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## WILDLIFE SURVEYS

*drones • environmental • engineering • water | soil | air • remediation • gis*



## 2DOT'S WILDLIFE SERVICES:

- Threatened and Endangered Species (TES) Surveys
- Baseline, Environmental, and Habitat Mapping
- Wildlife Monitoring Plans
- Avian/Bat Mortality and Carcass Surveys
- Acoustic Bat Surveys
- Nest Surveys
- Greater Sage-Grouse Surveys
- Carnivore Surveys
- Migratory Bird and Raptor Surveys
- Wildlife Collection Permit Application
- Pre/post-construction Wildlife Monitoring
- Avian and Bat Mist Netting and Banding
- Diurnal/Nocturnal Amphibian and Reptile Surveys
- Avian Point Count Surveys
- Aquatic Species Surveys
- Small Mammal Trapping

## WILDLIFE SURVEYS

2DOT's biologists are experts in wildlife surveys and are cross trained in many other valuable disciplines that allow staff to perform multiple tasks in one field visit (i.e. a raptor survey and stormwater inspection). This represents 2DOT's dedication to time management, efficiency, and our clients' budget.

## EXPERIENCE

- Permit holder: Section 10(a)(1)(A) recovery permit by the US Fish and Wildlife Service (FWS) to legally and purposefully take Preble's meadow jumping mouse (*Zapus hudsonius preblei*)
- 2DOT is qualified to perform presence/absence surveys to assess the potential of black footed ferrets. 2DOT assisted the WYGF, BLM, and FWS with trapping efforts near the Shirley Mountains in Natrona County, WY and demonstrated proper survey protocol techniques and identification of the species.
- Guidance on state and federal threatened and endangered species rules/guidelines
- Burrowing owl surveys, passive displacement, relocation, and monitoring



- Migratory bird - seasonal timing limitations for all disturbance activities
- Migratory bird nest management, deterrents, depredation permits, and nest monitoring
- Greater sage-grouse surveys and Density Disturbance Calculation Tool (DDCT) analyses and Lesser prairie chicken surveys and Southern Great Plains Crucial Habitat Assessment Tool (CHAT)
- Desktop studies for special status plant and wildlife species, big game habitat, and conservation areas
- Environmental permitting requirements by federal, state, and county agencies
- Project oversight on development, permitting, planning, project costs, and post-construction monitoring requirements
- Construction monitoring and recommendations to avoid and/or mitigate potential environmental impacts to the project area
- Plans of development to comply with statutory set-backs

## Working Relationships With:

- Bureau of Land Management
- Bureau of Reclamation
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Farm Service Agency
- U.S. Army Corps of Engineers
- Colorado Parks and Wildlife
- Wyoming Game and Fish Department
- State Historic Preservation Office
- Local and County Governments



## Qualifications:

- 2DOT biologists have over 100 years of combined wildlife experience and all have a minimum of a 4-year degree from an accredited university in the environmental field
- Certified Wildlife Biologists (CWB) from The Wildlife Society
- Expertise in Federal, State, and County Permitting & Regulations
- Section 10(a)(1)(A) USFWS Scientific Collection Permit
- Mexican Spotted Owl Survey Certification
- Yellow-billed Cuckoo Survey Certification
- Lesser Prairie Chicken Surveys (CPW Training)
- Lesser Prairie Chicken Habitat Analyses (CHAT) Training
- Greater Sage-Grouse DDCT Training (WY Game and Fish)

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## MIGRATORY BIRD MANAGEMENT

Migratory Bird Treaty Act  
Burrowing Owl Relocation  
Nest Removal and Deterrents

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## Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act of 1918 (MBTA) is a United States federal law, first enacted in 1916 to implement the convention for the protection of migratory birds between the United States and Great Britain (acting on behalf of Canada), in response to the extinction or near-extinction of a number of bird species, many of which were hunted either for sport or for their feathers. The MBTA makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts (feathers), nests, or eggs of such a bird except under the terms of a valid Federal permit or exemption. Over 800 species are currently on the list.

The U.S. Fish and Wildlife Service issues permits for otherwise prohibited activities under the act. These include permits for taxidermy, falconry, propagation, scientific and educational use, and depredation.

### Minimizing Impacts to Migratory Birds

#### Raptors of the west

- Typical mating and nesting season from early February to April through July
- Nesting period: 30-70 days
- Incubation: 28-36 days
- Fledging expected 40-50 days after eggs hatch



#### Common songbirds of the west

- Typical mating and nesting season from late February to late August
- Nesting Period: 28-35 days
- Incubation: 12-15 days
- Fledging expected 12-15 days after eggs hatch

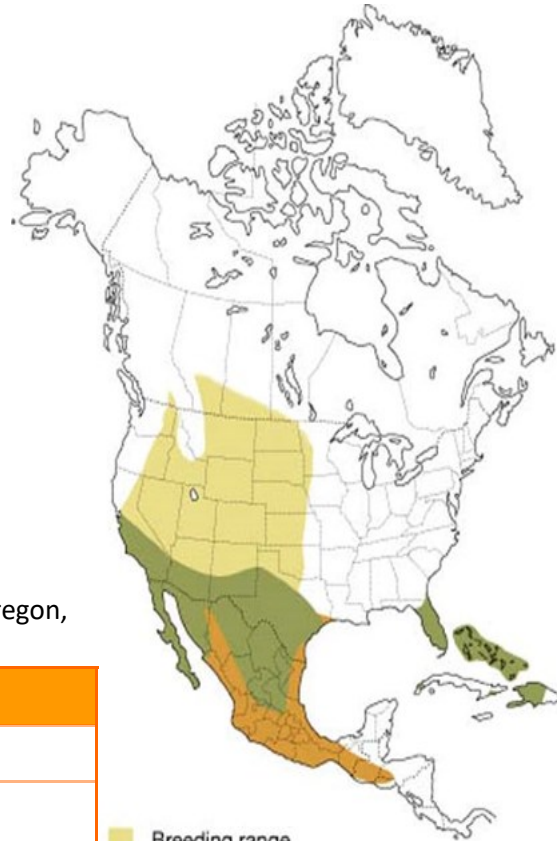
## A Successful Approach to Managing Migratory Birds

- If an active MBTA species nest is discovered on site:
  - Development employs best management practices to minimize disturbance, monitoring occurs
  - Development waits for seasonal and/or spatial restriction period to end, or until young fledge the nest
- If an inactive MBTA species nest is discovered on site:
  - Use of nest deterrents prior to a nest becoming active
  - Removal and destruction of nest in accordance with USFWS guidance & destruction/relocation of migratory bird nest contents (for inactive nests).
- Federal Migratory Bird Depredation Permit and the "M" Opinion (for active nests).





# Burrowing Owl (*Athene cunicularia*)



Breeding range  
 Year-round range  
 Nonbreeding range

## Conservation Status:

- Federally protected under the Migratory Bird Treaty Act
- Endangered in Minnesota
- Threatened in Colorado
- U. S. Fish and Wildlife Service (USFWS) Bird of Conservation Concern
- Species of Concern in Arizona, California, Florida, Montana, Oklahoma, Oregon, Utah, Washington, and Wyoming

## Seasonal Timing Restrictions

Colorado	Wyoming
<ul style="list-style-type: none"> <li>• March 15– August 31</li> <li>• No human encroachment or surface disturbance within 660 ft of the nest/ burrow (1320 ft for large industrial disturbances)</li> </ul>	<ul style="list-style-type: none"> <li>• April 1– September 15</li> <li>• No human encroachment or surface disturbance within 0.25 mile of the nest/burrow</li> </ul>

## Nesting and Habitat

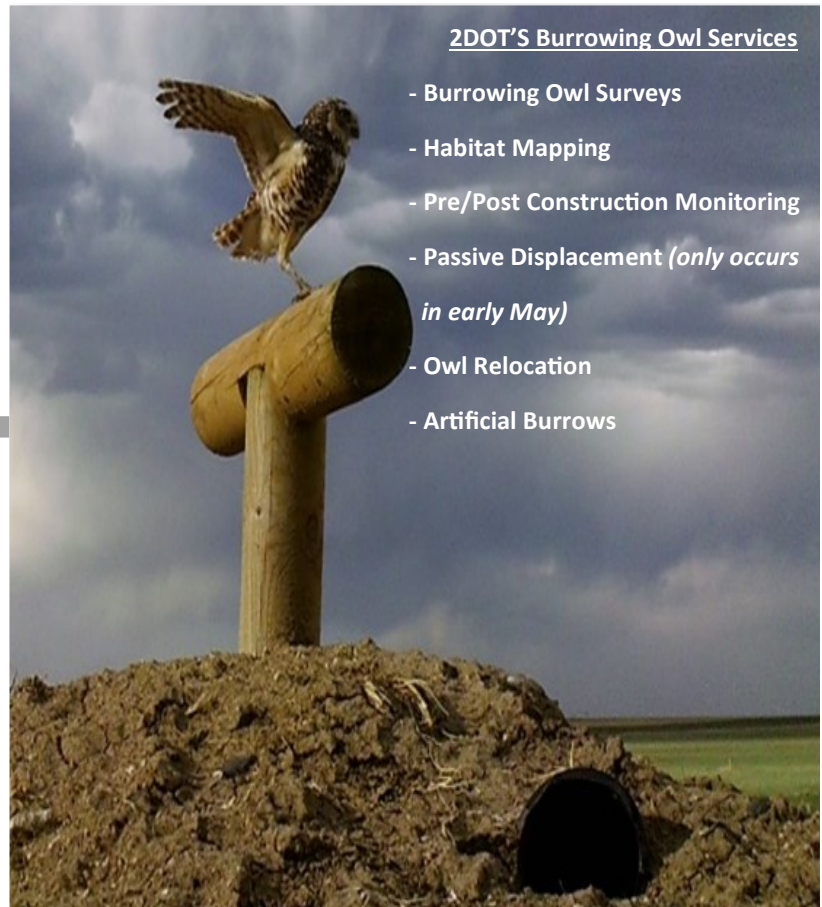
Burrowing owls migrate to Colorado and Wyoming during March and April and lay eggs during the summer. They live in dry, open grasslands, nesting and roosting in burrows excavated by other animals, such as prairie dogs.

## A Successful Approach to Relocating Burrowing Owls

- Conduct initial surveys and confirm active burrows
- Coordination with federal and state agencies
- Verify no eggs/owlets present
- Construct artificial burrows (called the *hoo hoo* hotel)
- Set passive displacement traps in existing burrows
- Observe and confirm owls have left the area for 72 hours
- Monitor artificial burrows with game cameras

## 2DOT'S Burrowing Owl Services

- Burrowing Owl Surveys
- Habitat Mapping
- Pre/Post Construction Monitoring
- Passive Displacement (*only occurs in early May*)
- Owl Relocation
- Artificial Burrows



# NEST REMOVAL AND DETERRENTS



## Steps for Successful Nest Removal

- Conduct surveys to determine the status of the nest. The nest should remain inactive for all three surveys
- Once determined inactive, the nest can be removed and destroyed in accordance with the Migratory Bird Treaty Act (MBTA)
- Preventative measures are then taken to deter activity and nesting
- Visual deterrents and physical barriers prevent birds from establishing residence near development during seasonal restrictions



## Nest Deterrent Options

- Bird netting
- Bird spikes
- Flash tape
- Decoys
- Scare diverters
- Holographic gel

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## WETLANDS AND 404 PERMITTING

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## 2DOT's Wetlands and 404 Permitting Services:

- Clean Water Act Section 404 Permitting
- United States Army Corps of Engineers (USACE) Coordination
- Delineations of Waters of the United States (WOTUS)
- WOTUS Jurisdictional Determination Requests
- Permitting Strategy Development
- Nationwide Permit (NWP) Pre-construction Notifications
- Individual (Standard) Permit Applications
- Mitigation Planning and Implementation





**Regulatory** — 2DOT's regulatory specialists maintain a strong understanding of the USACE NWP program, rules on permit processing, definitions of waters of the U.S., and other aspects of the 404 program. Our understanding of NWP terms and conditions help us to advise our clients in project approaches that can best minimize permitting hurdles and even help to avoid impacts to waters of the U.S.



### Delineation of WOTUS

2DOT's biologists are expert wetland delineators. Our years of experience delineating wetlands and conducting vegetation surveys throughout the western U.S. provide us with the skills necessary to accurately delineate all types of wetlands, ensuring that your project will not be held up due to unanticipated USACE intervention. We have also delineated non-wetland waters of the U.S., from arroyos to ditches and urban stormwater management systems.

### USACE Coordination & Permit Processing

Our in-depth knowledge of Section 404 permitting helps us to work well with USACE staff, which can also allow NWP verifications to be processed quickly. We can “clean up” complicated permitting negotiations started by less experienced regulatory specialists.

### Mitigation Planning and Implementation

Our staff have designed and constructed numerous wetland and riparian mitigation projects in the west. 2DOT's staff is skilled and experienced at mitigation design, grading design, seeding, container stock design & procurement, soil amendments, logistics, construction management & supervision, and long-term vegetation monitoring.





## Wetland and 404 Permitting Experience:

- On-call contractor for delineations of WOTUS and 404 permitting requirements for CO, UT, and WY projects
- Federal Emergency Management Agency (FEMA) stream restoration project located near Estes Park, CO
- 35-mile pipeline project located in Casper, WY
- Pipeline removal project located near Kiowa, CO
- Reservoir restoration project located near Pinedale, WY
- WOTUS investigation and determination for proposed energy development in the Piceance and Uintah Basin, UT

## Qualifications:

- Wetland Training Institute 40-hour Wetland Delineation Training Certificate
- Soil Scientist Society of America Hydric Soils Workshop
- BLM Uintah Basin Rare Plant Surveyor Training
- Association of State Wetland Managers Active Member



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## NOXIOUS & INVASIVE WEED MANAGEMENT

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## 2DOT BACKGROUND

2DOT staff have experience in botany, rangeland management, noxious and invasive weed surveys, weed management plans, and herbicide application. With more than 15 years of experience conducting a variety of biological and natural resource investigations, 2DOT has served every habitat of the Rocky Mountain Region.

2DOT specializes in vegetation monitoring, native revegetation and reclamation planning, and on-site consulting and supervision for implementation throughout Colorado, Montana, Utah, and Wyoming.

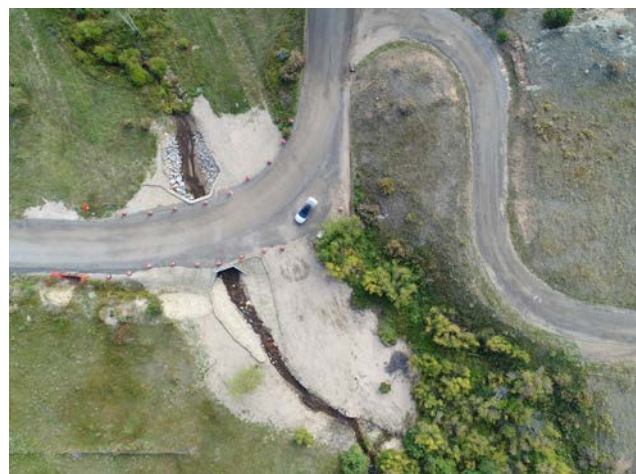
## WEED MANAGEMENT SERVICES

### Surveying and Mapping Noxious Weeds

2DOT staff have experience using state or federal protocols for noxious plant surveys and mapping. We use the most up to date data and information to optimize our field survey time. 2DOT is also trained and licensed to conduct weed mapping via drone, saving our clients time and money.

### Weed Management Plans

2DOT has created weed management plans for a variety of markets: renewable energy, oil and gas, municipalities, public utility operations, and private landowners.



### Chemical and Mechanical Treatment

2DOT is licensed in Colorado and Wyoming to treat noxious weeds via chemical and mechanical methods. 2DOT regularly provides treatment options to clients in need of quick and effective solutions.

### Reclamation and Follow Up

Through proper treatment, planning, and follow-up, 2DOT's ultimate goal is successful revegetation of native species for regulatory compliance and closure of permits.





# Drones: Utilized to Collect, Analyze, and Share Data For Better Weed Management

2DOT's UAV aerial imagery service has no minimum altitude, allowing aerial oblique or directly vertical perspectives that can satisfy most, if not all, imagery needs. Drones offer a cost and time effective solution compared to traditional field surveys.

2DOT uses its UAV imagery to provide orthorectified, high resolution imagery, and 20+ megapixel stills. UAV imagery integrated with GIS analysis can provide percent coverage, volume, and area calculations, as well as georeferenced 2D maps and 3D models.



## 2DOT Drone and GIS Services

- Noxious Weed Mapping and Surveys
- Land-use/Land cover/Vegetation Mapping
- Aerial Imagery (high resolution)
- Reclamation monitoring: Pre/Post-Disturbance
- Native Revegetation/Reclamation Planning
- Production Maps/Figures/Deliverables

### Drone Qualifications:

- Commercial Remote Pilot Small Unmanned Aircraft System (UAS)
- 4K and 20-megapixel capable commercial UAV
- General liability insurance up to \$1,000,000
- Geospatial Information Systems Professionals

## Project Experience:

- Municipal Open Space Management
- Commercial and Residential Development
- Land Development and Site Assessment
- Energy Development
- Renewable Development
- Transmission and Pipelines
- Stream Restoration/Embankment
- Restoration/Remediation



## Weed Management Qualifications:

2DOT staff are licensed Qualified Supervisor (QS) and Certified Operator (CO) applicators with years of experience in Colorado and possess seven endorsements from the Colorado Department of Agriculture (CDA) listed in the Special Requirements:

- |  |                                 |
|--|---------------------------------|
| • 103 – Agricultural Weed Control                | • 106 – Forest Pest Control     |
| • 107 – Rangeland Pest Control                   | • 108 – Aquatic Pest Control    |
| • 109 – Industrial and Right-Of-Way Weed Control | • 206 – Turf Pest Control       |
|  | • 207 – Ornamental Pest Control |

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