

OREGON'S WILD TURKEY MANAGEMENT PLAN 2004



Oregon Department of Fish and Wildlife



**3406 Cherry Ave. NE
Salem, OR 97303
(503) 947-6000**

Lindsay A. Ball, Director

EXECUTIVE SUMMARY

Oregon currently supports populations of Rio Grande and Merriam's wild turkeys. Rio Grande turkeys are most numerous and widespread throughout the state. More than 9,600 Rio Grande turkeys have been released during 584 releases in Oregon since 1975. The initial releases of Merriam's turkeys in 1961 resulted in establishing a remnant population of Merriam's turkeys along the east-slope of Mt. Hood and natural immigration of turkeys from Idaho has established Merriam's flocks along the eastern border of Oregon.

Transplanting of wild turkeys into areas with suitable habitat has been the key to establishing and expanding populations. This approach has been vital to providing added recreational opportunities to Oregon residents. The current occupied range of wild turkeys in Oregon encompasses approximately 35% of the state, the majority of additional suitable habitat has received stockings of wild turkeys, and future turkey population densities will vary with food and climatic conditions.

Hunting seasons for wild turkey occur both in the spring and fall. Additional opportunities for both spring and fall hunting exist. Spring, youth-only hunts and expanding hunt areas and allowing multiple tags in the fall season are examples of potential future regulation changes. ODFW will closely monitor fall turkey harvest, since it has the most significant impact on populations.

Wild turkeys can cause nuisance or damage problems to landowners in Oregon. During a 2-year period from January 1, 2002 to December 31, 2003 there were 284 turkey-damage complaints filed with ODFW biologists with a combined financial loss of \$25,792. The Department has several alternatives to solve damage problems. Protocol and alternatives for solving turkey damage complaints has been specifically addressed in the ODFW wildlife damage policy.

The trap and transplant program was essential for establishing turkeys across the state and remains the main method for reducing or eliminating turkey damage problems. Prior to the implementation of this plan, ODFW followed interim trap and transplant guidelines. Those guidelines allowed continued trapping of birds from in-state depredation and nuisance complaints and those turkeys could be used to augment existing populations. With the development of this plan, specific protocol has been established for the trap and transplant program.

There is concern about releasing turkeys in some areas of the state because of the potential impacts they may have to native wildlife and plants. There are no data however, that substantiate significant competition between wild turkeys and other wildlife or that turkeys negatively impact plant populations. The Fish and Wildlife Commission has adopted the State Wildlife Integrity rules that establish controls to protect native wildlife and designates wild turkeys as game birds. Wild turkeys have been and will continue to be treated by ODFW as a game bird, including management programs to maintain and promote the species.

Wild turkeys provide significant recreational opportunity and economic benefit to Oregon residents. During the spring 2003 season, 14,152 hunters pursued wild turkeys in Oregon. Using U.S. average hunter expenditures, the 2003 spring turkey season in Oregon generated more than \$11 million dollars. To maintain this important resource, ODFW needs better surveys to determine wild turkey distribution, understand population trends, and continually evaluate harvest goals and strategies. Research data, public input, statistically valid surveys, and adaptive management strategies will guide ODFW's management of wild turkeys in the future.

There are several issues and proposed management strategies outlined in this plan. ODFW recognizes the importance of each issue, will take a proactive management approach to address and resolve issues,

and will use the best available science for making decisions related to management of Oregon's wild turkey resource.

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PURPOSE OF THE PLAN

The mission of the Oregon Department of Fish and Wildlife (ODFW) is to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations. This plan was developed to provide ODFW guidance for appropriately managing Oregon's wild turkeys and to accomplish the department's mission.

As the public becomes more aware of wild turkeys, the demand for recreational use associated with wild turkeys and the public's knowledge about wild turkey populations will undoubtedly increase. To accommodate this demand for recreation and knowledge, ODFW will focus efforts in the following areas:

1. Public involvement: drafts of this plan were developed in cooperation with representatives from the sporting and conservation communities, federal land management agencies, tribal and private landowner representatives and ODFW field personnel. A final draft plan will be available for public comment prior to adoption by the Oregon Fish and Wildlife Commission.
2. Public education and awareness: ODFW will provide information to the public through printed media, presentations, and via the internet to promote public awareness of the wild turkey in Oregon.
3. Establish and maintain viable, widely distributed turkey populations. ODFW will assess statewide habitats and populations, monitor harvest trends, maintain populations in appropriate areas, and establish productive working relationships with land management agencies, conservation and sport hunting organizations, and private landowners.

BACKGROUND

LIFE HISTORY

General Distribution

North America has five recognized wild turkey (*Meleagris gallopavo*) subspecies. Only four are common in the United States, one occurs primarily in Mexico. None were native to Oregon. A second species, the Ocellated wild turkey (*Meleagris ocellata*) occurs in eastern Mexico and Guatemala. The five recognized subspecies are:

1. Florida turkey, *Meleagris gallopavo osceola* - occurs only in Florida.
2. Eastern turkey, *M.g. silvestris* - inhabits the eastern and southern U.S.
3. Rio Grande turkey, *M.g. intermedia* - occurs primarily in Texas, Oklahoma, and Kansas.
4. Merriam's turkey, *M.g. merriami* - scattered throughout the southwest and Intermountain West regions.
5. Gould's turkey, *M.g. mexicana* - occurs in north central Mexico, southeastern Arizona and southwestern New Mexico.

Two of the five subspecies of wild turkey occur in Oregon. The Rio Grande turkey (*M.g. intermedia*) principally occupies riparian areas throughout many areas of the state. The Merriam's turkey (*M.g. merriami*) is typically associated with areas of ponderosa pine (*Pinus ponderosa*) and occurs primarily in north and northeast Oregon.

The current statewide wild turkey population estimate of 25,000 to 30,000 birds, as well as distribution data, is based on incidental field observations from Oregon Department of Fish and Wildlife (ODFW) personnel and hunter survey results. Wild turkey distribution in Oregon currently covers 35% of the state (Figure 1). Turkey distribution within any Oregon county depends on suitable habitat and climatic conditions (particularly annual snow depth). The percent of a county covered by occupied turkey range varies from 0% (e.g. Clatsop and Sherman) to 85% (e.g. Josephine).

Physical Characteristics

The wild turkey is the largest gallinaceous game bird found in Oregon. Like most gallinaceous birds, turkeys are characterized by having 1) strong feet and legs designed for digging and scratching, 2) short rounded wings for brief rapid flight, 3) a short fowl-like beak, 4) ten primary wing feathers, 5) a large crop associated with granivorous and herbivorous feeding behavior, and 6) males and females differ in physical appearance, size, and weight. Both genders have very few feathers on the head and upper part of the neck. In addition, the skin of this area has many small bumps called caruncles. The mature male (gobbler) can have red, white, or blue coloration on their head, while female (hen) head coloration is typically dark brown or grey. The feathers of the breast and upper back are black tipped on the gobblers, but buff colored on the outer edge for hens. Males will normally develop a bony growth (spur) on the backside of the lower leg, while hens typically will not. Additionally, males sprout a tuft of hair-like fibers called a beard from the upper midline of the breast. Beards average between 6 to 12 inches in length on gobblers, shorter on immature males (jakes) and are usually absent on hens. Adult males, with their body fully erect, stand approximately 40 inches tall. Adult females in the same posture are around 30 inches tall. Gobblers weigh 17 to 25 pounds, while adult hens weigh 8 to 12 pounds (Mosby and Handley 1943, Hewitt 1967).

The 5 recognized subspecies can be readily distinguished based upon physical characteristics and by feather coloration on the lower back and tail margins. Oregon's Rio Grande turkeys have tan or buff-colored rump and tail feather tips, while Merriam's have lighter, ashy-white tipped feathers (Beasom and Wilson 1992, Schemnitz and Zeedyk 1992).

Turkeys in Oregon

With human occupation of the U.S., turkey numbers declined drastically due to over-harvest for food and wild game markets. By the turn of the 20th century, 19 of 39 states which once had turkey populations no longer contained wild stock.

However, prospects for the wild turkey have brightened considerably in the last several decades. Restoration efforts have been successful through much of the U.S. and it is estimated that 5.6 million turkeys now exist in the lower 48 states and Hawaii. All states, except Alaska, now manage wild turkey populations.

Oregon's experience with turkeys dates to 1899 when private individuals made releases in southern Oregon. None of the early attempts were successful at establishing sustaining populations. Between 1926 and 1933, the Oregon Game Commission raised and released 1,504 game farm-raised birds (eastern subspecies) in attempts to establish Oregon populations, but discontinued the program due to poor results. Either the turkeys failed to survive or quickly became domesticated (ODFW leaflet). In the late 1950's reports of turkey introduction success in other western states encouraged ODFW to try again. These successes came from live-trapping wild birds and releasing them, with minimal delay, into appropriate habitat.

The modern era of wild turkey management began in Oregon in 1961 when wild-trapped Merriam's stock was obtained from Colorado, Arizona, and New Mexico. Fifty-eight turkeys were received early in 1961 and released at three sites in eastern Oregon. Thirty-eight went to the White River Game Management Area in Wasco County; thirteen were released at Garrison Butte in Jefferson County; and seven turkeys were released on the Wenaha Game Management Area in Wallowa County. The most encouraging response was recorded at White River where 14 of 26 released hens were seen with broods the first year. Small populations also became established near the Wallowa and Jefferson County release sites (ODFW leaflet).

In the following years Merriam's were trapped from initial transplant sites or imported from other states (Montana and Nebraska) and liberated elsewhere in eastern Oregon with encouraging results. From 1961 through 1985, the Department released 295 Merriam's turkeys into 18 sites on 22 occasions.

Aside from the unsuccessful attempts in the 1920's and 30's using game farm turkeys, little effort was expended to establish the eastern subspecies in Oregon. A small flock of wild-trapped eastern turkeys was imported in 1967 from Tennessee and released in the Rogue River Canyon near Galice. These birds established for a short time but apparently declined and eventually disappeared.

In 1975, a milestone was reached in Oregon's turkey management with the first release of Rio Grande turkeys. That spring, 20 birds (15 hens and 5 gobblers) were received from northern California and were released in the foothills east of Medford. California had obtained initial stock of the Rio-Grande subspecies from Texas in 1968.

Following successful establishment from the 1975 release, the Department began actively seeking additional Rio Grande turkeys from other states. In 1985, with turkeys well established in several areas of the state, efforts focused on trapping and transplanting from in-state flocks. The Department acquired drop nets and rocket nets to facilitate this intensive trap-transplant program.

From 1975 - 2004, a total of 9,634 Rio Grande turkeys were trapped or imported and released at numerous

locations throughout Oregon (Table 1). A majority of these turkeys (8,272) were captured and moved within Oregon while 1,362 turkeys were transplanted from other states. Since the Rio Grande subspecies has shown to be adaptable to Oregon's wide variety of habitat and climatic types, most stocking activities focused on this subspecies since the mid-1980's. In 1987 Rio Grande turkeys were released in most areas occupied by Merriam's turkeys to supplement populations that had apparently stagnated.

ODFW currently estimates a statewide population of approximately 25,000 - 27,000 Rio Grande and 2,000 - 3,000 Merriam's/Rio hybrids. The current occupied range of wild turkeys in Oregon encompasses approximately 35% of the state and turkeys occur in nearly all counties (Figure 1).

HABITAT REQUIREMENTS

General

Wild turkeys are habitat generalists (Lewis 1992), adaptable to a variety of environmental and habitat conditions (Dickson et al. 1978). Optimum wild turkey habitat generally has a large variety of habitat types, successional stages, and plant species within their range. Seasonal wild turkey habitat use varies considerably, especially during the fall and winter as food availability fluctuates. Diverse habitats provide a range of habitat conditions within their home range providing for varying seasonal life history requirements, and provide a variety of food sources that are less susceptible to complete failure during years of overall poor natural food production.

Merriam's

A mixture of oak, pine and other conifers, with a diversity of habitats including open meadows, wet areas and dense pole stands for nesting characterize habitat in Oregon where Merriam's turkeys have been most successful. Merriam's wild turkeys will use south-facing slopes of ponderosa pine and oak stands during productive mast years. In years of substantial snowfall, birds may move to juniper or similar habitat. These areas consistently provide a good source of grasses, seeds, and berries (Hoffman 1993). However, use is still dependent upon the presence of ponderosa pine for roosting.

Rio Grande

The Rio Grande turkey is an adaptable bird, which does well in a variety of habitat types. In Oregon, Rio Grande turkeys have survived in areas as diverse as the oak-conifer zones of Douglas County and mixed-conifer habitats of northeastern Oregon. Both areas are substantially different from habitat in the Texas panhandle, where most of Oregon's birds originated.

Although wild turkeys are considered habitat generalists, there are three periods of distinct habitat utilization: nesting, brood rearing/summer, and fall/winter.

Nesting

Nest site locations for wild turkeys are generally chosen based on undergrowth characteristics that provide visual obstruction to conceal the nest and hen but still allow the hen to identify potential predators or other dangers (Holbrook et al. 1987). One side of the nest will often be positioned next to a tree, log, rock, or heavy shrub/grass thicket. The surrounding lateral cover averages at least 18 inches in height and will obscure the nest so that it cannot be easily viewed. Canopy cover immediately over the nest commonly conceals at least 60% of the ground (as viewed from above). The nest site must have brood rearing habitat nearby to allow easy and unrestricted access by poults.

Merriam's

Merriam's wild turkeys nests have been found in a wide variety of habitat types and seral stages, however they are found most often in ponderosa pine, aspen (*Populus spp.*)/fir, spruce (*Picea spp.*)/fir, and oak (*Quercus spp.*)

forest types (Schemnitz et al. 1985, Lockwood 1987, Liedlich et al. 1991). Merriam's nests usually occur on slopes of greater than 30%. In Oregon, Lutz and Crawford (1987a) reported Merriam's nesting habitat as thinned pole-size mixed conifer stands with untreated slash.

Rio Grande

Across most of their range, Rio Grande turkey nests occur in dense grasslands near riparian zones. Cover plants may include little bluestem (*Schizachyrium scoparium*), buffalograss (*Buchloe dactyloides*), grama grasses (*Bouteloua* spp.), Canada wildrye (*Elymus canadensis*), Johnsongrass (*Sorghum halepense*), sand dropseed (*Sporobolus cryptandrus*), sunflower (*Helianthus* spp.), and buffalo gourd (*Cucurbita foetidissima*) (Ransom et al. 1987). In Oregon, Crawford and Keegan (1995) observed Rio Grande nests in 8 of 10 available cover types, but only recent (<10 yr old) clearcuts were used more than expected.

Brood Rearing/Summer

Newly-hatched wild turkey poults require habitat that (1) produces insects, because insects provide the calcium and protein essential for poult growth, (2) permits frequent foraging throughout the day and, (3) provides enough cover to effectively hide, but still allows the hen unobstructed vision for protection from predation (Porter 1992:206). Tree cover should be nearby to allow additional escape avenues, as well as shade and protection from inclement weather. Brood habitat comprises a relatively small area, with weekly home ranges averaging less than 75 acres (30 ha), and total summer home ranges averaging close to 250 acres (100 ha) (Speake et al. 1975, Porter 1980).

Merriam's

Grassy openings in mixed conifer forests, meadows, and aspen glens provide brood habitat for Merriam's. Springs, seeps, and recovering burned areas are also used by broods (Schemnitz et al. 1985). In Oregon, hens with broods commonly used early successional forested stands (young mixed conifer and thinned mixed conifer) (Lutz and Crawford 1987a). Merriam's can utilize a greater portion of forest openings if shrubs or trees are interspersed through the open area, or if herbaceous vegetation height is greater than 15 inches (Hoffman et al. 1993).

Rio Grande

Rio Grande turkey broods use mixed grass-shrub areas between riparian woodlands and adjacent grassland/savannas (DeArment 1959). Bunchgrasses are particularly important, especially for young poults (less than 2 weeks old) that do not yet have flight capability (Beasom and Wilson 1992:317).

Fall/Winter

There are 2 critical components of turkey habitat during the fall and winter: food and roosting cover. Wild turkey habitat utilization shifts from open areas in the fall to more forested habitats during winter (Speake et al. 1975). In areas with snow cover, habitat that protects the turkeys from adverse weather is important, while in more southern climates hardwood stands with high tree diversity, intermixed with softwoods and field edges are used. Each of these habitat types must have adequate, available food resources within close proximity to the roost areas.

Merriam's

In Oregon, Merriam's occur in areas that can be influenced by heavy snow cover. Available roost sites that are protected from the prevailing winds are important, especially used are ravines and small river drainages where the turkeys can roost above the cold-air drainage. If conifers are available in these situations, Merriam's will readily use them.

Rio Grande

In Oregon, Rio Grande hens utilized meadow and pastures, hardwood/conifer woodlands, and hardwood/conifer

savannas more than expected during winter (Crawford and Keegan 1995). These three habitat types accounted for 56% of all diurnal winter locations.

GENERAL HABITS

Movements

Where winter conditions are mild, such as southwestern Oregon, turkeys often spend the entire year within the same general area. In areas with harsher winter conditions, represented by much of eastern Oregon, turkeys may winter at low elevations and move to higher country for breeding, nesting and brood rearing. In spring, flocks begin to break up in preparation for the breeding season. In the case of migratory flocks, gobblers generally begin moving to higher country first and the hens follow later.

Merriam's

In the Mt. Hood area of Oregon, Merriam's exhibited substantial seasonal movements, traveling as much as 40 miles between wintering and summer use areas. Adult hens traveled an average of eight miles between wintering areas and nesting sites. Seasonal home ranges were large and ranged from 857 ac (347 ha) for adult males in winter to 10,410 ac (4,213 ha) for yearling females in spring. Average annual home range size for all sex and age classes was 3,244 ac (1,313 ha). Daily movements ranged from 297 yards/day in summer (adult females) to 804 yards/day in spring (yearling males) (Crawford and Lutz 1984).

Rio Grande

Most of the year Rio Grande turkeys exhibit gregarious and nomadic behavior. In the fall and winter they join together into larger winter flocks to utilize ripening mast in wooded riparian or shrub habitats. During this time they typically range 1-2 mi (1.6-3.2 km). When hens disperse in the spring to nesting habitat they may move 15-20 mi (24-32 km) (Glazener 1967:470, Watts 1969, Thomas et al. 1973). Annual home range sizes in Oregon varied by season for Rio Grande hens ranging from 2,990 – 6,879 ac, (1,210 - 2,784 ha) for adults and from 4,495 – 13,101 ac (1,819 - 5,302 ha) for yearlings (Crawford and Keegan 1995).

Roost Sites

Roost sites are typically tall trees with layered, widely spaced, horizontal branches. These trees also provide food, escape, and resting cover. In areas where natural roost sites are limited, turkeys will utilize man-made structures (utility poles, windmills, house roofs etc.)

Merriam's

Merriam's turkeys show a strong dependency on older age ponderosa pine and Douglas fir forest types for roosting habitat. Merriam's roost sites are typically found on or just below ridgelines. During periods of below freezing temperatures, roost sites are chosen that provide protection from cold winds. Merriam's turkeys will join together in winter flocks and use traditional winter roost areas. Therefore, winter roost areas must be large and consistent from year to year (Boeker and Scott 1969). In the spring, these large flocks tend to break-up into smaller groups for the breeding season. Smaller flocks have a higher capacity for long-range movements, and therefore less need for consistent roosting sites. Summer roost sites are more transitory and depend upon availability and suitability of roost trees. In north central Oregon, mature mixed conifer, ponderosa pine/Douglas-fir/white oak (*Quercus garryana*), and ponderosa pine/white oak habitat types accounted for 75%, 11%, and 11% of all roost site use by Merriam's turkeys, respectively (Lutz and Crawford 1987b). Common roost trees for Merriam's include ponderosa pine, Douglas fir, western white pine (*Pinus monticola*), white fir (*Abies concolor*), cottonwoods and large oaks. In Oregon, Lutz and Crawford (1987b) reported exclusive use of ponderosa pine (62%) and Douglas fir (38%) trees by roosting Merriam's. The number of roost trees per site in their study varied by season and averaged 2.9, 5.4, and 5.7 for spring, winter, and summer roost sites, respectively. A similar trend was observed among roost sites in ponderosa pine stands in Colorado (Hoffman 1968). Roost tree average height varied seasonally in Oregon from 49 – 60 feet (15.2 - 18.5 m), while tree

diameter (at breast height) ranged from 19 – 28 inches (48 - 72 cm) (Lutz and Crawford 1987b).

Rio Grande

Roost trees for Rio Grande turkeys appear to be selected based on height rather than species (Crockett 1973, Hauke 1975). In Oregon, roost habitat by adult Rio Grande flocks did not vary seasonally. Three forested habitat types (dense young conifer, dense mature conifer, and hardwood/conifer woodland) accounted for 88% of all roosts used by adult turkeys. Hens and poult roosted in those same three habitat types 97% of the time (Crawford and Keegan 1995). Adult Rio Grande turkeys in southwest Oregon roosted in 11 species of trees, but >90% of the roost trees were Douglas fir (*Pseudotsuga mezesii*) and ponderosa pine (*Pinus ponderosa*). Hen-poult flocks roosted in 7 tree species with Douglas fir accounting for 70% of total use (Crawford and Keegan 1995). In their analysis of 565 individual roost trees, Crawford and Keegan (1995) reported that characteristics of individual roost trees differed among cover types and social groups. Roost trees used by adults in mature conifer stands averaged 130 feet (40 m) tall, 26 inches (66 cm) DBH (diameter of tree at breast height), and were >150 years old. Adults roosted in smaller trees in dense young conifer and hardwood stands, ranging from 91 – 101 feet (28 - 31 m) tall, 17 – 20 inches (44 - 50 cm) DBH, and 87 - 118 years old. Among all cover types, the average roost tree was 107 feet (33 m) tall, 20 inches (50 cm) DBH, and 106 years old. The number of trees used by adults at each roost site was related to flock size. Hens and poults tended to use a single tree. The mean number of adults and hen-poults per tree was 1.7 and 4 birds, respectively (Crawford and Keegan 1995).

Food Utilization

The wild turkey is omnivorous. Mast is the primary food during fall and winter (Porter 1992:209). Food items include pinyon nuts, oak acorns, juniper berries (*Juniperus spp.*), pine seeds (*Pinus spp.*), skunkbush sumac (*Rhus trilobata*), kinnikinnick berries (*Arctostaphylos uva-ursi*), hawthorn (*Crataegus spp.*), snowberry (*Symphoricarpos spp.*), and wild rose (*Rosa spp.*). During the winter and early spring, wild turkeys feed mostly on herbaceous vegetation and mast, such as juniper and manzanita berries, pine seeds, plant seeds and grasses and green forbs. During the summer and early fall, turkeys feed on grasses, forbs, soft mast (manzanita and juniper) and hard mast (pine seeds and acorns). Insects are important in the summer months, especially for young birds, which depend on this high protein diet for growth and development. For the first week of life, approximately 80% of the poult's diet will consist of insects. Adults will also readily utilize insects when available. Litton (1977) documented annual food utilization of Rio Grande turkeys as 36% grasses, 19% browse, 16% forbs and 29% insects. However, turkey food utilization varies seasonally, annually, and regionally and many variables affect food availability (Bailey and Rinell 1968).

The turkey's cosmopolitan diet is readily illustrated by the success Rio Grande turkeys have had in Oregon. Food plant species vary substantially in areas of the state where turkeys have adapted and the food sources in Oregon are different than in the panhandle of Texas, from which the majority of Oregon's birds originated. No comprehensive food habits analysis has been completed on wild turkeys in Oregon; however, known foods include grasses (both green and seed heads), legumes, and a wide variety of other green vegetable matter. Seeds and flower heads of a variety of plants, grain, acorns, pine nuts, poison oak berries and fruit are all consumed.

A recent article compiled wild turkey food utilization studies across the United States (unpublish. National Wild Turkey Federation report). Food documented in crops, gizzards, stomachs, and fecal samples for all sex-age groups totaled > 45,000 samples and invariably the food utilized was vegetative. Several studies did indicate turkey use of animal matter, but this was almost entirely insects. The article documented 15 occurrences of reptile or amphibians being ingested by wild turkeys (Appendix 4).

Turkeys will readily utilize agricultural crops such as corn, oats, and wheat for winter food (Porter 1977, Little 1980). Utilizing agricultural crops can significantly reduce winter deaths because corn (in particular) is higher in protein, lower in fats, and similar in carbohydrates compared to oak acorns (Crim 1981).

Feeding stations are not effective in reducing winter mortality because birds may have problems finding them, concentrating birds may result in increased mortality from predation and disease, and birds may become dependent upon sites (Stoddard 1963, Hurst 1992:81). Other authors suggest however, that supplemental feeding can be an effective management tool to help reduce winter mortality and the effects of low production resulting from periods of low mast production (Ligon 1946, Gardner and Arner 1968, Billingsley and Arner 1970, Pattee and Beasom 1979). The best success has come from planting and maintaining fields of corn and mast producing shrubs (Porter et al. 1980, Crim 1981, Healy 1981, Clark 1985, Kulowiec and Haufler 1985, Kurzejeski and Lewis 1985). In the higher elevation forest habitats occupied by Merriam's turkeys, seeps can be an important winter source of invertebrates, mast, and succulent vegetation. Since these water sources are not as subject to freezing they can provide a microenvironment that allows foraging throughout the winter (Porter 1992).

POPULATION DYNAMICS

Reproduction and Productivity

Turkeys are polygamous, meaning a single male may breed multiple females. Male turkeys attract hens and establish breeding territories by gobbling and by a spectacular strutting display. Depending on location, gobbling may begin in mid-February and can run through late May. Wild turkeys develop social hierarchies for males and females. Although juvenile males are capable of reproduction, the more dominant mature males accomplish most breeding. Once mating takes place, the hens drift away to begin nesting and egg-laying activities, while the gobbler continues to seek additional hens.

Adult hens typically have a higher nesting rate than do juvenile hens (Vangilder 1992). Nesting hens will lay a clutch of 9 – 12 eggs, and will begin incubation around mid-May (Cook 1972, Lockwood and Sutcliffe 1985). Hatch occurs after a 28-day incubation, and peaks near mid-June (Williams et al. 1971, Healy and Nenko 1985). The proportion of nests that have at least one poult hatch ranges from 30-40%. Of those nests, over 80% of the eggs hatch (Cook 1972, Lockwood and Sutcliffe 1985, Schemnitz et al. 1985, Ransom et al. 1987). When nests fail, hens reneest up to 37% of the time depending on when failure occurred (Schemnitz et al. 1985, Liedlich et al. 1991). Renesting rates are lower for nests lost after incubation than nests lost during laying (Williams and Austin 1988). In Oregon, Lutz and Crawford (1987a) reported moderate to high annual turnover rates (53%), good nesting success among adult hens (83%), and low to moderate poult recruitment (1 hen:5.1 poults).

Turkey poults are precocial; they hatch with a coat of downy feathers, imprint to the first living thing to provide parental care, move around freely within 24 hours of hatching, and will peck at food items while following the hen (Healy 1992). Young birds exhibit most of the adult behavioral characteristics such as feeding, body maintenance and reproductive mannerisms (strut, female crouch, and threat) within the first week of life (Healy 1992).

Poults start learning to fly 4-8 days post-hatch (Williams 1974), are capable of flight within two weeks following hatch, and begin to roost with hens within three weeks. Roosting behavior is important in the reduction of poult predation that may occur during this time (Glidden and Austin 1975, Everett et al. 1980, Speake 1980, Speake et al. 1985, Exum et al. 1987).

The critical period for poult survival is the first two weeks following hatch when the mortality rate can be nearly 70% (Williams and Austin 1988).

Limiting Factors

Life span of turkeys in the wild has been documented at 9-15 years (Mosby and Handley 1943, Ligon 1946, Powell 1965, Cardoza 1995). However, the most probable average life expectancy is less. As with most

gallinaceous birds, turkeys can experience dramatic population fluctuations between years. Annual mortality rates can be 30% to 55%, with most mortality occurring in the first year of life. Annual survival rates for Rio Grande hens ranged from 0.5 - 0.8 in southwest Oregon (Keegan and Crawford 1999) and were higher than documented for Merriam's in northern Oregon (0.6, Crawford and Lutz 1984). Mortality rates decline after the first year of life and remain somewhat stable for older birds. Most juvenile or yearling mortality occurs during the winter. Hen mortality is highest between March and June, which coincides with the peak of nesting and incubation, when hens are most vulnerable.

Weather – Annual weather conditions may be the greatest limitation on Oregon's wild turkey populations. Cold temperatures and rain can decrease survival of newly hatched poults, causing a decline in the annual production. In areas where snow cover influences food availability, winter mortality may cause short-term fluctuations by reducing the breeding population (Wunz and Hayden 1975, Porter et al. 1983, Healy and Powell 1999). Annual fluctuations, however, are most strongly related to variation in hen nesting success and poult survival, which determines recruitment into the population.

Predation - Predation can be a significant source of mortality for wild turkeys (Vangilder 1992:155, Roberts et al. 1995, Vangilder and Kurzejeski 1995). Mountain lions, bobcats, bears, hawks, owls, and eagles will actively pursue adult, juvenile, and newly hatched turkeys. Nest predators include coyotes, foxes, raccoons, skunks, snakes, ravens and crows. Physiological and behavioral adaptations to minimize the effects of predation include large clutch sizes, large body size, flocking behavior, and night roosting in trees (Miller and Leopold 1992:126-127). In quality habitat, turkeys can withstand predation and even flourish. However, predation may have a significant influence on local turkey populations when (1) populations are low (especially during introductions); (2) nesting cover is poor; (3) inadequate food and/or water force turkeys into unfavorable habitat; (4) other prey species are less available; (5) birds are exposed to severe weather for prolonged periods of time; and/or (6) predator populations are abnormally high (Glazener 1967, Markley 1967, Miller and Leopold 1992:127).

Disease and Parasites -Turkeys are subject to a number of bacterial/viral infections. The three most important bacterial and viral infections are (1) avian pox caused by poxviruses in the genus *Avipoxvirus*, (2) Mycoplasmosis caused by bacteria in the genus *Mycoplasma*, and (3) Salmonellosis caused by bacteria in the genus *Salmonella* (Davidson and Wentworth 1992). Many diseases that potentially threaten wild turkeys are associated with domestic poultry and captive gamebirds.

Wild turkeys can, and often do experience infestation of some degree by a number of endo- and ectoparasites including flatworms (flukes), tapeworms, roundworms, acanthocephalans (thorny-headed worms), and protozoan blood parasites (*Haemoproteus*, *Leucocylozoon*, *Plasmodium*) transmitted by blood-feeding arthropods. Most parasites typically cause only a nuisance, although particularly heavy infestations may cause physical impairment or secondary infections. Infections often do not produce clinical symptoms unless the bird is stressed or otherwise ill (Davidson and Wentworth 1992).

Significant disease and parasitic infections have not been documented in Oregon. Except during winter, turkeys flocks are naturally dispersed, so significantly large portions of the population are never in close proximity to one another. In addition, birds incapacitated by disease and/or parasites are likely removed by predators and scavengers (Davidson and Nettles 1988, Davidson and Wentworth 1992).

Hunting -Spring hunts, if managed properly, typically do not have a long-term impact on population numbers (Vangilder 1992, Vangilder and Kurzejeski 1995). Harvest of up to 30% of adult gobblers leave enough males for effective breeding and quality hunting the following season (Vangilder 1992). However, this may not be the case if there is a high level of legal and illegal harvest coinciding with several years of low reproduction (Kurzejeski and Vangilder 1992). Fall hunts can have a significant influence on local populations, and are therefore the most useful in terms of population management. Turkey population growth can be depressed due to the sensitivity of populations to fall either-sex harvest (Pack 1986, Healy and Powell 1999). Population

modeling indicates that fall harvests of >10% of the fall population lead to population decline.

Poaching - Illegal harvest can play an important role in turkey population viability especially if hen mortality rates are significantly increased. Known and suspected illegal take varies by location, but annual mortality can range from 2% to greater than 60% (Wright and Speake 1975, Everett et al. 1980, Williams and Austin 1988). When the spring gobbler season begins before the peak of incubation, hens are more vulnerable to illegal harvest (Kimmel and Kurzejeski 1985, Kurzejeski et al. 1987). Illegal harvest rate of turkeys is not known for Oregon.

Hybridization - Hybridization can and does occur in wild turkey populations since subspecies are physiologically similar. However, limited information is known on the impacts of hybridization to overall survival of established turkey populations. Maintaining genetic identity in populations has been a concern by some managers but has not been specifically addressed in Oregon.

Habitat Fragmentation/Degradation - ODFW has not performed a detailed inventory of wild turkey habitat in Oregon. However, qualitative changes in habitat have been observed. Road and housing development, fire suppression, commercial tree and grass harvesting have reduced and degraded turkey habitat in some areas of Oregon.

Roads can be detrimental to turkey populations. When vehicles travel roads frequently, turkeys often avoid the adjacent habitat (Wright and Speake 1975). In addition, roads provide easy public access that can promote higher levels of legal and illegal harvest and crippling mortality (Holbrook and Vaughan 1985). However, roads can be beneficial to turkeys by serving as travel corridors and feeding areas. Road rights-of-way will often contain many insects, seeds, fruit, and other food items. Also, if undeveloped roads are planted and/or maintained in native herbaceous vegetation, this makes for quality brood and feeding habitat (Hurst and Dickson 1992:281). Land management agencies need to balance agency needs and wild turkey requirements when planning and managing roads.

Fire suppression during the past century has promoted shrub and pinyon/juniper tree encroachment into open habitats. This has led to a reduction in available brood habitat by inhibiting grass and forb growth. In addition, the build-up of understory woody growth allows catastrophic fires to dramatically reduce available timber habitat. Prescribed fire can play an important role in enhancing habitat, especially for broods, by opening up understory vegetation through the removal of thick shrub growth, while stimulating grass, forb and legume production. Prescribed burning in pine forests has the benefit of reducing mat-forming perennial herbs and woody plants (Buckner and Landers 1979, Porter 1992). In addition, food availability is increased for all birds during the first three years post-burn (Hurst 1978). It is important that prescribed fires be planned outside of the nesting season so hens and nests are not impacted (Hoffman et al. 1993).

Timber harvest that removes trees from large areas negatively impact wild turkey populations by reducing roost sites, travel corridors and escape cover. Fuel-wood harvest of oak and cottonwoods especially in riparian areas, may remove valuable winter food sources. To benefit wild turkeys, timber harvest strategies need to produce vegetative mosaics with small openings, provide brood habitat, and protect known roost sites and travel corridors.

Intensive grazing for long periods reduces available food and cover, particularly brood habitat (Merrill 1975, Phillips 1982). However, moderate grazing can stimulate herbaceous growth and associated insect biomass, thereby improving brood habitat as well as year-round adult feeding areas (Hillestad and Speake 1970, Speake et al. 1975).

Herbicide and pesticide applications may reduce the ability of habitat to support wild turkeys. Insecticides may

reduce or eliminate turkey insect food sources. Herbicides can diminish insect cover and remove forbs essential for nutrition. Both insecticides and herbicides can poison turkeys, thus predisposing them to predation, reduced reproductive output, and causing direct mortality (Clawson 1958, Hoffman et al 1993, Nettles 1976).

In Oregon, many housing and community development projects occur within riparian and forested areas favored by wild turkeys. Many residents enjoy feeding birds, including turkeys. This generally leads to birds becoming concentrated and may lead to birds becoming dependent upon human provided food and increase vulnerability to poaching, predation, and disease/parasite transmission (Hurst 1992).

USE AND DEMAND

Harvest Management

Hunting Seasons

Spring -Spring hunting in Oregon began in 1966 and has occurred annually since. Spring hunting season dates were originally restricted to April but recent seasons have extended to May 31. During the 1960's and 1970' s all spring hunting was controlled by permit. As statewide turkey range and population numbers expanded, small permit hunts began to proliferate until, in 1986, twelve different hunts were listed in the regulations synopsis.

In 1987 the entire state was opened to spring turkey hunting with essentially no limit on participation. The change in season structure permitted a substantial increase in hunting opportunity; both in areas previously open by permit and on numerous scattered flocks in other areas of the state.

The transition from permit hunting to general season hunting occurred over two years during which hunters were required to apply for tags on a controlled hunt application card. However, there was no limit on tag numbers and all individuals who applied by the February 15 deadline received a tag. The tag application procedure was implemented so ODFW could evaluate the demand for turkey hunting and so that names and telephone numbers would be available for a harvest survey. A comprehensive harvest survey was needed to evaluate the expanded season framework. The application procedure was dropped in 1989 and general season tags became available through the statewide license agent network.

Beginning with the 1990 spring season, hunters were allowed to purchase two tags prior to the opening day of season. This allowed hunters the opportunity to harvest two male turkeys during the season, but not more than one per day. An additional "bonus" tag became available in 1993 for hunting gobblers in Douglas, Coos, Curry, and Josephine Counties. This permitted an individual to harvest 3 turkeys in the spring; 2 tags could be used statewide and the bonus tag only in specified counties. The bonus hunt area expanded in spring 2003 with Jackson, Lane, Linn, Benton, Polk and Marion counties added to the hunt area.

Hunter participation in spring turkey hunting in Oregon has increased dramatically since 1987. Between 1987 and 2001 there was a 48% increase in the number of tags issued and a 542% increase in statewide harvest (Table 2).

Fall – Oregon's first turkey hunting seasons were fall hunts. The first fall turkey hunt was in 1965, four years after the first release of Merriam' s turkeys. Fall seasons occurred from 1965 - 1972 except for 1969, with hunters allowed to harvest one turkey of either sex. Three hundred permits were issued the first year, 1,000 in the second, and no limit was placed on participation in fall hunts during the rest of that period. The fall hunt was limited to the Wasco Management Unit the first three years, was expanded to include Sled Springs Unit for the next two years, and the area was increased to include all of Oregon north of Highway 26 and east of the Cascades summit after that. Fall hunting was discontinued after 1972 (except for an experimental season in 1986) due to a population decline following a post-introduction peak.

Although fall hunting was discontinued in 1972, an experimental either-sex fall hunt occurred in 1986 in Douglas County, limited to 100 permit holders. However, large concentrations of turkeys observed in October dispersed during the fall hunt and did not regroup the remainder of the fall and winter. The fall season was not recommended in 1987 because the major management emphasis became trapping and transplanting which conflicted with fall hunting.

In 1994, the controlled fall season was reinstated in Douglas and Jackson counties. From 1994 – 2000, 900 permits were available annually, with an average of 262 issued annually. Since 2000, the number of first-come, first-served fall permits has increased dramatically; 1000 tags in 2001, 2000 tags in 2002, and 3000 tags in 2003 (Table 3). These tags were valid for specified counties in western Oregon and in fall 2003, 10 counties were included in the hunt area. Additionally, in fall 2003, there were 100 tags available in two eastern Oregon controlled hunts (50 tags each).

Currently, there is abundant opportunity for hunting wild turkeys in Oregon. Tags are available for purchase without application and throughout the season. Both spring and fall seasons are (approximately) 45 days. Spring tags are valid statewide and fall tags are valid in 10 counties. It appears that current demand is being met. However, there is potential for expanding both spring and fall hunting opportunities. ODFW could establish a spring, youth-only season and extend the fall season with multiple tags, and increase the hunt areas. ODFW will closely monitor changes in fall hunting regulations, as fall hunting can significantly reduce turkey populations. Since it is likely that hunting demand and interest will increase as turkey populations continue to increase, ODFW will continue to evaluate any additional recreational opportunities associated with wild turkeys.

Depredation Permits

As wild turkey populations continue to increase and demonstrate their ability to adapt and coexist in relatively high human-populated suburban settings, nuisance situations have occurred. While some people are pleased to see and are protective of wild turkeys, adjacent landowners may object to their presence. Common complaints include turkey feces on homes, driveways, and vehicles, turkeys scratching in vegetable and flower gardens, aggressive behavior by gobblers toward children and undesired gobbling and commotion by turkeys during the breeding season.

Protocol and alternatives for solving turkey damage complaints has been specifically addressed in the ODFW wildlife damage policy.

Fall hunting or trapping and removing turkeys may be the best approaches to addressing problems created by nuisance turkeys in suburban situations. However, fall turkey hunters may not be able to gain access to, or safely hunt in these problem areas. Also, trapping and removing birds may not be feasible due to site logistics (e.g., too small of an area for safe rocket net operation). In situations where other preventive or corrective actions are deemed infeasible, or in situations where turkeys are causing problems outside of hunting season, ODFW can issue to the landowner (or his agent) a permit to kill a specified number of wild turkeys. In some cases, the harvest of one of the offending birds will sufficiently alter flock behavior and they will disperse from the site or cease offending activities. If trapping and removal is the chosen alternative to control a turkey damage complaint, ODFW has developed protocol for the handling of wild turkeys captured on damage complaints (see trap/transplant section).

Trap and Transplant Program

During fall through late winter turkeys usually concentrate in larger flocks and native food sources are limited. At these times turkeys can be readily attracted to bait sites. Drop nets and/or rocket nets are used very successfully at these sites and can capture multiple turkeys in a single capture event. The development of this capture technique made possible the restoration of wild turkeys throughout the U.S.

Many other techniques were tried to restore or introduce wild turkey populations, however the best method has been by capturing wild turkeys with rocket nets and releasing them in suitable habitat with as little delay as possible. When adequate source populations are available for trapping this technique can quickly establish a small resident flock of turkeys at new sites. Many state wildlife agencies prevent harvest of turkeys at new release sites for a short period of time while the flock is becoming established. Additionally, many agencies have prioritized the available release sites based on habitat availability and suitability. Guidelines sometimes require a specific number of turkeys released per site and within a specified distance of a previous release.

Prior to the implementation of this plan, ODFW followed interim trap and transplant guidelines. Those guidelines allowed continued trapping of birds from in-state depredation and nuisance complaints and those turkeys could be used to augment existing populations. However, turkeys were not released into previously unoccupied areas. With the development of this plan, specific protocol has been established for the trap and transplant program:

Trap and Transplant Guidelines

- 1) Turkey trap sites will be developed from depredation and nuisance complaints only and trapping will be used to alleviate those depredation and nuisance complaints.
- 2) The release of turkeys will be used for augmenting existing turkey populations in habitat that is mapped as “suitable habitat” by the ODFW Turkey Plan Habitat Map and that is confirmed to be “currently occupied.” “Currently occupied” shall mean that reproduction has been documented 2 out of 3 years within 10 miles of the proposed release site (Rio Grande hens may disperse up to 25 miles from winter flock locations).
- 3) Prior to turkey introduction into suitable unoccupied habitat (as indicated on the ODFW Turkey Plan Habitat Map), a site analysis will be conducted to evaluate potential negative impacts. At a minimum, site analysis will briefly examine:
 - a) Current damage or nuisance issues and likelihood of future nuisance complaints.
 - b) Impacts to existing management actions, such as restoration efforts.
 - c) Long-term survival of species of special concern. Species of special concern will include state and federally listed Threatened, Endangered, Candidate, and Sensitive Species and species identified as “Species of Greatest Conservation Need” in ODFW’s Comprehensive Wildlife Conservation Strategy.“Potential negative impacts” will be based on credible and defensible methods such as niche overlap analysis, spatial habitat analysis, and literature review and will be interpreted at a “reasonable person standard.” Measures will be taken to mitigate potential negative impacts. If potential negative impacts cannot be mitigated or mitigation measures cannot be identified, the site will not be used as a release site.
- 4) For all release sites, priority will be given to locations that will provide future opportunities for public hunting.
- 5) Every 5 years, the ODFW Turkey Plan Habitat Map delineating “currently occupied habitat” and “suitable habitat” will be updated in consultation with wildlife districts, wildlife division, and other interested parties. Those areas with suitable habitat, and not defined as currently occupied, shall be considered suitable unoccupied habitat.

- 6) Annually, ODFW watershed managers, in consultation with their wildlife districts, and using the ODFW Turkey Plan Habitat Map, will submit to the wildlife division a list of release sites in their order of priority. For each release site, watershed managers will identify that the release augments an existing and commonly known wild turkey population in “currently occupied” habitat, as defined in item 2 above. Watersheds must have available documentation that the release site is “currently occupied” by wild turkeys.
- 7) The Wildlife Division in cooperation with regions will prioritize a statewide release site list and provide the list to trap crew supervisor(s). All releases will be determined from the statewide release list, and releases will be made in order of prioritized list. In the event, where weather or road conditions preclude a release at a particular site, the next available site on the priority list will receive the release.
- 8) ODFW will continue to seek cooperative funding to support the trap and transplant program.
- 9) ODFW recognizes that the Oregon Department of Agriculture (ODA), by statutory authority in ORS 596.020, is provided the ability to “take all measures necessary and proper, in its judgment, to control diseases within this state and to eradicate and prevent the spread of infectious, contagious and communicable diseases that may exist among livestock and to prevent the entry into this state of animals or materials liable to convey infectious, contagious and communicable disease to the livestock or people of this state”. Within this general authority is the ability to cause testing and diagnostic procedures and to control and eradicate exotic and emergency diseases. ODFW will consult regularly with ODA regarding disease-testing protocols for wild turkey trap and transplants. At the minimum ODFW will, prior to release, test 20% of birds for *Mycoplasma gallisepticum* as indicated by ODA. If any birds test positive, none of the birds in the capture group will be released, and ODFW will immediately contact ODA for further advice and proper biosecurity measures.
- 10) All captured wild turkeys will be aged, sexed, and banded.
- 11) All banding information, capture location, numbers of birds released, release location, date of release etc. will be provided to the wildlife division. These records will be kept on file at ODFW headquarters indefinitely.
- 12) Wild turkeys captured to reduce damage or nuisance in numbers not sufficient to warrant the expense to transport to priority release sites, will be released in the existing county to augment existing populations.
- 13) The Department will provide annual updates to the Fish and Wildlife Commission during the game bird regulations process each August.

Wildlife Viewing

Wild turkeys provide excellent potential for non-consumptive recreation. During the winter, turkeys congregate in large flocks, often providing viewing or photography opportunities. During the spring, gobblers exhibit a magnificent breeding display and may be observed and/or photographed by patient individuals who learn proficient use of the hen call to lure birds within camera range.

Correspondence and telephone calls to ODFW from individuals thrilled by having seen wild turkeys occurred as the range and numbers of turkeys increased. With the continued expansion of turkey populations and range, ODFW expects enhanced opportunities for viewing and general enjoyment of wild turkeys.

Economic Impacts

Landowners occasionally file damage complaints about wild turkeys in Oregon. During a 2-year period from January 1, 2002 to December 31, 2003 there were 284 turkey damage complaints filed with ODFW biologists with a combined financial loss of \$25,792. However, there is no verification of the damage or of the financial loss claimed; generally it is the best estimate of the landowner.

Turkey hunting is the fastest growing form of hunting and is extremely popular in many states, with nearly 2.6 million turkey hunters nationwide. It has become the 2nd highest participated type of hunting. A recent study (Southwick 2003) revealed that nationally, nearly 2.3 million spring turkey hunters were estimated to have spent 1.795 billion during the 2003 season. The study found that the average U.S. spring turkey hunter spent more than \$784 annually on products and services related to turkey hunting while hunters surveyed in the West (California, Idaho, and Washington) spent over \$928 per hunter annually. Of these expenditures, the average U.S. turkey hunter spent \$207 for travel-related goods and services, typically spent at rural and small community businesses. During the spring 2003 season, 14,152 hunters pursued wild turkeys in Oregon. Assuming that Oregon hunters spend similar amounts to other U.S. hunters, the 2003 spring turkey season in Oregon generated more than \$11 million dollars. Revenues from just turkey tag sales alone, in spring 2003 (35,892 tags sold) were greater than \$412,000.

In 1996, the total money spent on wildlife-watching activities (non-consumptive uses) in Oregon was \$693 million (U.S. Dept. of the Interior 1998). The total included \$262 million for trip related expenses, \$405 million in equipment purchases and \$26 million for magazines, membership dues, contributions, land leasing and ownership, and wildlife plantings. The proportion spent on wild turkey related activities is unknown.

ISSUES AND STRATEGIES

Issue: Impacts to Native Wildlife

The potential biological impact of exotic (non-native) species on native wildlife is a concern among wildlife managers across the western U.S. In Oregon, the Fish and Wildlife Commission has adopted Wildlife Integrity Rules (OAR Division 056). Under these rules, all game birds including wild turkey are designated as Controlled Species in which the Commission (at the time the Commission categorizes a species) establishes “controls necessary to protect native wildlife”. The current Integrity Rules do not exclude any existing management programs regarding turkeys. Wild turkeys have been and will continue to be treated by ODFW as a game bird, including conducting population surveys, harvest surveys, and management programs to maintain and promote the species.

ODFW has attempted to document, through literature review and/or conversation with turkey managers, competition for food between wild turkeys and other wildlife and determine if wild turkeys cause detrimental effects on the environment. Competition for food between wild turkeys, hogs, deer, squirrels, and other wildlife species has been discussed (Bailey et al. 1951, Shaffer and Gwynn 1967, Korschgen 1967). Foster (1992) indicates having observed Merriam’s turkeys in Oregon competing with western gray squirrels for winter food. However, competitive relationships for food resources are unclear since many species compete for mast and seed sources and it is unknown if this competition represents a limiting factor for any species. Additionally, there has been concern expressed that wild turkeys may compromise habitat restoration efforts in riparian/meadow areas if they concentrate their feeding in these areas or if they forage on plants or seeds being used for the restoration efforts. These concerns are difficult to address since research studies have neither specifically examined inter-species competition with turkeys nor the ecological impacts of wild turkey foraging.

Additionally, there are no data that indicate wild turkeys are intolerant of other birds or that wild turkeys exclude other gallinaceous species from an area. In their native range, wild turkeys co-exist with many of the same species (or their ecological equivalents) that occur in Oregon (e.g., ruffed grouse, deer, elk, quail, passerines, amphibians, and reptiles).

Proposed Management Strategies:

- ◆ The wildlife Commission has adopted the Wildlife Integrity Rules that establishes controls to protect native wildlife
- ◆ ODFW wildlife division staff have developed turkey stocking guidelines that incorporate considerations for state sensitive species (see trap/transplant section)
- ◆ ODFW will continue to evaluate the literature and research efforts of other agencies to document potential interactions that may be negative to Oregon’s native plants and animals
- ◆ ODFW will cooperate with associated land management agencies in development and implementation of population and habitat monitoring programs to survey wild turkey numbers and vegetative communities when and where appropriate
- ◆ If it is determined that a native species or its habitat is being negatively impacted by wild turkeys, ODFW will cooperatively develop and implement appropriate management actions to protect the species of concern
- ◆ ODFW is currently gathering distributional data on state Threatened, Endangered and Sensitive species. Once this important data is available (or other data that would substantially increase the precision of known wildlife distribution in Oregon), it will be incorporated into the wild turkey management plan during the normal 3-year review of OARs pertinent to the Department

Issue: Nuisance and Depredation Problems

Game animals occasionally compete with domestic animals for food, or feed on agricultural or garden crops and can cause losses to private landowners.

Turkeys have a potential to cause damage since they feed on a wide variety of vegetation that can include

agricultural or garden crops. ODFW does receive complaints from private landowners concerning turkeys. Most complaints are of "nuisance" problems with landowners complaining of noise, birds feeding with or around livestock, or turkey feces in or on livestock feed. Additional problems occur in urban areas when turkeys defecate on house roofs, driveways, and vehicles, scratch for food in vegetable and flower gardens, and exhibit aggressive behavior during the breeding season. Most of these problems occur during the winter when birds concentrate in flocks.

Turkey-caused damage in Oregon (where the landowner has economic loss) can occur but is infrequent, totaling 284 complaints in the 2-year period from January 1, 2002 to December 31, 2003. Generally these problems can be effectively dealt with by allowing hunting, hazing, other corrective measures like providing alternate food sources, and kill permits. Most complaints to date have been handled by trapping and transplanting, which often provides opportunities to capture turkeys for relocation.

Proposed Management Strategies:

- ◆ ODFW will continue to educate the public about feeding wildlife, which in many cases attracts unwanted turkeys to their property
- ◆ Protocol and alternatives for solving turkey damage complaints has been specifically addressed in the ODFW wildlife damage policy.
- ◆ If trapping and removal is the chosen alternative to control a turkey damage complaint, ODFW has developed protocol for the handling of wild turkeys captured on damage complaints (see trap/transplant section).
- ◆ ODFW will explore the use of alternate food sources to attract turkeys causing nuisance or damage away from the problem area

Issue: Public Hunting Opportunity, Access, and Hunter Education

Turkeys occur on both public and private lands. In some areas of the state, private land has the best habitat for wild turkeys and their populations are usually denser in these areas. Obtaining permission to hunt on private land is a challenge for many Oregon hunters, thus ODFW has promoted transplanting turkeys onto public land to increase recreational hunting opportunity.

Since turkey hunters usually wear full camouflage and use calls to simulate turkeys, hunters need to be especially careful while hunting and positively identify their targets. Although turkey-hunting accidents do occur, the risk of accident per participant is far less than skiing, swimming or boating (Keck and Langston 1992). Hunter education is one preventative measure that has already been undertaken by ODFW. Previously, all turkey hunters who received tags issued from ODFW's headquarters received printed material on turkey hunting safety.

Now that tags are issued through license agents, this option is no longer practical. However, ODFW continues to issue safety information through its hunter education program and through news releases, contacts with outdoor writers, discussion before sportsman's groups, and through other venues. Hunters also need information and education on methods to hunt turkeys, appropriate hunting weapons and loads that minimize crippling, and how to correctly identify turkeys legal for harvest. ODFW has, and will continue to, develop material available for hunters in Oregon that promotes turkey hunting ethics and safety, explains hunting opportunities and provides needed information. Youth-only hunts provide an opportunity for beginning hunters to learn safe, ethical, and responsible hunting techniques and behaviors without competition from adults.

A state chapter of the National Wild Turkey Federation (NWTF) formed in 1990 and local chapters are being organized throughout the state. Education of hunters is a major emphasis of NWTF. In addition to NWTF's efforts, public seminars on turkey hunting have been conducted both by ODFW and by other sportsman's organizations.

Proposed Management Strategies:

- ◆ ODFW will initiate a youth-hunter only spring hunt or time period

- ◆ ODFW may increase the number of harvest tags available per hunter in the fall season
- ◆ ODFW will release turkeys into sites where reasonable public access exists
- ◆ ODFW will cooperate in development of permanent or long term easements that secure public access to wild turkeys during hunting season
- ◆ ODFW will continue to develop high quality harvest opportunities based on biological and social information that maximizes recreational opportunities
- ◆ ODFW will establish wild turkey harvest management objectives

Issue: Supplemental Feeding

Supplemental feeding is the intentional and artificial spreading of food; usually grain, to attract wildlife and is not recommended. This is not to be confused with planting food plots or leaving unharvested crops standing in fields. ODFW encourages landowners to utilize these latter practices for providing wildlife habitat. Supplemental feeding should only be used in emergency situations to increase turkey survival during severe winter conditions.

Most wild turkey biologists agree that supplemental feeding does not enhance survival nor reproductive performance of wild turkeys under normal winter conditions. Turkeys that become dependent upon supplemental foods may not receive a nutritionally balanced diet. Furthermore, supplemental feeding artificially concentrates birds and predisposes them to predation, diseases, and poaching.

When wild turkeys are provided supplemental feed, they can easily lose their natural avoidance behavior and become a nuisance problem. Unintentional feeding may occur where turkeys visit barnyards or livestock feed lots. Operators of these facilities should be encouraged not to provide additional food for turkeys. Even unintentional feeding can lead to unnaturally high concentrations, disease, and potential damage. As mentioned above, providing food plots or leaving unharvested crops are both excellent alternatives to supplemental feeding.

Proposed Management Strategies:

- ◆ ODFW will continue to educate the public about feeding wildlife, which in many cases attracts unwanted turkeys to their property
- ◆ ODFW may provide, or participate in cooperative programs that offer, alternate food sources to turkeys in emergency situations created by winter conditions and/or unusual concentrations of turkeys

Issue: Illegal Releases

Well-meaning individuals try to speed the process of establishing wild turkeys by rearing and releasing birds raised from eggs or poults purchased from breeders of "wild" stock. Although the release of wildlife is illegal without a permit (ORS 498.052), and ODFW does not issue permits for the release of pen-reared turkeys, some people are unaware or do not care that their actions are unlawful.

The releasing of pen-raised, or game farm turkeys, into the wild has been, and remains, a concern of many turkey biologists and managers. Releasing these turkeys presents several problems: (1) survival of captive-reared stock in the wild is very low (Bailey and Putnam 1979), (2) if captive stock do reproduce their poults do not learn the skills needed to survive in the wild, (3) most offspring of first-generation wild birds do not survive the stressful conditions of confinement, (4) pen-raised turkeys may harbor various poultry diseases that could be transmitted to wild stock, and (5) there is a chance that pen-raised "wild" turkeys are genetically inferior and could dilute the genetically desirable traits of wild stock. The past unsuccessful experience of many states, including Oregon, in attempting to establish wild flocks using pen-raised turkeys substantiates these problems.

ODFW will continue its public education effort that will inform individuals to not release pen-reared turkeys into the wild. To help discourage illegal releases, vigorous enforcement action will occur when violations are found.

Proposed Management Strategies:

- ◆ ODFW will not issue permits for the release of pen-reared or game-farm turkeys
- ◆ ODFW will continue to educate the public about the biological problems associated with releasing pen-reared or game-farm turkeys
- ◆ Vigorous enforcement action will occur when violations are found

Issue: Disease/Parasites

Wild turkeys are susceptible to many diseases of domestic turkeys and chickens including avian pox, mycoplasmosis, histomoniasis, trichomoniasis, and coccidiosis. Wild turkeys are likely susceptible to infection by viruses of domestic turkeys, however, most of these diseases are not known in wild turkeys or have been reported only rarely (Davidson and Wentworth 1992). Fortunately, wild and domestic turkeys seldom come into contact, thereby reducing the opportunity for disease to spread. Potential for the transmission of disease is a major reason why releasing domestic birds into the wild is greatly discouraged and illegal.

Although turkeys can contract many of the same diseases to which domestic poultry are susceptible, the hazards of living in the wild quickly eliminate unfit or ill birds from the population. For this reason, many diseases that can be devastating to domestic poultry operations are uncommon or have little effect in wild populations.

In recent years, *Mycoplasma gallisepticum* (*MG*), a bacterial respiratory disease, has become a concern for turkey managers throughout the U.S. Until recently this disease, which has been a serious problem in domestic poultry flocks, was not known to exist in wild turkey populations. Several years ago, however, the disease was discovered in several wild turkey populations. Although the disease can cause losses in adult turkeys, the biggest concern is that it can substantially reduce reproductive potential in a population. Birds that contract the disease and survive become carriers that can pass the pathogen on to other birds and offspring. *MG* has not, to date, been identified in any birds introduced to Oregon or in wild populations established within the state. To guard against introduction or spread of *MG* in Oregon, birds imported since 1986 or trapped and transplanted within the state have been blood tested for this disease prior to release. ODFW also tests existing flocks for *MG* as opportunity presents. Routine testing will continue in the future.

Proposed Management Strategies:

- ◆ Releasing domestic or pen-reared turkeys is illegal and will continue to be discouraged
- ◆ ODFW will work with private individuals who own domestic fowl to reduce the chances of disease transmission between wild turkeys and domestic fowl
- ◆ ODFW will investigate the options and methods to remove flocks of pen-reared turkeys illegally released onto public lands
- ◆ ODFW will not release turkeys with clinical signs (or positive blood titer tests) of diseases of mutual concern to ODFW and the domestic fowl industry
- ◆ ODFW will continue to test and monitor for *MG* in turkeys captured for research or removal purposes

Issue: Population Monitoring

The accurate determination of turkey population numbers has been a problem for wildlife managers throughout the United States. Currently, ODFW has no effective method to determine total turkey numbers.

Most information on Oregon turkey populations comes from game bird routes conducted each summer by ODFW personnel, data obtained from the hunter harvest survey and wildlife damage reports. To assess population status, the number of broods observed during the routes, average brood size, composition and size of winter flocks, age composition of the harvest and hunter success are data useful in evaluating population trends. Additionally, ODFW biologists use information from random observations, brood sightings, and hunter reports to monitor turkey populations in their districts.

Other state agencies utilize various methods for monitoring turkey populations including mark-recapture studies, direct counts of wintering populations, brood surveys, mail-delivery personnel surveys, gobbling counts, hunter check stations, and landowner turkey production surveys.

ODFW needs a method(s) that is repeatable and statistically valid for assessing turkey populations and production status. ODFW biologists will continue working with other state wildlife agencies and NWTF to develop effective techniques for population inventory. The development of effective methods to assess turkey population trends continues to be a high priority for turkey managers nationwide.

Proposed Management Strategies:

- ◆ ODFW will strive to identify statistically valid surveys that can be used to monitor populations
- ◆ ODFW will continue and expand efforts on annual brood surveys
- ◆ ODFW will utilize hunters to collect information on harvest and biology of wild turkeys

Issue: Research

There is an obvious need for research on wild turkeys in Oregon. To appropriately manage wild turkeys, ODFW needs additional data on several biological and management issues: (1) wild turkey competition with native wildlife species for food resources has been discussed by other researchers, but it has not been documented if this competition limits any species populations over the long term. Research should investigate potential competitive impacts of turkeys to native wildlife, (2) forage utilized by wild turkeys in Oregon has not been determined. Research could/should document food utilization to benefit managers in providing additional forage and to validate if turkeys are consuming sensitive native plants, amphibians, and reptiles. In reality however, additional food utilization studies are of limited value, whereas documenting interactions between nutritional resources and turkey populations are needed (Robbins 1983), (3) research should investigate habitat utilization of wild turkeys in Oregon so that ODFW can develop an acceptable plan based on habitat appropriateness with priorities for future releases, and (4) research should work cooperatively with management biologists to develop a useable, scientifically valid survey method to monitor turkey populations

Proposed Management Strategies:

- ◆ Contingent on available funding, identify and conduct research projects that will provide the data needed for appropriate management of wild turkeys in Oregon,
- ◆ Investigate the food utilization patterns of wild turkeys in Oregon
- ◆ Investigate the potential competitive impact of turkeys to native grouse and quail
- ◆ Investigate habitat utilization and determine the availability of suitable habitat for turkeys in Oregon
- ◆ ODFW research staff will cooperate with management staff to develop a useable, scientifically valid survey method to monitor wild turkey populations

Table 1. Total turkeys released and number of releases for wild turkeys in Oregon, 1975- 2004.

Capture Year	Total Turkeys Released	Number of Releases ¹
1975	20	1
1982-83	108	4
1984	123	8
1985-86	249	11
1986-87	153	8
1987-88	460	26
1988-89	318	15
1989-90	473	17
1990-91	256	13
1991-92	458	28
1992-93	808	51
1993-94	352	20
1994-95	864	47
1995-96	526	39
1996-97	698	54
1997-98	496	38
1998-99	711	34
1999-00	889	60
2000-01	533	28
2001-02	318	25
2002-03	409	25
2003-04	412	32
Total	9634	584

1. Some geographic sites have >1 release of turkeys. A single release has ranged from 1 – 63 turkeys.

Table 2. Spring turkey tags issued, hunter effort, and wild turkey harvest in Oregon, 1987-2003.

Year	Tags Sold	Number Hunted	Days Afield	Harvest	Harvest Change
1987	8,308	5,033	16,514	425	
1988	3,749	3,055	11,600	563	32%
1989	3,864	2,623	9,788	313	-44%
1990	5,000	3,720	15,557	751	140%
1991	7,159	5,103	27,301	1,086	45%
1992	7,909	6,248	28,384	841	-23%
1993	9,942	7,242	33,117	1,354	61%
1994	9,594	7,531	38,408	1,524	13%
1995	9,947	7,498	35,852	1,631	7%
1996	8,873	6,859	29,661	1,647	1%
1997	9,371	7,396	34,302	1,851	12%
1998	12,883	9,037	40,806	2,621	42%
1999	11,793	8,240	37,056	2,543	-3%
2000	11,894	9,203	40,786	2,590	2%
2001	12,312	8,882	40,669	2,729	5%
2002	33,498*	13,072	55,681	3,699	36%
2003	35,892*	14,152	63,787	4,089	10%

* Includes turkey tags sold within Sports Pac

Table 3. Fall turkey tags issued, hunter effort, and wild turkey harvest in Oregon, 1994-2003.

Year	Tags Available	Tags Issued	Number Hunted	Hunter Days	Harvest	Percent Success
1994	900	140	91	80	42	46%
1995	900	200	151	518	67	44%
1996	900	200	104	435	66	63%
1997	900	276	212	540	135	64%
1998	900	365	213	749	113	53%
1999	900	330	265	787	144	54%
2000	900	322	243	676	122	50%
2001 ^a	1000	1000	662	2437	257	38%
2002 ^a	2000	1932	1234	4965	519	42%
2003 ^a	3100 ^b	2613	1666	5949	755	45%

^a 2001-2003 Fall tags were available on a first-come, first-serve basis

^b 100 tags available in White River and Pine Valley controlled hunts (50 tags each)

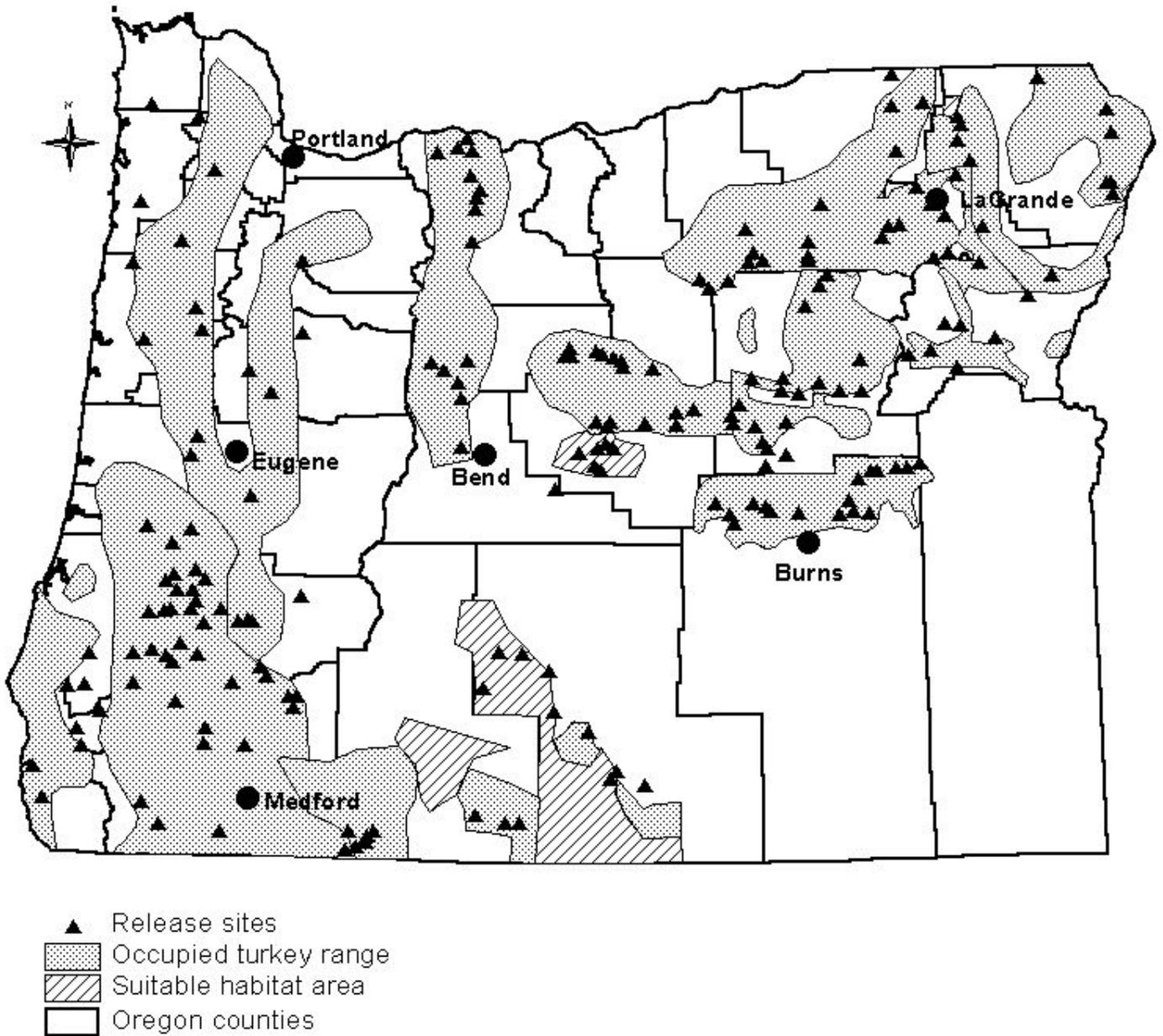


Figure 1. Wild turkey release sites, current occupied range, and distribution of suitable habitat for wild turkeys in Oregon.

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Appendix 1.

PUBLIC INPUT GROUP PARTICIPANTS

Organization – Group – Agency	Contact Person	Phone	Email Address
Audubon Society Central Oregon Chapter	Larry Pecenka P.O. Box 565 Bend, OR. 97709	541-383-4944	
Private citizen Ex ODFW Commissioner	Susan Foster P.O. Box 335 Gresham, OR. 97030	503-665-2076	magsaf@juno.com
Oregon Hunters Association	Fred Walasavage 7101 Sylvan Way Mosier, OR. 97040	541-980-2503	fwalasavage@bpa.gov
Oregon State Police Fish/Wildlife	Jim Collom 4500 Rouge Valley Hwy Suite A Central Point, OR. 97502	541-776-6236 x392	
Oregon State University Dept of Fish & Wildlife Game Bird Program	Michael Pope Nash Hall #46 Oregon State University Corvallis, OR. 97331-3803	541-737-4908	popem@onid.orst.edu
National Wild Turkey Federation Regional Biologist	Ryan Mathis 1660 J Street Arcata, CA. 95521	707-826-7926	ryannwtf@yahoo.com
National Wild Turkey Federation Regional Director	Jeff Johnson 348 Riverloop 1 A Eugene, OR. 97404	541-689-5733	nwtfjeff@msn.com
Confederated Tribes of Warm Springs	Doug Calvin Natural Resources Dept P.O. Box C Warm Springs, OR. 97761	541-553-2001	dcalvin@wstribes.org
Oregon Department of Agriculture Poultry	Bruce Mueller Oregon Dept of Agricultural 635 Capitol St. NE Salem, OR. 97301-2532	503-986-4685	bmuller@oda.state.or.us
U.S. Forest Service	Dave Zalunardo Ochoco Nat. Forrest 3160 NE 3 rd Prineville, OR. 97754	541-416-6605	dzalunardo@fs.fed.us
Oregon Guide & Packers Association	Steve Mathers 20129 Mathers Rd. Bend, OR. 97701	541-389-0743	mathers@bendnet.com
ODFW Technical Representative	Steve Denney SW Region Office 4192 N. Umpqua Hwy Roseburg, OR. 97470	541-440-3353	steve.r.denney@state.or.us
ODFW Upland Game Bird Program	Dave Budeau 3406 Cherry Drive NE Salem, OR. 97303	503-947-6323	david.a.budeau@state.or.us
ODFW Wildlife Diversity Program	Holly Michael 3406 Cherry Drive NE Salem, OR. 97303	503-947-6321	holly.b.michael@state.or.us
ODFW Wildlife Diversity Program	Chris Carey HD Region Office 61374 Parrell Rd Bend, OR. 97702	541-388-6363	chris.g.carey@state.or.us

APPENDIX 2

COMMENTS RECEIVED FROM PUBLIC REVIEW COMMITTEE

April 10, 2004

Objectives of the meeting:

- Review existing draft plan
- Focus on key issues and concerns that are included in draft
- Identify issues that were not addressed
- Give committee the opportunity to have their issues, concerns and questions recorded
- If time, provide recommendations to improve other sections of the Wild Turkey Management Plan

Comments received from committee members:

- Would like to see Issues and Opportunities
- Consistency in how we handle non-native species within the Dept.-will need data and discussion - want consistency for upland game bird (non natives)
- Research needed within Oregon to determine impacts (Management game before plan) {unable to determine exact meaning comment from notes}
- Scott Lutz-local research done, was beneficial in some cases but, were not food habit studies
- Want more clarification/specifics included in plan
- Number of turkeys trapped and transplanted-typically between 300-500 but as many as 800
- May be research/reports on distribution of released turkeys
- Suggest environmental assessment document
 - list of what species are in the areas where turkeys are being released (Special Status Species)
 - perhaps could be included as bullet, appendix
 - Feds recommend keeping assessment separate and do not use federal wording

Additions/Questions About Key Issues in Draft:

ISSUE = turkey impact to native/sensitive species

- Question-Increasing population density within the areas that they are already established. Would like more clarification on where we will release them
- Definitions needed: (on where to release them) “currently occupied”

- List of T&S species that could be affected in an appendix/and species who have overlap with how turkeys use the environment
- Action, Habitat, Associated Species-maybe just the primary habitats
- Need for long term monitoring of effects, study an area that has not yet been populated but, will be in the future
- Encourage deductive reasoning for management strategies-Here's what we are going to do and why

Bullet 2-issue one

- perhaps leave room open for releasing turkeys into sites that have been assessed/researched-not until questions are answered and not against guidelines/policies/rules

Bullet 3-issue one

- In discussion of literature separate introduced habitats and in native habitats (for example, are they consuming different foods in introduced habitats)

Bullet 4-issue one

- Cooperation-ODFW will actively work with agencies/private forests/state lands etc...on habitat improvement projects and cooperating with people trying to protect certain habitat types- (i.e., oak savanna etc.)
- Research need - spread of exotic and native plants, diseases etc. because turkey's are wide ranging
- Research needs - at what density of turkeys are negative impacts more likely to take place

ISSUE = Turkeys can cause damage

- Can information be provided on % of which types of damage complaints are used?
- Listing in the plan of what techniques are used to control damage problems
- Include season and harvest structures and management tool for addressing damage
- Have there been management objectives (#'s taken per year and densities) also need population estimates
- Monitor effectiveness of fall hunts – needs to be measured each year
- Potentially talk to Don Whitaker, others to get population estimates
- If there are management objectives developed, pick some sort of index that can be measured precisely – habitat, damage complaints
- \$\$ Amount on how much damage, look at how much in specific areas of state
- Perhaps look at LOP, special hunts, emergency hunts to deal with damage

ISSUE = wild turkey and domestic fowl diseases

- Concern about transmission of disease should be considered in how the wild turkey is classified under integrity rules
- Wild turkeys-potential carriers of disease to domestic fowl
- Need clarification on what diseases/how turkey are being tested

- Right now they are tested for MG and there are protocols provided by ODA
- Would like to see written protocols for testing of disease and parasites
- Like to see something that can test/be sure that avian diseases such as AI (Avian Influenza) and Exotic Newcastle
 - Perhaps specific regulations criteria/standards for commercial producers to keep contacts between domestics and wild turkeys to a minimum (but, this is not under our jurisdiction, could ask AG)
- Parasite issues that turkey may pass
- Clarify that bullet three (under disease) whether pen-raised flocks would be removed (not just investigated) and contact landowner if released on private land

ISSUE = no method to monitor populations

- Research -suggest focusing on existing populations (not recently transplanted ones)
- Questions on where to trap and transplant, perhaps slowing down their transplant even into where there are existing populations
- Research needs-competition, effects on non-natives
- Need for more specifics on where they will be transplanted (release site guidelines, checklist that can be used)
- Lists of species that may be affected
- Would like to see use of other forms of control-hunting, kill permits, other methods that would keep turkeys from spreading until research questions are answered
- Summary of damage, \$\$value, etc. Would like to see into the plan -Whole economic picture
- Forest Service position is supportive of maintenance and establishment of turkeys on Forest Service Land as long as assessment has been done
- How money for tags is utilized - can this be included in plan

ISSUE = Limited biological information available on wild turkeys in Oregon

- Non-hunting mortality-predation-Would like to see more research
- Getting info from hunters, i.e. droppings, crops (for food studies), tissue samples
- Suitable habitat - should not investigate if we are not going to release them into new sites
- Would like to see research on competition with other native wildlife dependent on same resources
- **Research** - are turkeys going to be able to be controlled-what are the naturally controlling factors?
- **Research** - How susceptible are turkeys to being vectors of diseases
- **Research**-specific predation on vertebrate and invertebrate wildlife-are they

causing mortality

- Concern with research cited - specifically study on food utilization, would like to see it differentiated depending on where the studies were done
- **Research**-need to look at herptile consumption, other natives and wildlife more closely –like more info on species, geographical information
- Concerns about terminology “vegetarian turkeys”, and others

ISSUE = Hunting opportunities for wild turkeys

- Clarify bullet three-into which sites
- Clarify reasons for having higher numbers of tags issued in fall
- Multiple fall bird opportunities
- Master hunter opportunities – increase, promote with turkeys, and perhaps across state boundaries

ISSUE = Other Issues

- **Habitat** – releasing the right type of turkey for the right habitat – suitability
- Habitat as its own issues, things that people could do on their own property, release suitability handbook?
- Disturbance to other wildlife during hunting season by off-road vehicles- habitat management
- Incorporating flexibility in hunting seasons to prevent disturbance
- **Research and Habitat**
 - Competition affecting habitat restoration efforts, perhaps comprising recovery (primarily riparian areas)
 - Hybridization-does behavior change/habits?

APPENDIX 3

TRAP & TRANSPLANT PROGRAM OPTIONS

Option 1. Current Interim Guidelines

Trap and Transplant Criteria

1. All trapping will occur to alleviate depredation and nuisance problems.
2. Trapped birds will be used to augment existing populations.
3. Release locations must provide opportunities for public hunting.

Trap and Transplant Guidelines

1. Trap sites will be developed from depredation and nuisance complaints only.
2. ODFW watershed managers will submit a list of release sites in priority order to the Wildlife Division using the following prioritization criteria.
 - a) All releases must occur at sites where turkeys currently exist.
 - b) First priority are public lands that allow hunting and second priority are private lands that allow hunting.
3. The Wildlife Division in cooperation with regions will prioritize a statewide release site list and provide to the trap crew supervisor(s). All releases will be determined from the statewide release list.
4. ODFW will continue to match, if funding is available, NWTF contributions to the trap and transplant program to fund a trap crew.
5. Wild turkeys captured will be disease tested under current protocols prior to release.
 - 20% of birds tested for *Mycoplasma gallisepticum* as indicated by Dept. of Agriculture.
6. All wild turkeys will be aged, sexed, and banded.
7. Wild turkeys captured in numbers not sufficient to warrant the expense to transport to priority release sites, will be released in the existing county to augment existing populations.
8. All banding information, numbers of birds released, release location, date of release etc. will be provided to the wildlife division.

Option 2. Controlled introduction of wild turkeys to all suitable habitat

Trap and Transplant Guidelines

1. Priority will be given to trap sites that will reduce depredation and nuisance. If necessary to meet transplant needs, sites of concentration that could sustain the removal of ~ 30 turkeys could be selected.
2. The release of turkeys will be used for the following purposes (in order of priority):
 - a) Augment existing populations (turkeys commonly exist in immediate area).
 - b) Augment turkey populations in habitat mapped as “currently occupied” by the ODFW Turkey Plan Habitat Map.
 - c) Introduce turkeys to habitat mapped as “currently unoccupied suitable habitat” by the ODFW Turkey Plan Habitat Map.
3. Every 5 years, the ODFW Turkey Plan Habitat Map delineating “currently occupied” and “currently unoccupied suitable habitat” will be updated in consultation with wildlife districts, wildlife division, and other interested parties. “Currently occupied” delineations will be based on harvest records, sightings, survey data, and local knowledge of field biologists.
4. Priority will be given to release locations that will provide future opportunities for public hunting.
5. Annually, ODFW watershed managers will submit a list of release sites in priority order to the Wildlife Division using the following prioritization criteria.
 - a) Releases must occur in suitable turkey habitat.
 - b) First priority for release sites will be given to public lands that allow hunting and second priority to private lands that allow hunting.
6. The Wildlife Division in cooperation with regions will prioritize a statewide release site list and provide to the trap crew supervisor(s). All releases will be determined from the statewide release list, and releases will be made in order of prioritized list. In the event, where weather or road conditions preclude a release at a particular site, the next available site on the list will receive the release.
7. ODFW will continue to seek cooperative funding to support the trap and transplant program.
8. Prior to release, 20% of birds will be tested for *Mycoplasma gallisepticum* as indicated by Dept. of Agriculture. If any birds are a “confirmed positive”, none of the birds in the capture group will be released
9. All captured wild turkeys will be aged, sexed, and banded.
10. All banding information, numbers of birds released, release location, date of release etc. will be provided to the wildlife division.

11. Wild turkeys captured to reduce damage or nuisance in numbers not sufficient to warrant the expense to transport to priority release sites, will be released in the existing county to augment existing populations.

Option 3. Measured Wild Turkey Trap and Transplant

Trap and Transplant Guidelines

- 1) Priority will be given to trap sites that will reduce depredation and nuisance. If necessary to meet management goals, and only with prior approval of Wildlife Division, sites of wild turkey concentrations not causing depredation and nuisance and able to sustain the removal of ~ 30 turkeys may be considered as trap sites.
- 2) The release of turkeys will be used for the following purposes (in order of priority):
 - a) Augment existing populations (turkeys commonly exist in immediate area). Augment turkey populations in habitat that is mapped as “suitable habitat” by the ODFW Turkey Plan Habitat Map and that is confirmed to be “currently occupied.” “Currently occupied” shall mean that reproduction has been documented 2 out of 3 years within 10 miles of the proposed release site (Rio Grande hens may disperse up to 25 miles from winter flock locations).
 - b) Introduce turkeys to habitat mapped as “suitable habitat” by the ODFW Turkey Plan Habitat Map, but is not confirmed to be “currently occupied” as defined in 2(a).
- 3) Prior to turkey introduction into unoccupied habitat (as indicated on the ODFW Turkey Plan Habitat Map), a site analysis will be conducted to evaluate potential negative impacts. At a minimum, site analysis will briefly examine:
 - a) Current damage or nuisance issues and likelihood of future nuisance complaints.
 - b) Impacts to existing management actions, such as restoration efforts.
 - c) Long-term survival of species of special concern. Species of special concern will include state and federally listed Threatened, Endangered, Candidate, and Sensitive Species and species identified as “Species of Greatest Conservation Need” in ODFW’s Comprehensive Wildlife Conservation Strategy.

“Potential negative impacts” will be based on credible and defensible methods such as niche overlap analysis, spatial habitat analysis, and literature review and will be interpreted at a “reasonable person standard.” Measures will be taken to mitigate potential negative impacts. If potential negative impacts cannot be mitigated or mitigation measures cannot be identified, the site will not be used as a release site.
- 4) For all release sites, priority will be given to locations that will provide future opportunities for public hunting.
- 5) Every 5 years, the ODFW Turkey Plan Habitat Map delineating “currently occupied habitat” and “suitable habitat” will be updated in consultation with wildlife districts, wildlife division, and other interested parties. Those areas with suitable habitat, and not defined as currently occupied, shall be considered unoccupied suitable habitat.
- 6) Annually, ODFW watershed managers in consultation with their wildlife districts, and using the ODFW Turkey Plan Habitat map, will submit to the wildlife division a

list of release sites in their order of priority. For each release site, watershed managers will identify which of the following release site designations apply:

- a) The release will augment an existing and commonly known wild turkey population.
 - b) The release will occur in “currently occupied” habitat, as defined above in 2(a). Watersheds must have available documentation that area is “currently occupied” by wild turkeys.
 - c) The release will expand the current range of wild turkeys in suitable habitat without any expected negative impacts, as determined through site analysis described in 3.
- 7) The Wildlife Division in cooperation with regions will prioritize a statewide release site list and provide the list to trap crew supervisor(s). All releases will be determined from the statewide release list, and releases will be made in order of prioritized list. In the event, where weather or road conditions preclude a release at a particular site, the next available site on the priority list will receive the release.
 - 8) ODFW will continue to seek cooperative funding to support the trap and transplant program.
 - 9) ODFW recognizes that the Oregon Department of Agriculture (ODA), by statutory authority in ORS 596.020, is provided the ability to “take all measures necessary and proper, in its judgment, to control diseases within this state and to eradicate and prevent the spread of infectious, contagious and communicable diseases that may exist among livestock and to prevent the entry into this state of animals or materials liable to convey infectious, contagious and communicable disease to the livestock or people of this state”. Within this general authority is the ability to cause testing and diagnostic procedures and to control and eradicate exotic and emergency diseases. ODFW will consult regularly with ODA regarding disease-testing protocols for wild turkey trap and transplants. At the minimum ODFW will, prior to release, test 20% of birds for *Mycoplasma gallisepticum* as indicated by ODA. If any birds test positive, none of the birds in the capture group will be released, and ODFW will immediately contact ODA for further advice and proper biosecurity measures.
 - 10) All captured wild turkeys will be aged, sexed, and banded.
 - 11) All banding information, capture location, numbers of birds released, release location, date of release etc. will be provided to the wildlife division. These records will be kept on file at ODFW headquarters indefinitely.
 - 12) Wild turkeys captured to reduce damage or nuisance in numbers not sufficient to warrant the expense to transport to priority release sites, will be released in the existing county to augment existing populations.

Option 4. Eliminate the Trap and Transplant Program

APPENDIX 4

A LIST OF TURKEY FOOD HABITS STUDIES

Age	Season	Location	# Samples	Type	% Animal (mostly insect)	% Reptile/Amphibian	Reference
adult	fall	Florida	8	crop	0	0	Lovett Williams 1988
adult	fall	Montana	226	crop	0	0	R. Jonas 1966
adult	fall	New York	30	crop	10.46*	0	Eaton & Saylor 1962-pers. Comm. In Hewitt 67 & Williams 81
adult	fall	Pennsylvania	15	crop	2.3	1 lizard	Bennett & English 1941 in Williams 81
adult	fall	Texas	31	crop	5.62	0	Beck & Beck 1955
adult	fall	South Dakota	30	crop	0	0	Laudenslager & Flake 1987
adult	fall	Florida	32	crop	2.9	0	Schemnitz 1956
adult	fall	Arizona	126	crop			Burget 1957 in Schorger 66
adult	fall	Washington	21	crop	45.4*	0	Mackey 82, Mackey & Jonas 82
adult	fall	Wisconsin	250	crop	12	0	Paisley, Wright, & Kubisiak 96
adult	fall	Arizona	13	crop	0	0	Ligon 46
adult	fall	Wyoming	88	crop	3	trace—bone fragments	
adult	spring	Texas	25	crop	34.02	0	Beck & Beck 1955
adult	spring	New Mexico	14	crop		0	
adult	spring	Arizona	3	crop	0	0	Murie 1946
adult	spring	Tennessee	87	crop	1.1	0	Tabatabai & Kennedy 1984
adult	spring	New Mexico	24	crop	13.1*	0	Schemnitz 1983 & et al. 85
adult	spring	New Mexico	26	crop	trace*	0	Schemnitz 1983 & et al. 85
adult	spring	Washington	14	crop	0.5*	0	Mackey 82, Mackey & Jonas 82
adult	spring	Wisconsin	100	crop	3**	0	Paisley, Wright, & Kubisiak 96
adult	spring	Missouri	823	cr & giz	?	0.4-snakes	Korschgen 73
adult	spring	Missouri	22	cr & giz	3.2	0	Korschgen 73
adult	spring	Arkansas	22	crop	?	0	Meanley 1956 in Hewitt 67
adult	summer	South Dakota	31	crop	0	0	Petersen & Richardson 1973
adult	summer	Texas	27	crop	5.55	0	Beck & Beck 1955
adult	summer	Wisconsin	3	crop	21	0	Wright, Paisley & Kubisiak yr?
adult	summer	Wisconsin	6	crop	?	0	Paisley, Wright, & Kubisiak 96
adult	summer	Alabama	21	crop	30	0	Hamrick & Davis 71
adult	summer	South Dakota	63	crop	?	0	Petersen & Richardson 75
adult	winter	Montana	15	crop	0	0	Jonas 1966
adult	winter	South Dakota	33	crop	0	tr-small bones	Petersen & Richardson 1973
adult	winter	Florida	32	crop	1.6*	0	Schemnitz 1956
adult	winter	Florida	221	crop	1a	0	Powell 1962-unpubl. In Hewitt 67
adult	winter	Florida	191	crop	0.8a	0	Powell 1962-unpubl. In Hewitt 67
adult	winter	Florida	136	crop	0.3a	0	Powell 1962-unpubl. In Hewitt 67
adult	winter	Virginia	101	crop	6	0	Culbertson 1948 in Williams 81
adult	winter	Texas	25	crop	1.96	0	Beck & Beck 1955
adult	winter	Florida				small snake	Howell 1932 in Schorger 66
adult	winter	Arizona	38	crop	6.87***	0	
adult	winter	Mississippi	10	crop	0.02*	0	Parker 67
adult	winter	Mississippi	10	crop	3.6	0	Kenamer & Arner 67, Kenamer 66
adult	fall/wint	Virginia	115	crop	6.74	0	Martin, et al 1939 in Hewitt 67
adult	fall/wint	Florida	548	crop	8.1	0.05-lizard	Powell 1962 in Hewitt 67 & 1965
adult	wint/spr	Texas	40	crop	18.7*	0	Pattee & Beasom 81

adult	all	Florida	221	crop		0	
adult	all	Florida	191	crop		0	
adult	all	Florida	136	crop		0	
adult	all	California	58	crop	2.8*	0	Smith & Browning 1967
adult	all	Arizona	29	crop	13.1	0	Scott & Boeker 73
adult	all	Arizona	20	crop	17.9	1 horned lizard	Scott & Boeker 73
adult	all	Arizona	36	crop	?	0	Scott & Boeker 75
adult	all	South Carolina	147	crop	11.2/.24a	0	Warlick 70
adult		Colorado	200	crop	16	0	Hoffman 1962 in Williams 81
adult		Colorado	85	crop	20	0	Burget 1957 in Williams 81
adult		Arizona	24	crop	trace	0	Murie 1946
adult		Arizona	23	crop	11	0	Reeves & Swank 1955 in Williams 81
adult		Texas	38	crop	1.5	0	Walker & Blakey no yr in Williams 81
adult		Texas	16	crop	26.4	0	Glazener--pers. Comm. In Williams 81
adult		Texas	25	crop		0	Beck & Beck 55
adult		Texas	25	crop	33	0	Beck & Beck 55
adult		Texas	27	crop	3.5	0	Beck & Beck 55
adult		Texas	31	crop	4.9	0	Beck & Beck 55
adult		New Mexico	1	crop	?	1 horned toad	Ligon 46
?	?	Florida	10	crop			Garrison 54 in Schorger 66
adult	fall	Missouri	1,604	fecal	16.1	0	Dalke, Clark, & Korschgen 1942
adult	fall	Pennsylvania	176	fecal	6.2	0	Kozicky 42 in Williams 81
adult	fall	Michigan	75	fecal	8.5	0	Lewis 62 in Williams 81
adult	fall	New York	70	fecal		0	Eaton & Saylor 62-unpubl. In Hewitt 67 & Williams 81
adult	fall	Pennsylvania	174	fecal		0	
adult	fall	Arizona	43	fecal		0	Schorger 66
adult	fall	Alabama	117	fecal	0	0	Barwick & Speake 73
adult	fall	South Carolina	559	fecal	22*	0	Exum 85 & Exum et al 87
adult	fall	Wyoming	88	fecal	7	0.13--bone	Hengel 90
adult	spring	Alabama	1,706	fecal	?	0	Kennamer, Gwaltney & Sims 80
adult	spring	Missouri	993	fecal	0.5	0	Dalke, Clark, & Korschgen 42
adult	spring	Michigan	208	fecal		0	Lewis 62 in Williams 81
adult	spring	New York	90	fecal		0	
adult	spring	Pennsylvania	90	fecal	0.7	0	Kozicky 42 in Williams 81
adult	spring	New York	117	fecal	0.6	0	Eaton & Saylor 62-unpubl. In Hewitt 67 & Williams 81
adult	spring	South Carolina	249	fecal	25	0	Exum 85 & Exum et al 87
adult	spring	Wyoming	53	fecal	42	0.12--bone	Hengel 90
adult	summer	Michigan	305	fecal	5.6	0	Lewis 62 in Williams 81
adult	summer	Missouri	292	fecal		0	Dalke, Clark, Korschgen 42
adult	summer	Pennsylvania	140	fecal		0	Kozicky 42 in Williams 81
adult	summer	NY/PA	286	fecal		trace-salamander vertebrae	Eaton, Moore & Saylor 70
adult	summer	West Virginia	4,249	fecal	1.6	0	Glover & Bailey 49
adult	summer	South Carolina	140	fecal	22*	0	Exum 85 & Exum et al 87
adult	summer	Wyoming	74	fecal	32	0	Hengel 90
adult	winter	Missouri	750	fecal	trace	0	Dalke, Clark, Korschgen 42
adult	winter	Michigan	273	fecal		0	Lewis 62 in Williams 81
adult	winter	New York	169	fecal		0	Eaton & Saylor 62-unpubl. In Hewitt 67 & Williams 81
adult	winter	Pennsylvania	364	fecal		0	Kozicky 42 in Williams 81
adult	winter	South Dakota	51	fecal		0	Rumble 90
adult	winter	South Dakota	100	fecal		0	Rumble 90

adult	winter	Arizona	77	fecal	*	0	Wakeling & Rogers 96
adult	winter	Arizona	43	fecal	0	0	Murie 46
adult	winter	Mississippi	46	fecal	30*	0	Kenamer & Arner 67, Kenamer 66
adult	winter	South Carolina	881	fecal	16*	0	Exum 85 & Exum et al 87
adult	winter	Wyoming	33	fecal	2.1	0.06--bone	Hengel 90
adult	wint/spr	Mississippi	80	fecal	1-19%	0	Parker 67
adult	all	Missouri	3,639	fecal	6.4	0	Dalke, Clark, Korschgen 42
adult	all	Michigan	860	fecal	3.7	0	Lewis 62 in Williams 81
adult	all	Pennsylvania	770	fecal	3.5	0	Kozicky 42 in Williams 81
adult	all	New York	356	fecal	0.2	0	Eaton & Saylor 62-unpubl. In Hewitt 67 & Williams 81
adult	all	Florida	2,775	fecal	4*	0	Schemnitz 56
adult	all	Montana	2,192	fecal	39.6	0	Rose 56 in Williams 81
adult	all	New Mexico	42	fecal		0	
adult	all	Missouri	3,244	fecal	24	0	Dalke et al 42 & 46
adult	all	New Mexico	240	fecal	4.1*	0	Potter, Schemnitz, & Zeedyk 85
adult	all	Alabama	748	fecal	33.3	0	Sims 79
adult	all	South Dakota	44	fecal	0	0	Rumble & Anderson 96
adult	all	South Carolina	1,576	fecal	8.5	0	Baughman & Guynn 93
adult	all	Arizona	866	fecal	?	0	Scott & Boeker 75
adult	all	New Mexico	339	fecal	*	0	Schemnitz 83 & et al. 85
adult	all	Arkansas	1,026	fecal	?	0	Meanley 56 in Schorger 66
adult	all	Arizona	249	fecal	2.8	0	Reeves & Swank 55 in Williams 81
adult	all	Montana	2,192	fecal	39.6	0	Rose 56 in Williams 81
adult	all	Colorado	1,545	fecal	40.2	0	Hoffman 55 & 62 both in Williams 81
adult	all	New Mexico	42	fecal	2.4	0	Spicer 59 in Williams 81
adult	all	Arizona	23	fecal	11	0	Reeves & Swank 55 in Williams 81
adult	spring	New Mexico	8	gizzards		0	
adult	fall	Alabama	116	stomach	11.71	0	Good & Webb 40 in Williams 81
adult	fall	New York	30	stomach		0	Eaton & Saylor 62 in Hewitt 67 & Williams 81
adult	fall	Pennsylvania	15	stomach		0	Bennett & English 41 in Hewitt 67 & Williams 81
adult	spring	Alabama	116	stomach	11.6	1 lizard	Good & Webb 40 in Williams 81
adult	spring	Alabama	154	stomach	10.3	0	Wheeler 48
adult	winter	Alabama	38	stomach	15.1	0	Webb 41 in Williams 81
adult	winter	Missouri	25	stomach	2.3	0	Blakey 37-unpubl.-includes fall in Williams 81
adult	winter	Alabama	33	stomach	17.6	0	Wheeler 48
adult	all	Virginia	524	stomach	4.7	0.07-3 salamanders	Mosby & Handly 43
adult	summer	Arizona	14	other		0	
poult	fall	Florida	22	crop		0	
poult	fall	Virginia	15	crop	?	0	Martin & McGinnes 75
poult	spring	Mississippi	49	crop		0	
poult	spring	Alabama	3	crop	90*	0	Hurst & Poe 89
poult	summer	Wisconsin	15	crop	87	0	Wright, Paisley & Kubisiak yr?
poult	summer	Wisconsin	39	crop	68	0	Paisley, Wright & Kubisiak 96
poult	summer	Mississippi	160	crop	15.5	0	Hurst 78
poult	summer	South Dakota	1	crop	?	0	Petersen and Richardson 75
poult	summer	Alabama	5	crop	?	0	Kirk 74
poult		Florida	21	crop	25*	0	Barwick, Hetrick, & Williams 73
poult		Florida	54	crop		0.1-reptile bone fragments	Barwick, Hetrick, & Williams 73
poult	summer	Alabama	217	fecal	10	0	Blackburn, Kirk, Kenamer 75
poult	summer	Florida	32	fecal		1.9	

poult	summer	Alabama	15	fecal	59.9	0	Kirk 74
poult	summer	South Carolina	469	fecal	45*	0	Exum 85 & Exum et al 87
poult	summer	Wyoming	9	fecal	70	0	Hengel 90
poult	spring	Mississippi	74	stomach		0	Hurst & Stringer 75
poult	winter	South Dakota		other		0	
poult	spring	Mississippi	312	other		1 ground skink	Stringer 77
poult	summer	West Virginia	30	observ	84	0	Healy 85
poult	summer	West Virginia	8	observ	*	0	Rogers 85
poult	summer	West Virginia	55	observ	?	0	Healy and Nenno 83
poult	spring	Pennsylvania	8	observ	*	0	Anderson & Samuel 80
poult	spr/sum	West Virginia	36	observ	?	0	Healy 78
poult	all	California	69	observ	?	0	Burger 54
?	?	Kentucky		observ	?	Tadpoles & lizards	Audubon 1831 in Schorger 66 & Judd 1905 in Bent 1932
?	?	South Carolina		observ	?	fiddler crabs & shad frogs	Davis 49 in Schorger 66
?	?	West Virginia		observ	?	1 dusky salamander	Bailey & Rinell 60 in Schorger 66
?	?	Missouri		observ	?	lizards	Woodruff 1908 in Schorger 66
?	?	Indiana		observ	?	Garter snakes	Hay 1892 in Schorger 66
?	?			observ	?	snake	Caton 1877 in Schorger 66

Footnotes:

* all insects

** worms & snails

a – listed as animal foods