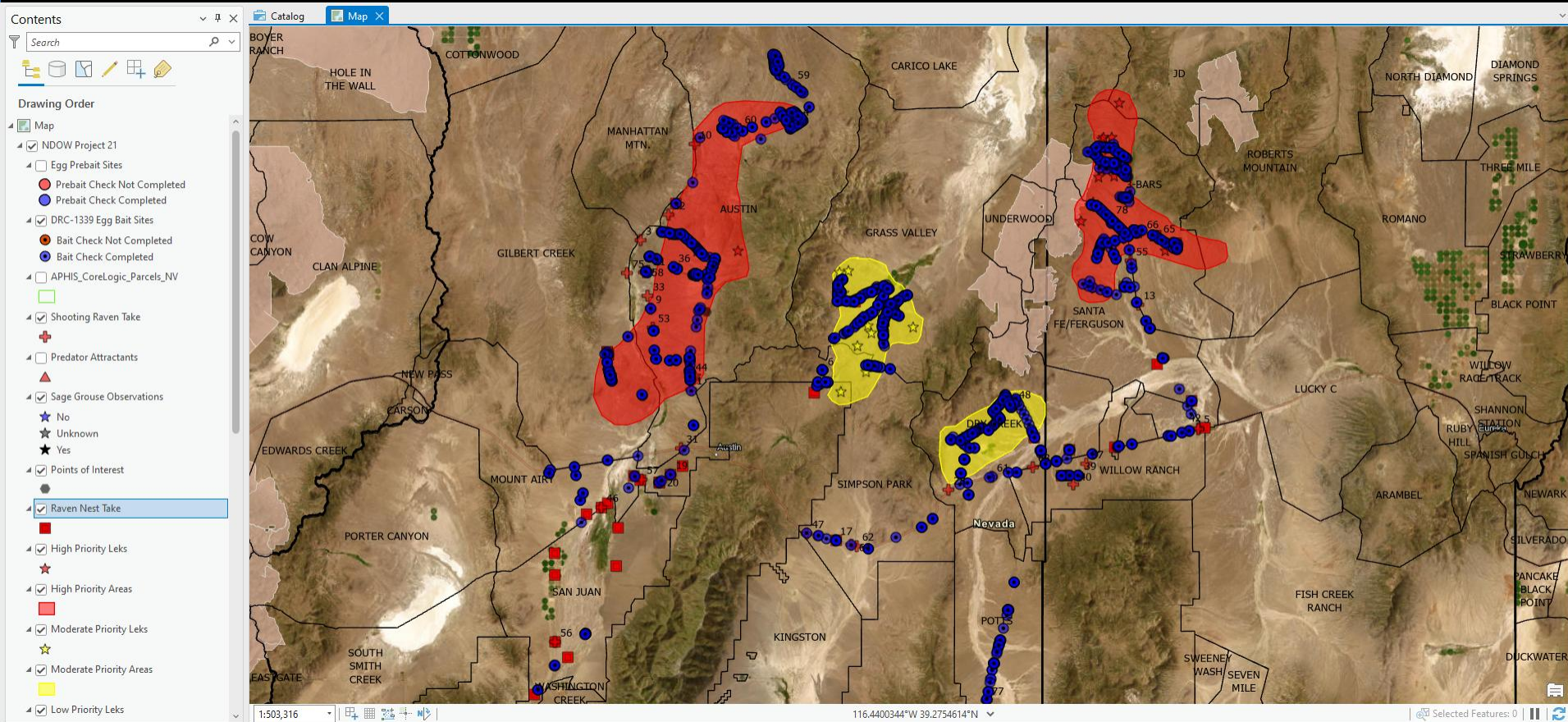
Avoid transcription errors

Team communication

Understand land ownership

**Avoid sensitive areas:
WAs/WSAs/ACECs**





Spatial/temporal data capture

Used for real time operational activities and take reporting

Data set available for future research

- **Mid-January to late-May 2026**
- **3 WS staff; 892 hours**

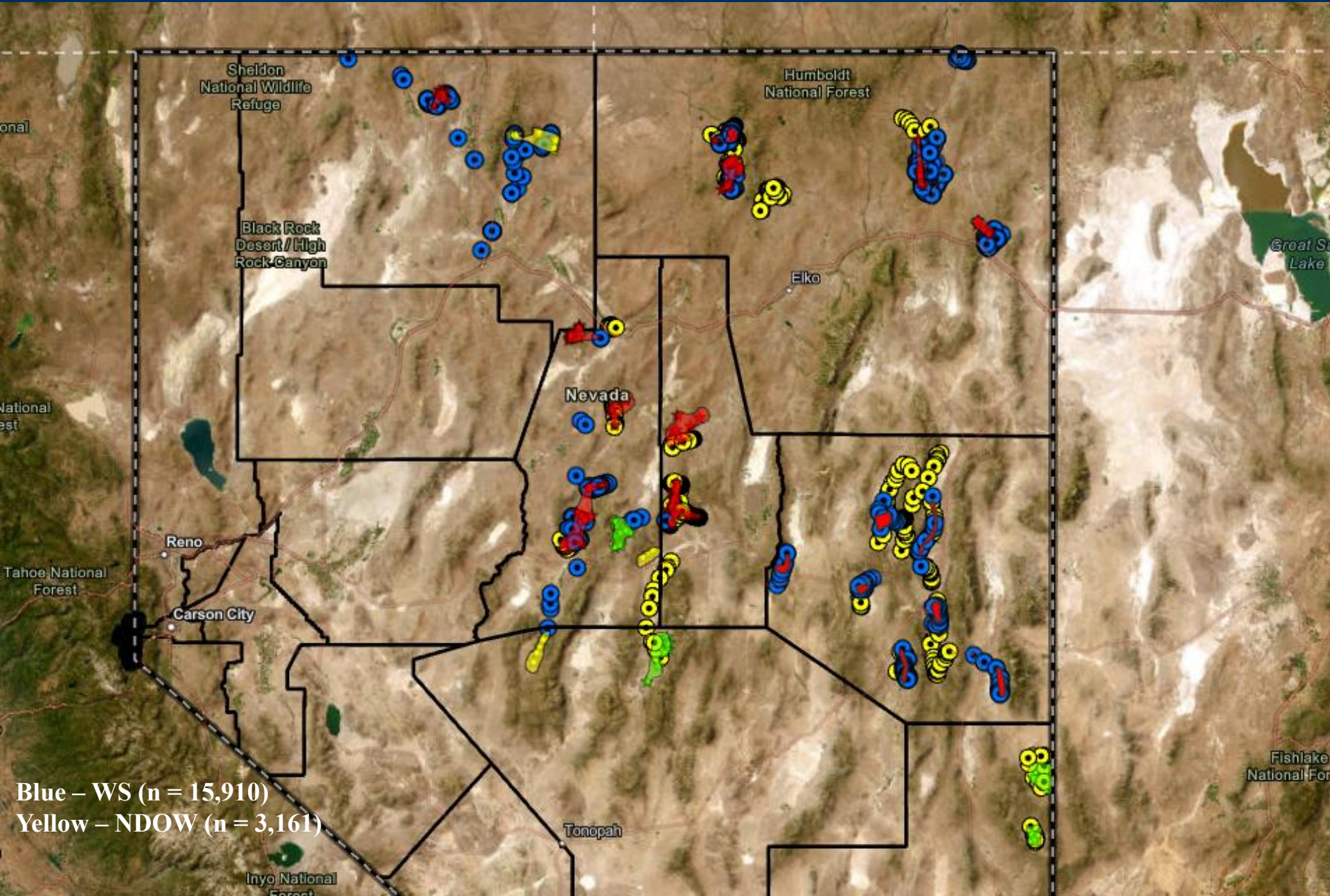
NEW in 2026:

- **NDOW Collaboration – HUGE SUCCESS!**
- **10 NDOW staff assisted in Elko, Lander, Eureka, White Pine, Nye and Lincoln counties**
- **Workforce multiplier!**



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Results – DRC 1339



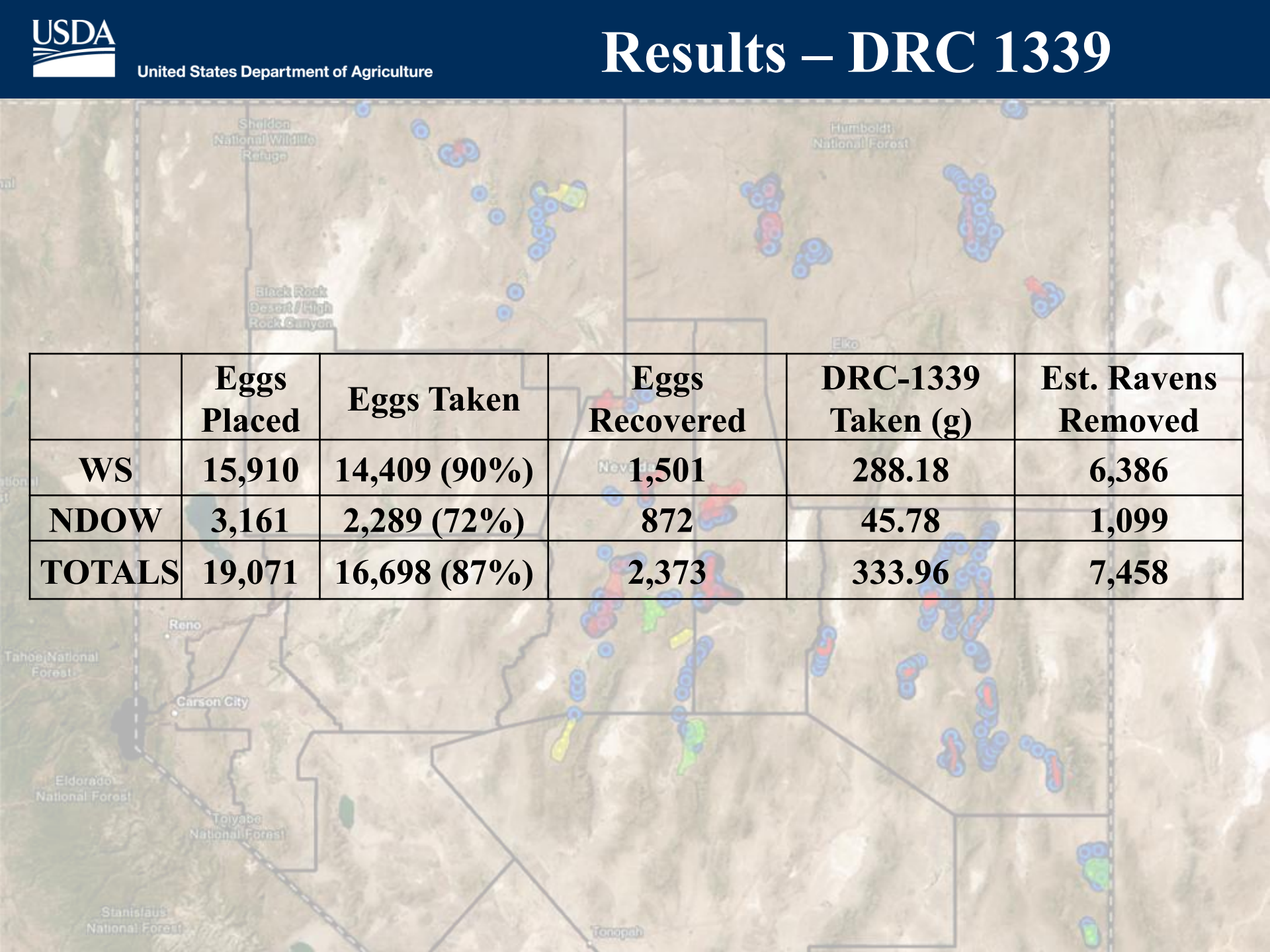
Blue – WS (n = 15,910)

Yellow – NDOW (n = 3,161)



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Results – DRC 1339

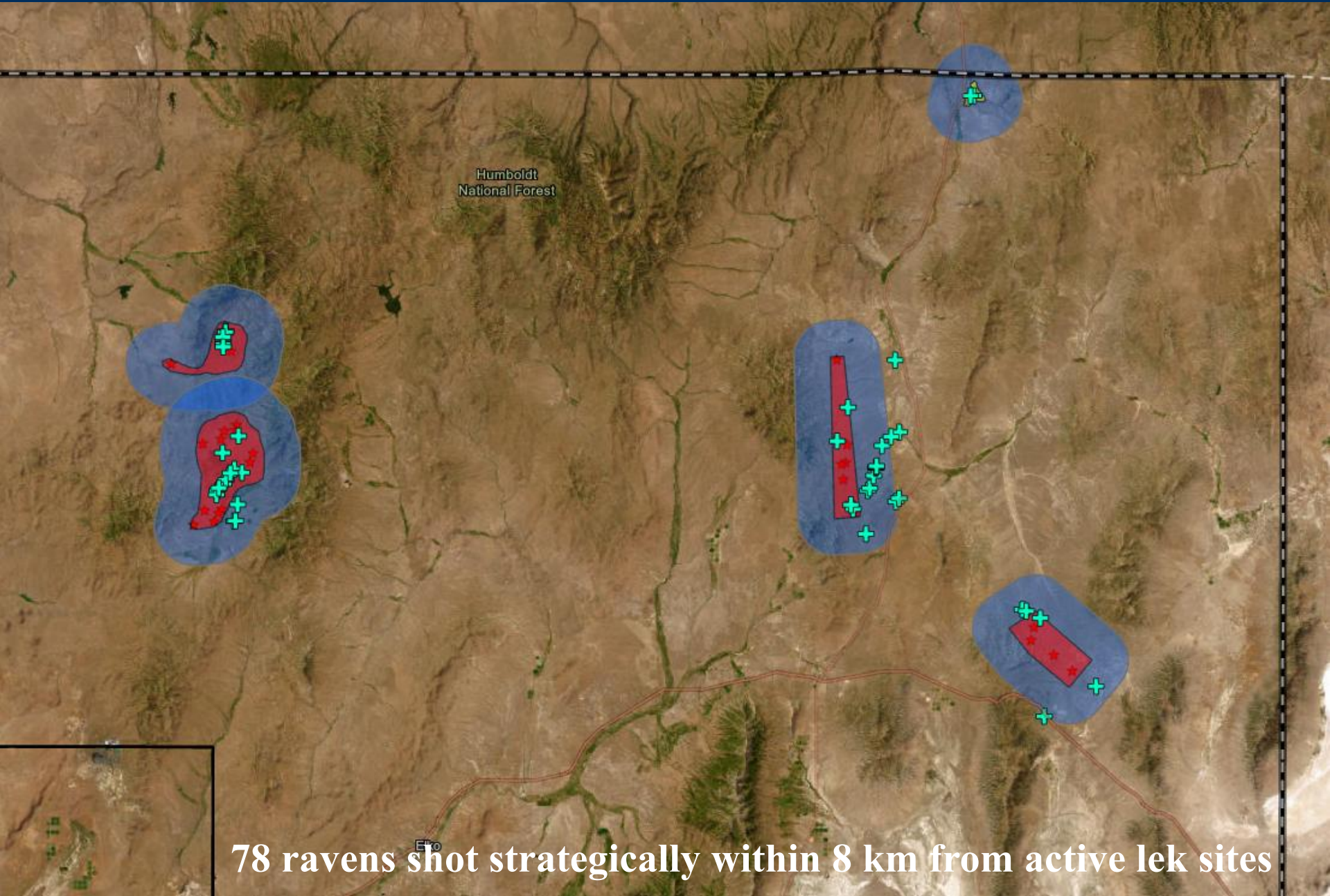
A map of Nevada serves as the background for the table. It shows various geographical features and locations, including Sheldon National Wildlife Refuge, Humboldt National Forest, Black Rock Desert / High Rock Canyon, Elko, Nevada, Reno, Carson City, Tahoe National Forest, Eldorado National Forest, Toiyabe National Forest, Stanislaus National Forest, and Tonopah. Numerous blue and red circular markers are scattered across the map, representing the locations of DRC 1339. The table is overlaid on the map, providing a summary of the data collected from these locations.

	Eggs Placed	Eggs Taken	Eggs Recovered	DRC-1339 Taken (g)	Est. Ravens Removed
WS	15,910	14,409 (90%)	1,501	288.18	6,386
NDOW	3,161	2,289 (72%)	872	45.78	1,099
TOTALS	19,071	16,698 (87%)	2,373	333.96	7,458



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Results – Targeted Shooting



78 ravens shot strategically within 8 km from active lek sites

Tiered Control Strategy



- 1. Winter treatments on unkindnesses**
- 2. Attractant “pods” utilizing calls and decoys**
- 3. Passive treatments within 1-2 miles of active lek sites**

Tier 1 - Unkindness

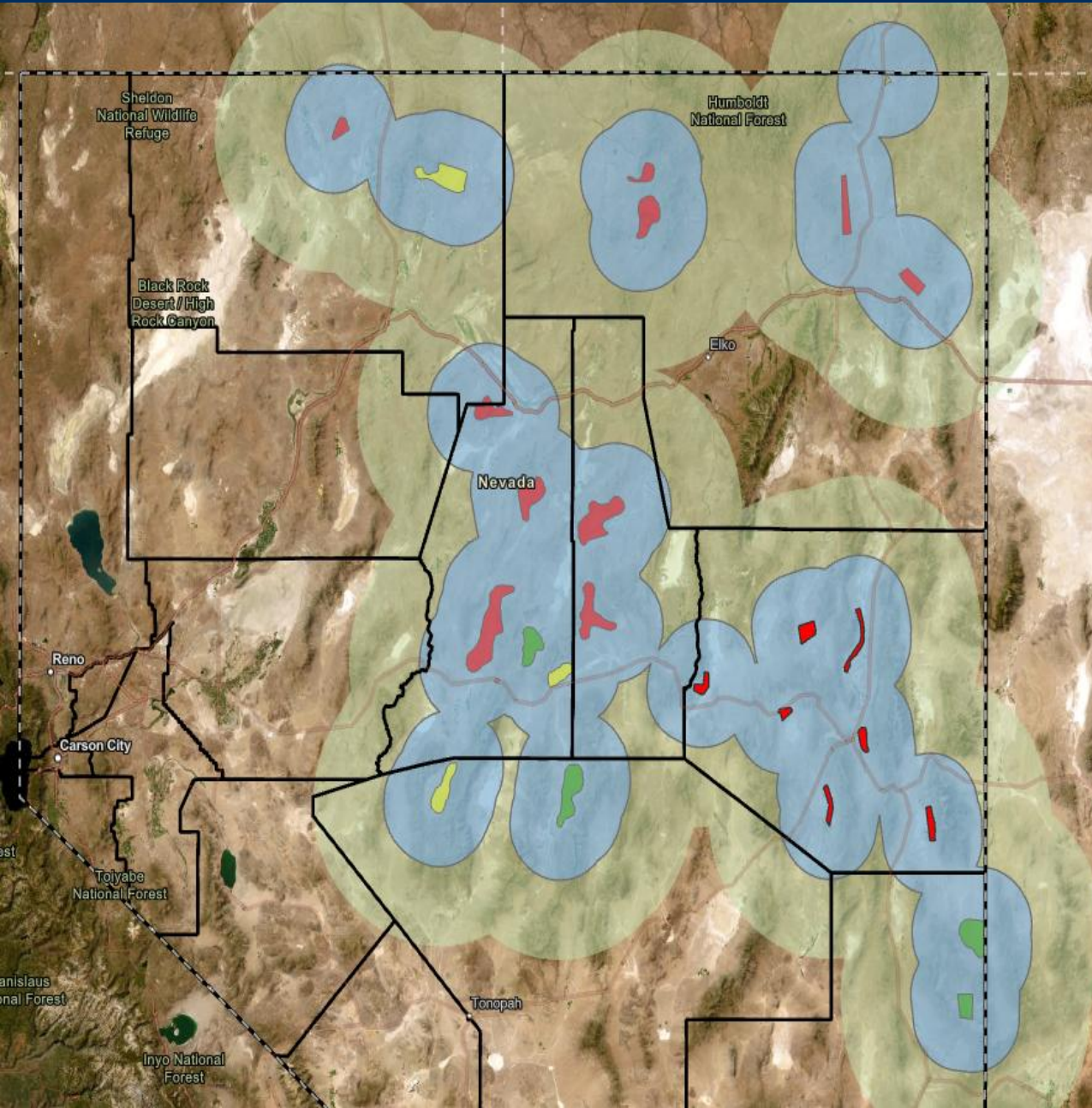


- **Winter months (Dec-Feb) when natural prey base is absent on the range**
- **Target breeders and non-breeders**
- **Landfills, dairies, agricultural areas, etc.**
- **Private/State/County-owned land preferable**



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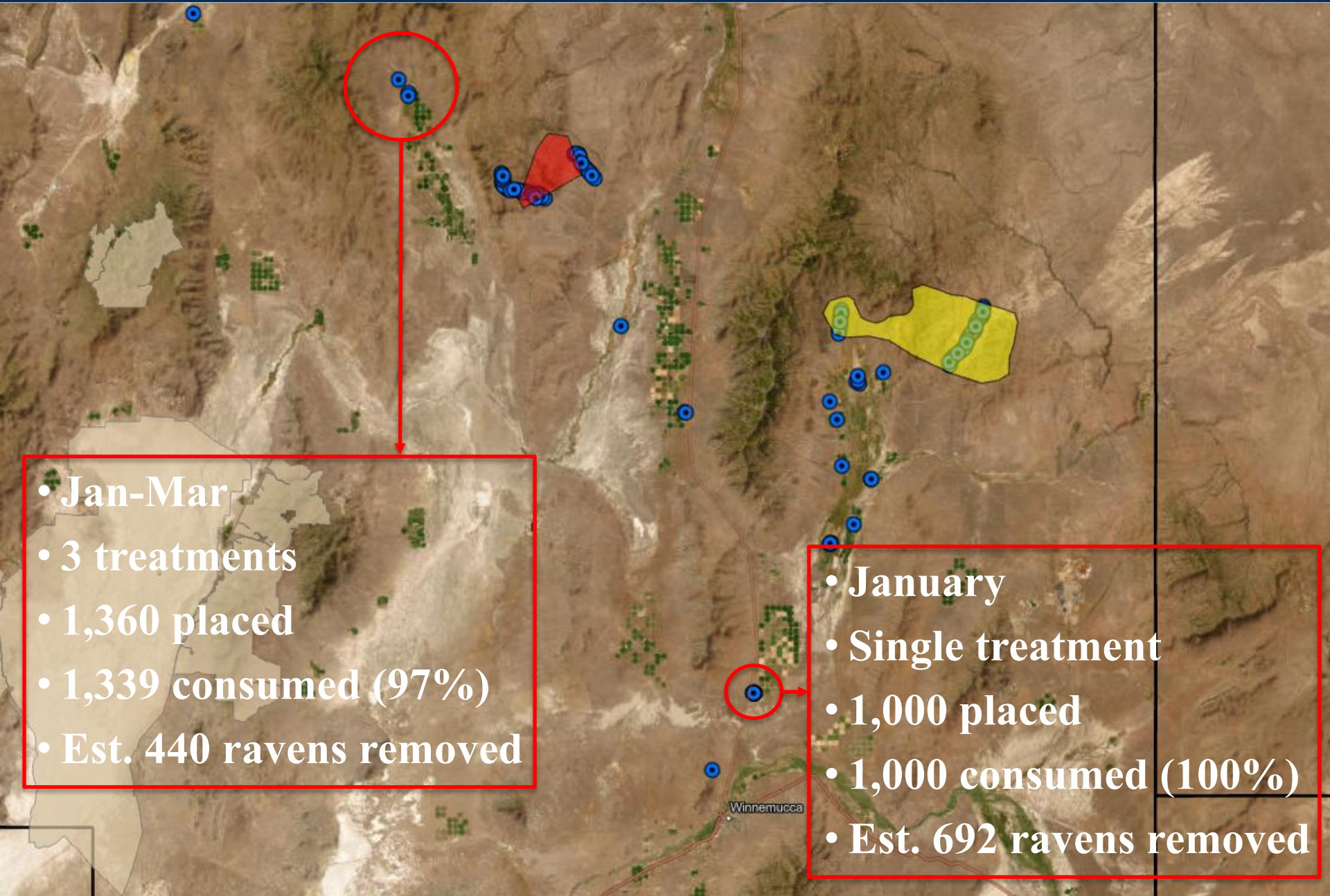
Tier 1 - Draft Criteria



1. Raven abundance
2. Distance to priority leks
3. Access
4. Available resources

Blue buffer = 20 mi
Green buffer = 50 mi

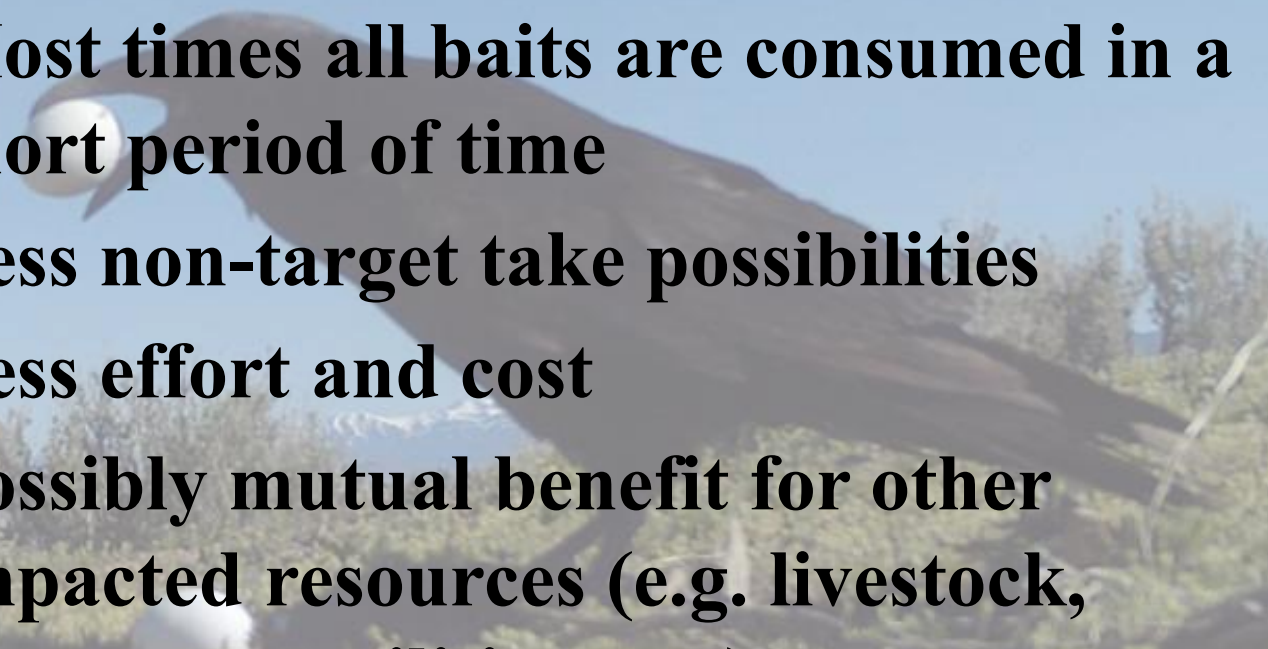
Tier 1 - 2026 Trials



- Jan-Mar
- 3 treatments
- 1,360 placed
- 1,339 consumed (97%)
- Est. 440 ravens removed

- January
- Single treatment
- 1,000 placed
- 1,000 consumed (100%)
- Est. 692 ravens removed

Tier 1 - Benefits

- 
- 1. Ravens are normally in a foraging behavior**
 - 2. Possibly minimizes egg caching**
 - 3. Most times all baits are consumed in a short period of time**
 - 4. Less non-target take possibilities**
 - 5. Less effort and cost**
 - 6. Possibly mutual benefit for other impacted resources (e.g. livestock, structures, utilities, etc.)**

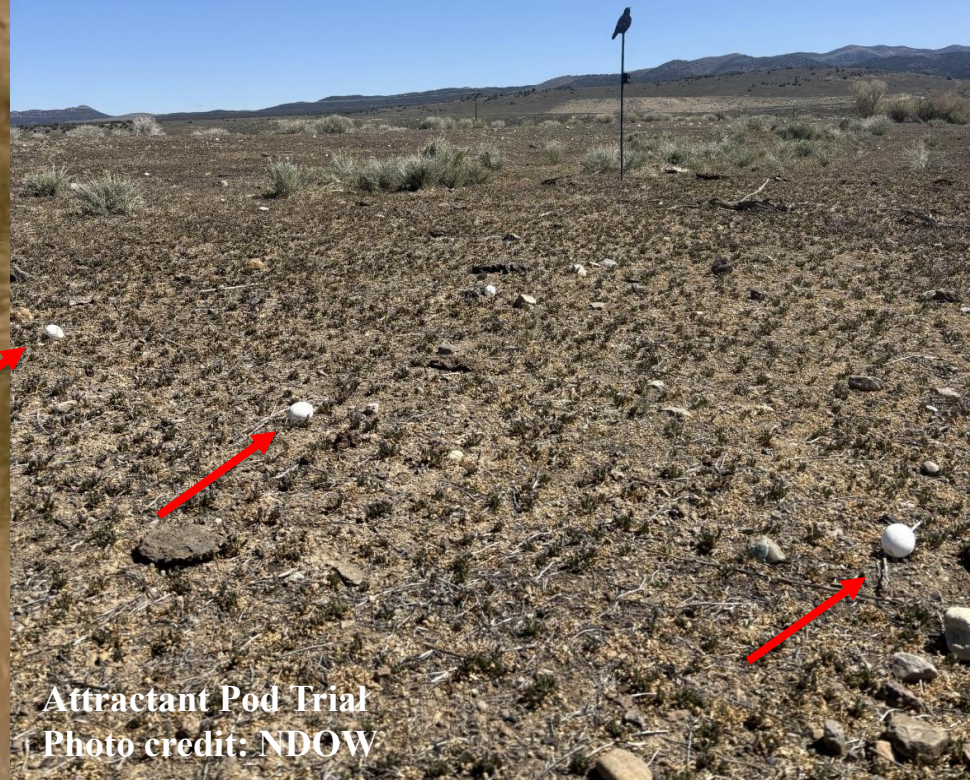
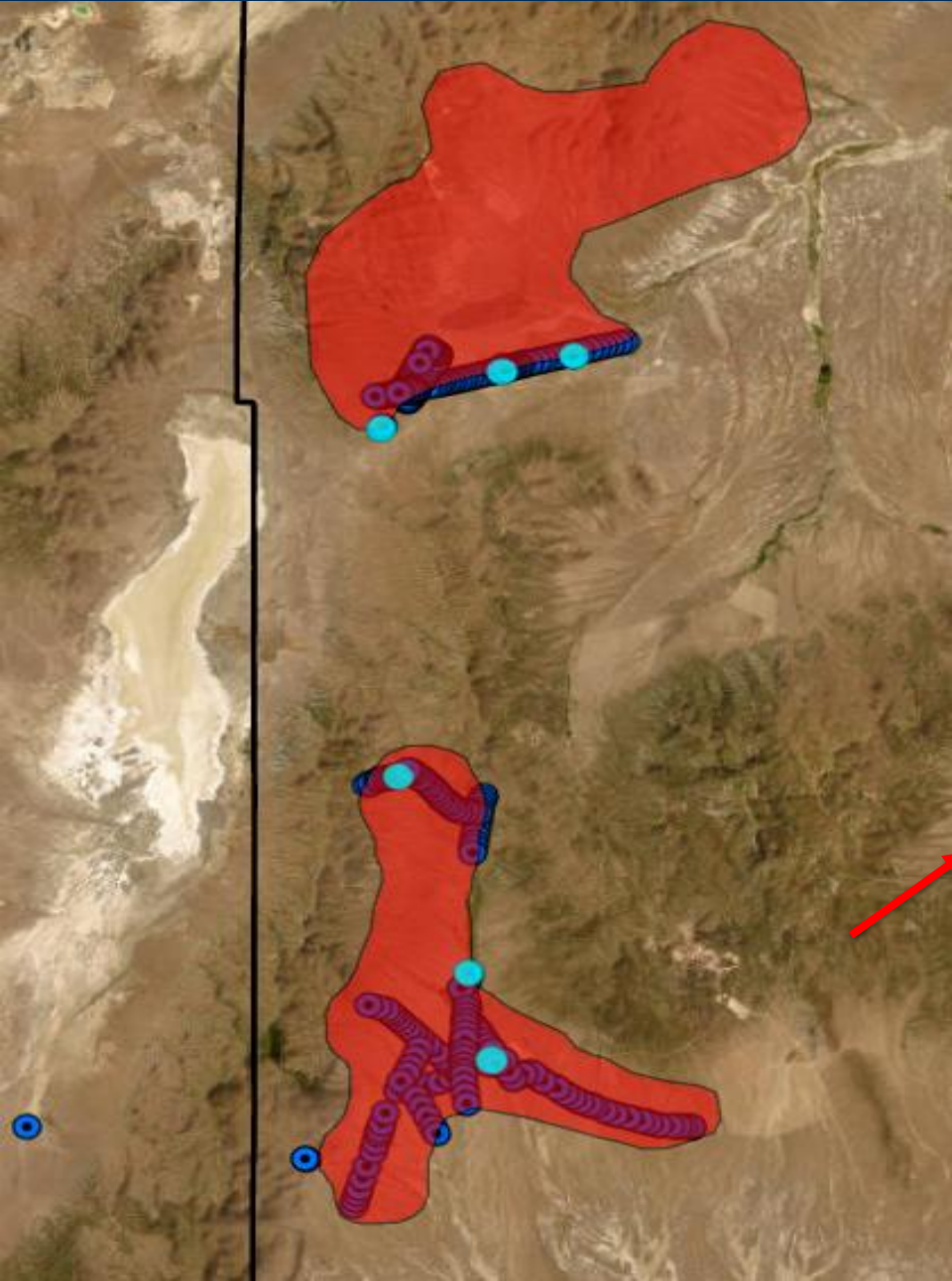
Tier 2 – Attractant Pods



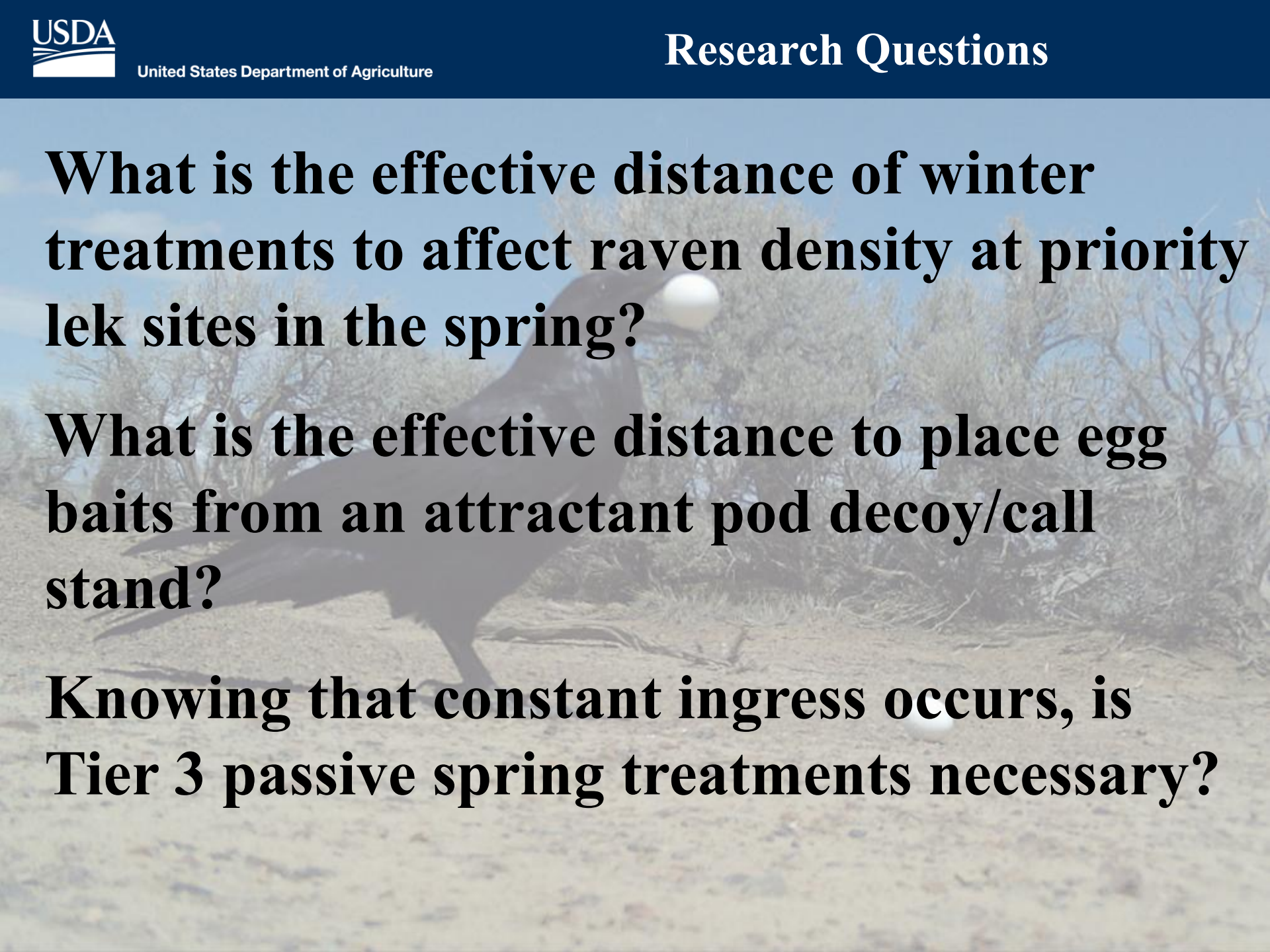
- **Call + decoy = point of focus**
- **Egg bait sites within 30m-50m**
- **Increase bait uptake in a shorter period of time**
- **Decrease non-target take**

Tier 2 - 2026 Trials

- April
- 7 pod treatments (NDOW staff)
- 285 placed
- 283 consumed (99%)
- Uptake within 3 days (most within 2 days)



Attractant Pod Trial
Photo credit: NDOW



What is the effective distance of winter treatments to affect raven density at priority lek sites in the spring?

What is the effective distance to place egg baits from an attractant pod decoy/call stand?

Knowing that constant ingress occurs, is Tier 3 passive spring treatments necessary?



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Questions?



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