

ACORN WOODPECKER (*Melanerpes formicivorus*)

Population Status and Trends: Historically and currently, fairly common in the Klamath Mountains ecoregion, but has expanded its range in the Willamette Valley in the last 50 years.¹⁸ BBS trend data indicates non-significant long-term and short-term regional and sub-regional declines, except for long-term and short-term increases in OR, including a significant long-term increase.³⁶ A “Species of Greatest Conservation Need” in the Willamette Valley ecoregion.²⁵

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-0.51	-1.18
NPR – OR, WA, CA	-0.51	-1.18
NPR – WA	na	na
NPR – OR	2.79	3.26
NPR - CA	-1.09	-2.46

Nest Location and Timing: Nest in natural cavities or those they excavate usually high above ground [i.e., > 8 meters (25 feet)]. Cooperative, colonial breeder in small family groups. Stores acorns in granary trees. Will nest near or away from human settlement. In areas near human settlement, can be negatively affected by European Starling, a non-native competitor for cavities. Nesting primarily occurs from early May through early July, although mid-summer and/or fall nests can occur in good acorn crop years.

Comments: Resident. A characteristic oak species due to its strong association with acorns, which it caches in granary trees as its primary food resource during winter.

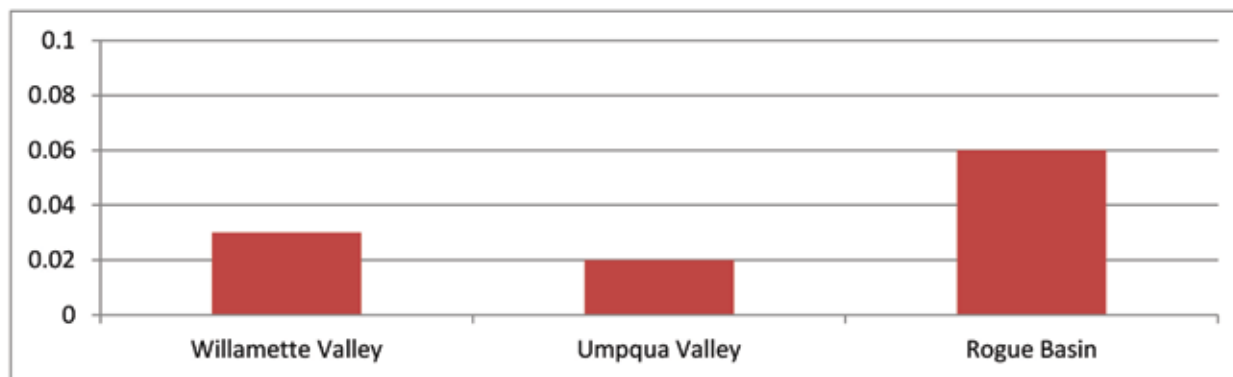


Greg Homel, Natural Elements Productions

The hypothesis for the northern range limitation is the lack of diversity of oak tree species due to inconsistencies and the cyclic nature of acorn production by different oak tree species annually. Conversely, expansion in the Willamette Valley was likely enhanced with extensive conversion of oak savannah into oak woodland and forest.

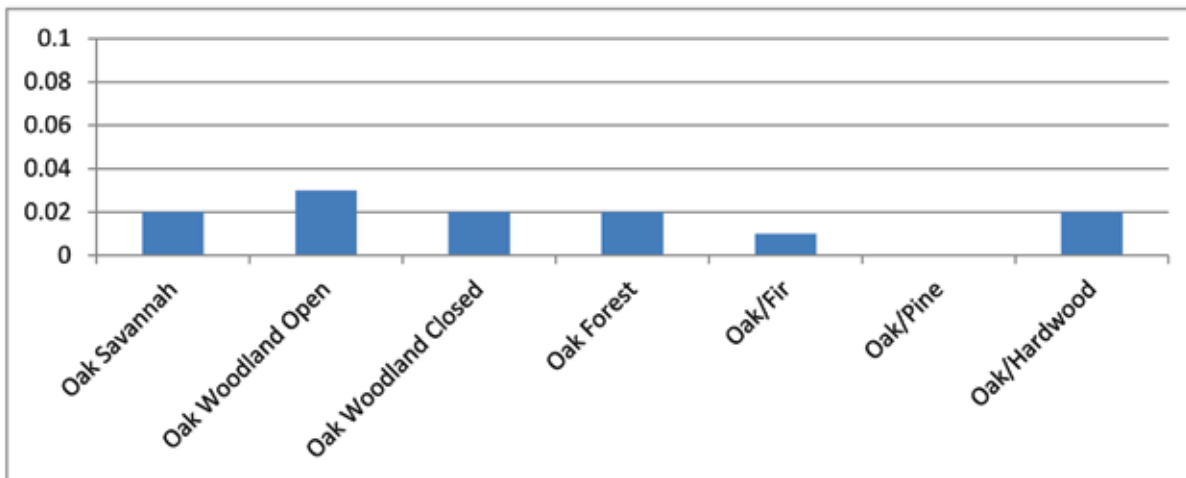
Breeding Range in Oak Habitats: Distributed throughout oak habitats in the Klamath Mountains and Willamette Valley ecoregions in OR, with a small population in south-central WA in oak habitats of the East-slope Cascades ecoregion.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Very low and similar density estimates in the Willamette Valley (0.03 birds/ha) and Umpqua Valley (0.02 birds/ha). Density estimates twice as high in the Rogue Basin (0.06 birds/ha).



ACORN WOODPECKER

Oak Habitat Type Regional Density Estimates: Very low and similar density estimates (< 0.04 birds/ha) in all oak-dominant habitat types. Associated more with closed canopies in the Willamette Valley (Oak Forest), and open canopies in the Klamath Mountains (Oak Woodland Open and Oak Savannah). Generally absent from Oak/Fir habitat except for the Rogue Basin.



Oak Habitat Conditions/Relationships:

Willamette Valley

- only present at site with no Douglas-fir in the canopy throughout the Willamette Valley³⁷
- oak basal area almost twice as high at granary sites than at non-granary sites; shrub height shorter in granary plots than non-granary in central Willamette Valley³⁸
- territories tend to have larger oaks, more dead limbs, and lower density of trees than unoccupied sites; abundance most correlated to the number of dead limbs on trees; understory at most colonies lacked shrub cover, either residential or grazed by livestock³⁹

Willamette/Umpqua/Rogue

- significantly more abundant where shrub cover $>50\%$ ⁴⁰

Northern California

- positively associated with tan oak canopy volume and mast production⁴¹
- abundance positively correlated with number of granary trees and number of valley oaks >5 cm (2 in) dbh⁴²
- significantly more abundant in plots with low tree density (<100 trees/ha [40/ac]) and large tree diameter (mean dbh 45 cm [18 in])⁴³
- abundance positively associated with number of cavities and negatively with number of snags >10 cm (4 in) dbh¹⁹

Optimal Oak Breeding Habitat: Mature woodland or forest ($>40\%$ canopy cover) with mean tree size >38 cm (15 in) dbh and $>20\%$ of the trees >53 cm (21 in) dbh, $<10\%$ Douglas-fir canopy cover, and $<15\%$ cover in the sub-canopy. Understory shrub and ground cover variable and likely less important.



Bob Altman

ASH-THROATED FLYCATCHER (*Myiarchus cinerascens*)

Population Status and Trends: BBS trend data indicates non-significant declining trends for all regional and sub-regional analyses, except for a significant long-term decline in CA.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-1.03	-0.90
NPR – OR, WA, CA	-1.03	-0.90
NPR – WA	na	na
NPR – OR	-0.54	-0.51
NPR - CA	-1.54	-1.45

Nest Location and Timing: Nest in natural cavities or those excavated by woodpeckers usually 3-6 meters (9-18 feet) above ground. Will use nest boxes. Nesting occurs primarily mid-May through early July.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the Klamath Mountains and East-slope Cascades ecoregions.

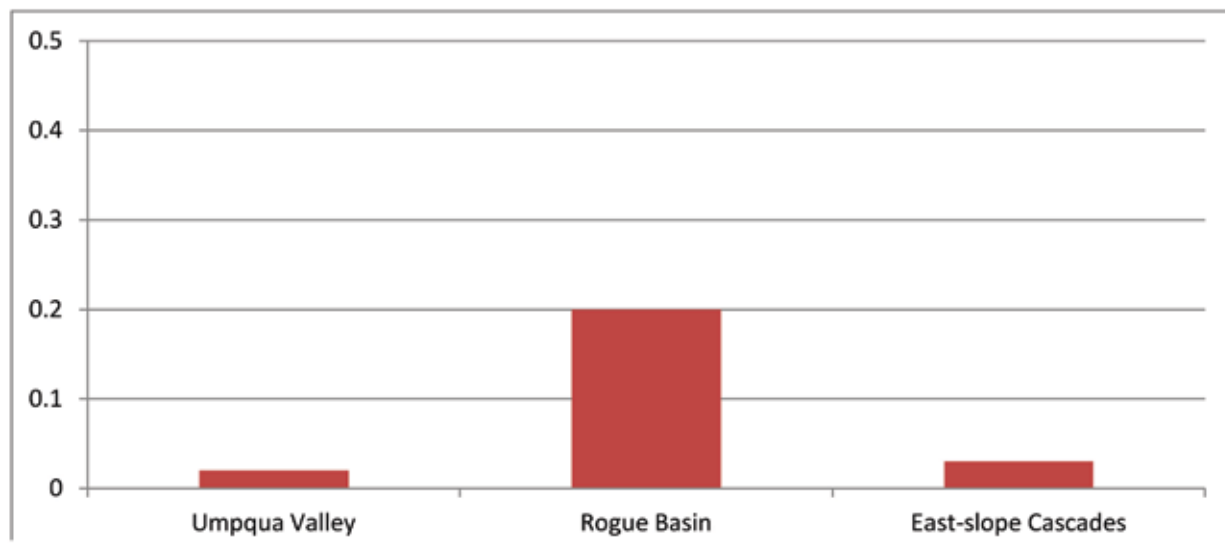
Comments: Long-distance migrant. A Klamath Mountains and East-slope Cascades species associated with mature trees with cavities and edge habitat in savannah and open woodland types. Limited occurrence in oak-conifer types, and relatively high density estimates in Oak/Hard-



Greg Homel, Natural Elements Productions

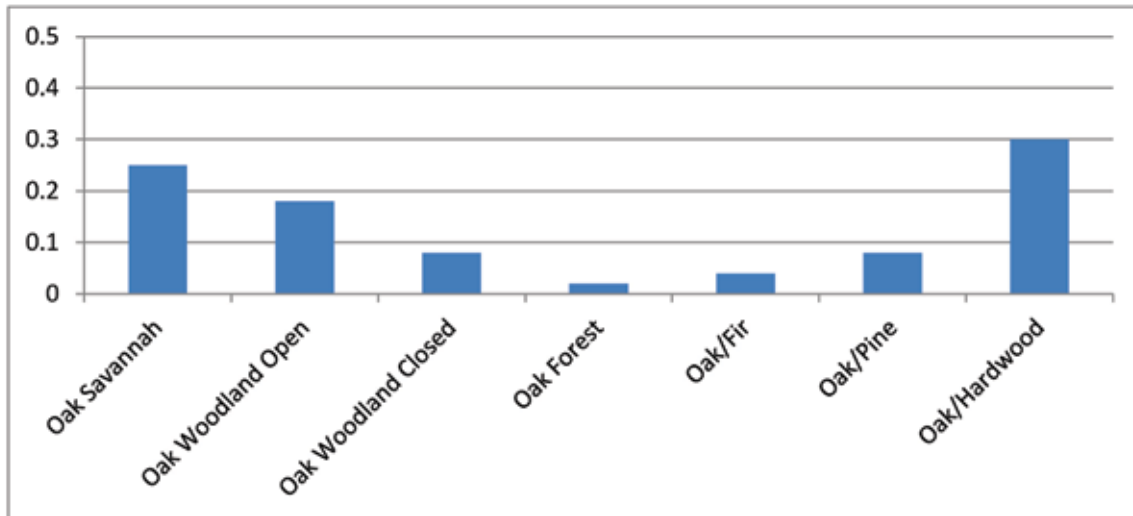
wood and open oak-dominant habitats indicate strong association with hardwoods. Understory shrub cover may be highly variable, although some shrub cover could provide productive foraging on aerial insect hatches.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Very low density estimates in the Umpqua Valley and East-slope Cascades (< 0.04 birds/ha), but moderately high density estimates in the Rogue Basin (0.20 birds/ha).



ASH-THROATED FLYCATCHER

Oak Habitat Type Regional Density Estimates: Relatively moderate density estimates in Oak Savannah (0.25 birds/ha) that decline as canopy cover increases to near absence in Oak Forest. Density estimates highest in Oak/ Hardwood (0.30 birds/ha), and low in the two oak-conifer types (< 0.09 birds/ha).



Oak Habitat Conditions/Relationships:

East-slope Cascades

- most abundant in large pine/large oak habitats at sites with mean dbh of oaks 36 cm (14 in) and mean tree height 10 m (35 ft) in south-central WA⁴⁴
- most abundant at mature oak sites, mature oak mixed with some pine, and riparian; nesting landscape habitats characterized by tall oak trees with mean nest tree dbh of 36 cm (14 in) and mean cover around nest tree plot of 58% grass, 11% shrub, and 80% canopy in south-central WA⁴⁵

Umpqua/Rogue

- significantly more abundant where canopy cover <25% than 50-75%; general trend of decreasing abundance with increasing canopy cover⁴⁰

Northern California

- abundance negatively correlated to residential development and positively correlated to amount of oak habitat in the landscape⁴²
- abundance positively correlated with shrubs and cavities and negatively correlated with mean basal area of oak⁴⁶

Optimal Oak Breeding Habitat: Mature savannah or open woodland (<50% canopy cover) with significant edge habitat, mean tree size >38 cm (15 in) dbh with >20% of trees >53 cm (21 in) dbh, and <5% Douglas-fir canopy or sub-canopy cover. Understory shrub and ground cover variable and likely less important.



BEWICK'S WREN (*Thryomanes bewickii*)

Population Status and Trends: BBS trend data indicates relatively stable and non-significant short-term trends for all regional and sub-regional analyses, with significantly increasing long-term trends in WA being countered by significantly long-term declining trends in CA and for the entire region.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-1.54	0.72
NPR – OR, WA, CA	0.25	0.57
NPR – WA	1.76	1.23
NPR – OR	0.41	0.11
NPR - CA	-1.87	-1.66

Nest Location and Timing: Nest in natural cavities or those excavated by woodpeckers at low heights usually < 3 meters (20 feet) from ground. Nesting occurs primarily from early April into early July. Will nest near or away from human settlement.

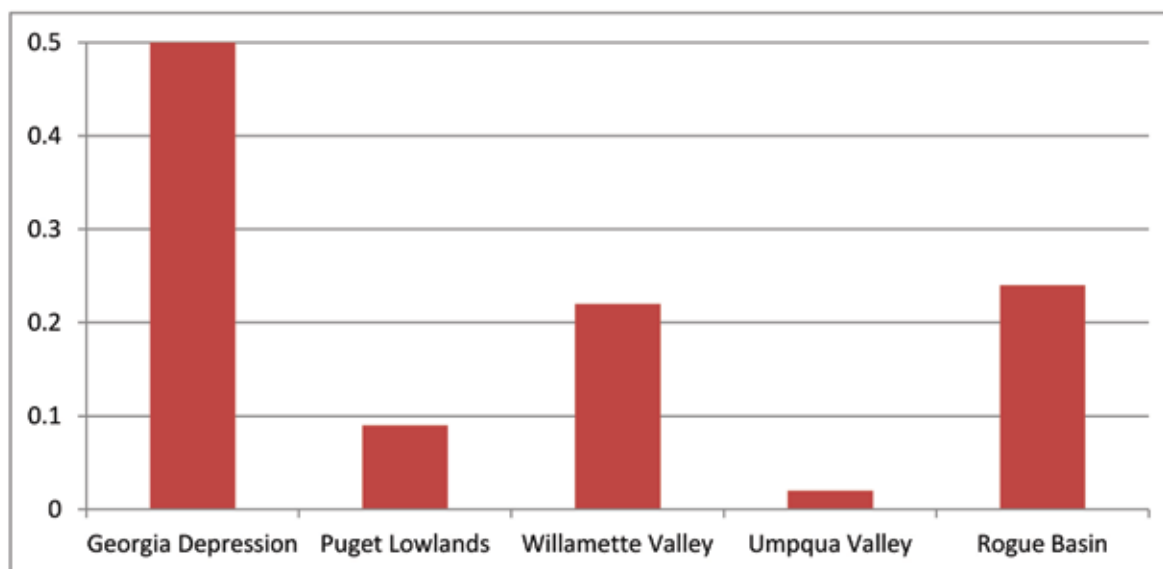
Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region, although occurrence in East-slope Cascades relatively recent and local in distribution.



Greg Homsel, Natural Elements Productions

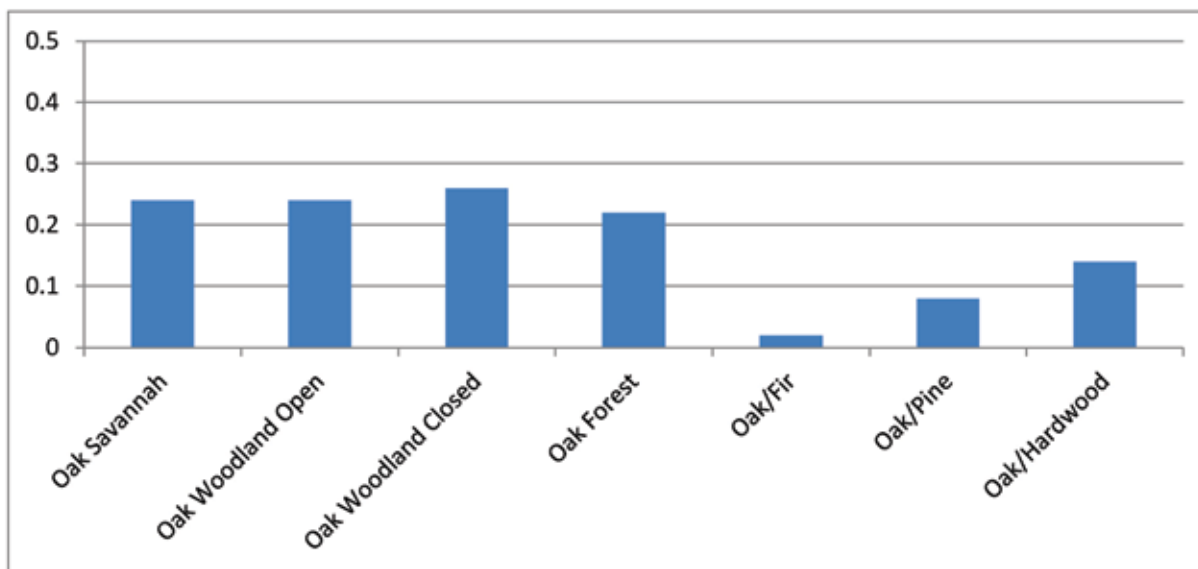
Comments: Resident. An understory species most associated with a relatively dense shrub layer and canopy cover not likely a determinant of habitat use. Thus, strongest association in the Rogue Basin is with Oak Savannah where the chaparral shrub habitat is prevalent, but least associated with Oak Savannah in the Willamette Valley where understory is usually more grass-dominated than shrub-dominated. Near absence in Oak/Fir habitat indicates strong association with hardwoods.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Highly variable density estimates from low in the Umpqua Valley (0.02 birds/ha) and Puget Lowlands (0.09 birds/ha) to moderate in the Willamette Valley (0.22 birds/ha) and Rogue Basin (0.24 birds/ha) to high in the Georgia Depression (0.52 birds/ha).



BEWICK'S WREN

Oak Habitat Type Regional Density Estimates: Moderate and similar density estimates in all oak-dominant habitat types (0.22 - 0.26 birds/ha), and moderate in Oak/Hardwood (0.14 birds/ha). Low density estimates in both oak-conifer types (<0.09 birds/ha). This pattern is balanced by moderate to high densities in Oak Savannah (0.36 birds/ha) and very low in Oak Forest (0.01 birds/ha) in the Rogue Basin, with the opposite in the Willamette Valley, 0.04 birds/ha in Oak Savannah and 0.24 birds/ha in Oak Forest.



Oak Habitat Conditions/Relationships:

Willamette Valley

- most abundant at site with least canopy cover (40%) and highest sub-canopy cover (37%, mostly oak) and 52% shrub cover; least abundant at site with second highest canopy cover (82%) and sub-canopy cover (14%) and 54% shrub cover³⁷

Rogue Basin

- significantly less abundant in sites that had undergone fuel reduction treatments resulting in greater herbaceous cover and reduced shrub cover⁴⁷
- significantly less abundant at sites where shrub cover had been reduced by mechanical mastication thinning treatment than at sites that were untreated in the Applegate Valley⁴⁸

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >25% or >75% than 50-75%; tree dbh <23 cm (9 in) than 38-53 cm (15-21 in); and shrub cover >75% than <75%; general trend of increasing abundance with increasing shrub cover⁴⁰

Northern California

- abundance positively correlated with number of snags >13 cm (5 in) and negatively correlated with average height of canopy and grazing intensity⁴²

Optimal Oak Breeding Habitat: Mature or young savannah, woodland, or forest with <10% Douglas-fir in the canopy, sub-canopy, and shrub layer, and native shrub cover >60%. Canopy and ground cover variable and likely less important.



BLACK-CAPPED CHICKADEE (*Parus atricapilla*)

Population Status and Trends: BBS trend data indicates long-term significant declines for all regional and sub-regional analyses, except for non-significant declines in WA, and a long-term substantial and significant increase in CA.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-2.03	-3.36
NPR – OR, WA, CA	-0.93	-1.61
NPR – WA	-0.49	-0.72
NPR – OR	-1.38	-2.41
NPR - CA	16.01	-0.92

Nest Location and Timing: Nest in natural cavities or those excavated by woodpeckers at variable heights but often <5 meters (15 feet). Will use nest boxes and will nest near or away from human settlement. In areas near human settlement, can be negatively affected by non-native competitors for cavities such as European Starling and House Sparrow. Nesting occurs primarily from early April through early July.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region except for Vancouver Island, British Columbia, and the San Juan Islands, Washington where it may be a rare and local breeder.



Alan Wilson

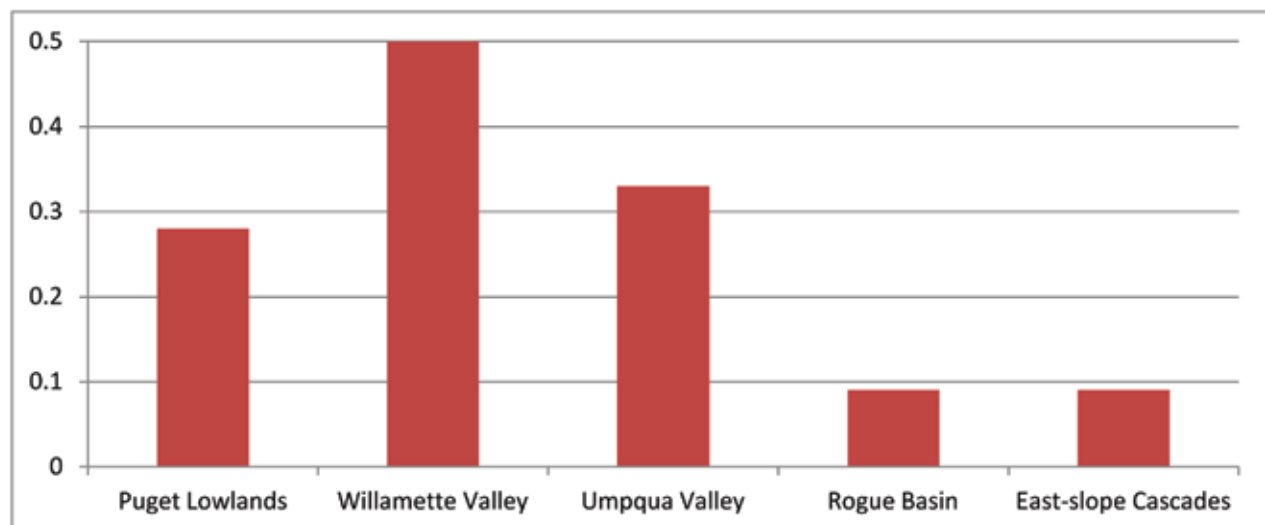
Comments: Resident. A species most associated with woodland or forest habitat with moderate to high amounts of sub-canopy cover where most foraging occurs. Tree size and shrub cover are variable and likely not a determinant of habitat use. Density estimates lowest in the drier and warmer Rogue Basin and East-slope Cascades.

Oak Habitat Conditions/Relationships:

Puget Lowlands

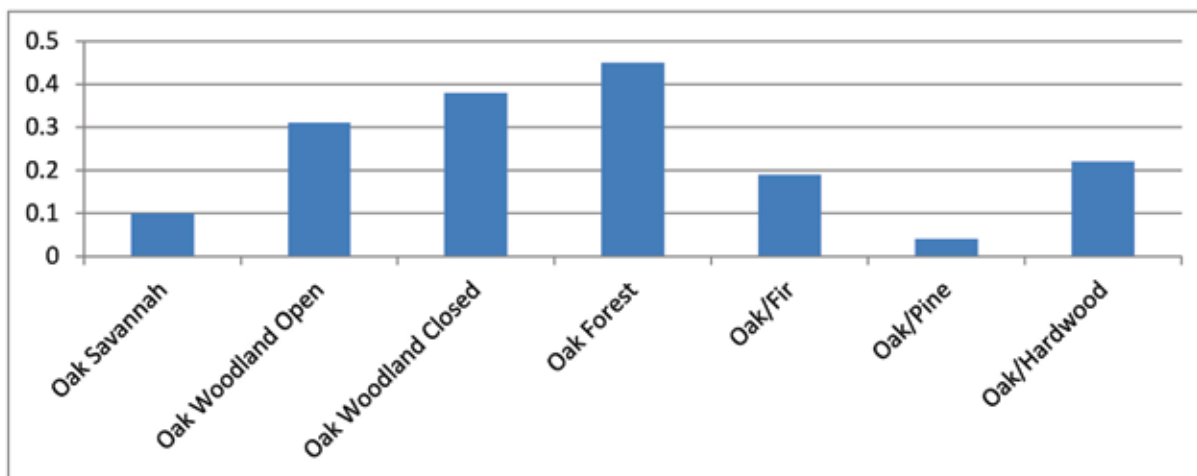
- relatively abundant where mean tree cover 25-50% (closer to 50), mean shrub cover 50-75% (closer to 50), and herbaceous cover 50-75% (closer to 50) on Fort Lewis Military Installation⁴⁹

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Moderate to high density estimates (0.28 - 0.55 birds/ha) in the northern ecoregions, but substantially higher in the Willamette Valley (0.55 birds/ha), and lowest in the drier ecoregions of the Rogue Basin and East-slope Cascades (0.09 birds/ha).



BLACK-CAPPED CHICKADEE

Oak Habitat Type Regional Density Estimates: Similar moderate to high density estimates in all woodland and forest oak-dominant habitat types (0.31 - 0.45 birds/ha), with much lower density estimates in Oak Savannah (0.10 birds/ha). Moderate density estimates in Oak/Fir (0.19 birds/ha) and Oak/Hardwood (0.22 birds/ha), but very low in Oak/Pine (0.04 birds/ha). This pattern is generally consistent throughout the region.



Willamette Valley

- abundance positively associated with percent sub-canopy cover of oak, and negatively correlated with percent snowberry cover; most abundant at two sites with lowest canopy cover (40 and 57%) and highest subcanopy cover (37%, dominated by oak); least abundant at site with 62% canopy cover (>95% oak), least sub-canopy cover (8%), and most shrub cover (65%, dominated by snowberry)³⁷
- highest density at sites with large woodland edges, followed by interior woodlands, and small woodlands²²

Umpqua Valley

- most abundant at sites dominated by moderate to large madrone trees in the canopy with lesser amounts of oaks and Douglas-fir, and substantial poison oak in the understory (22-26% cover)⁵⁰

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >25% than <25% and >75% than 25-75%; tree dbh >23 cm (9 in) than <23 cm (9 in) and >38 cm (15 in) than <38 cm (15 in); and shrub cover >50% than <50%; general trend of increasing abundance with increasing canopy cover and tree size⁴⁰

Rogue Basin

- abundance positively associated with tree cover⁴⁷

Optimal Oak Breeding Habitat: Mature or young woodland or forest (>35% canopy cover) with mean tree dbh >23 cm (9 in), and moderate to high sub-canopy cover (20-40%). Understory shrub and ground cover variable and likely less important.



Bob Altman

BLACK-HEADED GROSBEAK (*Pheucticus melanocephalus*)

Population Status and Trends: BBS trend data indicates relatively stable to increasing trends for all short-term and long-term regional and sub-regional analyses, including substantial and significantly increasing trends in WA.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	0.78	0.93
NPR – OR, WA, CA	0.88	1.01
NPR – WA	4.51	4.36
NPR – OR	0.28	0.05
NPR - CA	0.70	0.59

Nest Location and Timing: Open cup-nest in tree away from trunk usually 2-5 meters (6-15 feet) above ground. Nesting occurs primarily from late-May through early July.

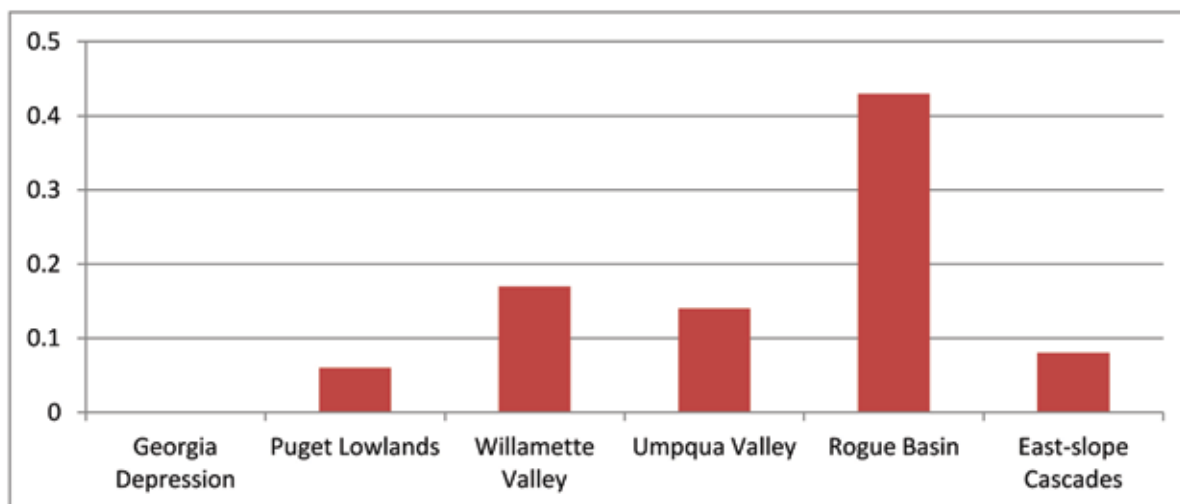
Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.

Comments: Long-distance migrant. A canopy and sub-canopy species most associated with woodlands and forests with a relatively closed canopy. Forests do not need to be mature, but need to have moderate to high canopy and sub-canopy cover where most foraging occurs. Strong association with Riparian Oak where high foliage volume and cover usually occurs in the sub-canopy, and Oak/Fir with increased structural layering of vegetation below the canopy.



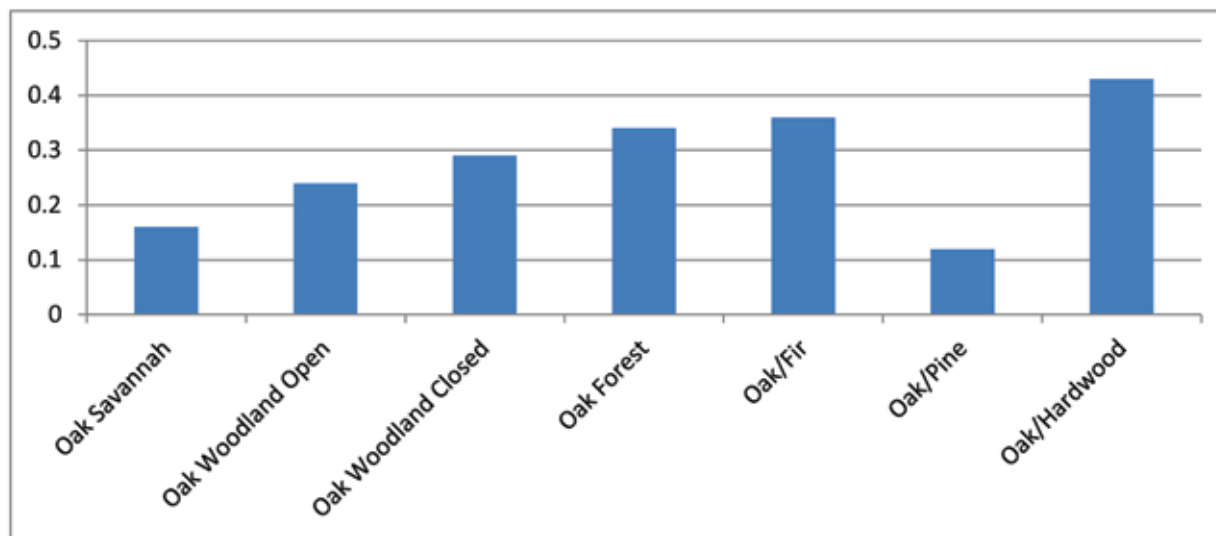
John White

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Low to moderate density estimates (< 0.18 birds/ha) in all ecoregions except relatively high in Rogue Basin (0.43 birds/ha).



BLACK-HEADED GROSBEAK

Oak Habitat Type Regional Density Estimates: Moderate to high density estimates in all habitat types (0.12 - 0.43 birds/ha), increasing with increasing canopy cover in oak-dominant types. This pattern is generally consistent throughout the region except in the Umpqua Valley where density estimates are similar in all oak-dominant types. Highest density estimates in Oak/Fir (0.36 birds/ha) and Oak/Hardwood (0.43 birds/ha).



Oak Habitat Conditions/Relationships:

Puget Lowlands

- positive relationship with total basal area of trees, and density of Oregon ash and willows in the shrub layer on McChord Air Force Base⁵¹

Willamette Valley

- abundance positively associated with percent sub-canopy cover; most abundant at two sites with relatively high canopy cover (75% and 65%), sub-canopy cover (31 and 32%), and low to moderate shrub cover (34% and 50%); least abundant at two sites with least amount of sub-canopy cover (8 % and 14%), relatively moderate shrub cover (54% and 65%), and relatively high canopy cover (62% and 82%)³⁷

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >50% than <50%; tree dbh 38-53 cm (15-21 in) than <38 cm (15 in); and shrub cover >50% than <25% and >75% then 25-50%; general trend of increasing abundance with increasing canopy cover⁴⁰

Optimal Oak Breeding Habitat: Mature or young woodland or forest (>40% canopy cover), including mixed oak-fir in the canopy, with mean tree dbh >23 cm (9 in), and moderate to high sub-canopy cover (>20%). Understory shrub and ground cover variable and likely less important.



Bob Altman

BLACK-THROATED GRAY WARBLER (*Dendroica nigrescens*)

Population Status and Trends: BBS trend data indicates relatively stable and mostly non-significant trends for all short-term and long-term regional and sub-regional analyses, except for significant long-term substantial declines in OR, which is likely driving the regional long-term significant decline.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-1.01	-1.38
NPR – OR, WA, CA	-1.28	-1.03
NPR – WA	0.22	0.18
NPR – OR	-2.70	-2.88
NPR - CA	-0.71	-0.46

Nest Location and Timing: Open cup-nest in tree or tall shrub away from trunk near end of branches usually 2-5 meters (6-15 feet) above ground. Nesting occurs primarily from mid-May through early July.

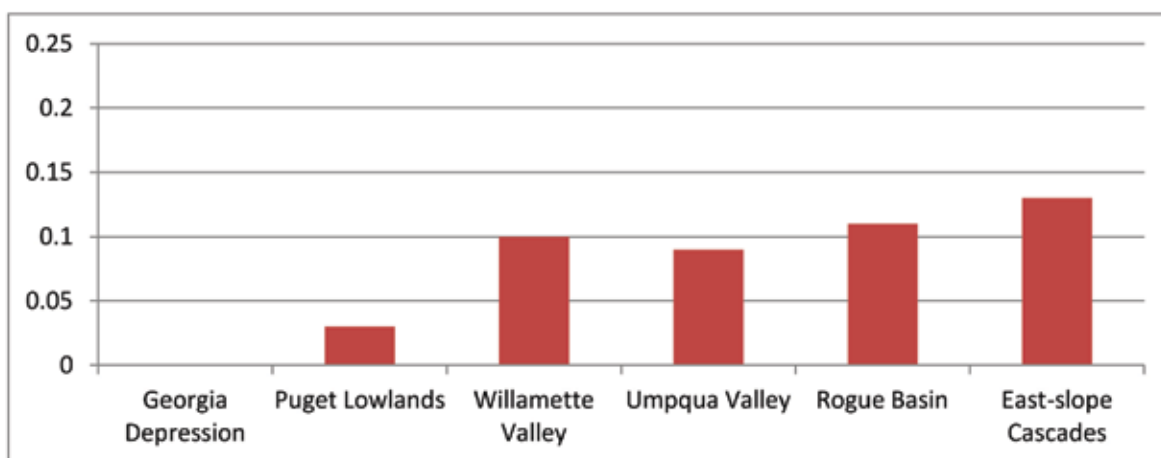
Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.



Greg Homel, Natural Elements Productions

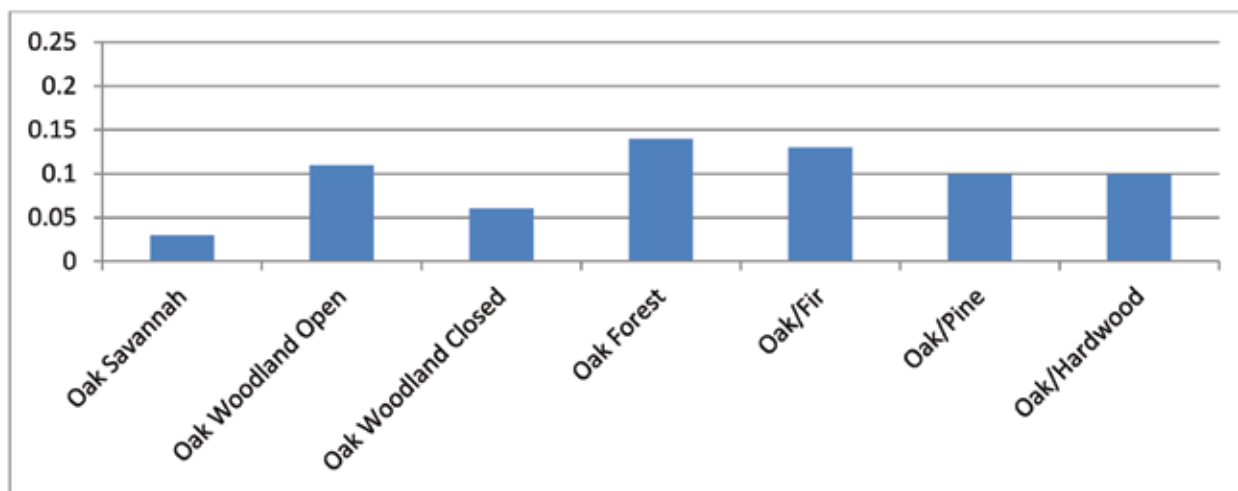
Comments: Long-distance migrant. A canopy and sub-canopy species most associated with forests and closed woodlands (i.e., relatively closed canopy), especially in mixed oak/Douglas-fir. Forests don't need to be mature, but need to have high canopy and sub-canopy cover where most foraging occurs. Patch size may be a limiting factor with smaller patches of forest or woodland (e.g., <10 ha [25 ac]) less suitable or unsuitable.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively low to moderate and similar density estimates (approximately 0.10 birds/ha) in all ecoregions, except much lower in the northern ecoregions of the Puget Lowlands and Georgia Depression (< 0.04 birds/ha).



BLACK-THROATED GRAY WARBLER

Oak Habitat Type Regional Density Estimates: Relatively low to moderate and similar density estimates in all oak-dominant and mixed oak types (0.06 – 0.14 birds/ha), except very low in Oak Savannah (0.03 birds/ha). This pattern is predominant in the Klamath Mountains ecoregion, but different in the Willamette Valley with much higher density estimates in Oak Forest (0.17 birds/ha).



Oak Habitat Conditions/Relationships:

Puget Lowlands

- positive relationship with basal area of Douglas-fir, and mean canopy cover and density of crabapple on McChord Air Force Base⁵¹

Willamette Valley

- most abundant at site with highest canopy cover (84%, 100% oak) and highest shrub cover (65%, mostly snowberry); second highest abundance at site with most Douglas-fir canopy cover (11%) and most sub-canopy cover (37%, dominated by oak)³⁷
- most associated with larger patches⁵¹
- territories in 83% of sites >10 ha (25 ac), but in 0% of sites <10 ha (25 ac)²³

Rogue Basin

- abundance decreased post wildfire (1-8 years post-fire) in oak/mixed-conifer forest in the Applegate Valley⁵²

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >75% than <25%; tree dbh 23-53 cm (9-21 in) than <23 cm (9 in); and shrub cover 50-75% than 25-50%; general trend of increasing abundance with increasing canopy cover⁴⁰

Optimal Oak Breeding Habitat: Mature or young closed woodland or forest (>60% canopy cover), including mixed oak-fir in the canopy, in large patches (e.g. >10 ha [25 ac]) with mean tree dbh >23 cm (9 in), and moderate to high sub-canopy cover (>20%). Understory shrub and ground cover variable and likely less important.



Bob Altman

BLUE-GRAY GNATCATCHER (*Polioptila caerulea*)

Population Status and Trends: First recorded in the Rogue Valley around 1960 with nesting documented in 1963.⁵³ Currently, breeding at numerous locations.¹⁸ BBS trend data indicates non-significant and relatively stable trends for all regional and sub-regional analyses, except a substantial long-term non-significant increase in OR.³⁶ A “Species of Greatest Conservation Need” in the Klamath Mountains ecoregion.²⁵

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	0.77	0.30
NPR – OR, WA, CA	0.77	0.30
NPR – WA	na	na
NPR – OR	11.89	-0.11
NPR - CA	0.18	0.23

Nest Location and Timing: Open cup-nest away from trunk of tree or shrub on a branch or on a forked branch at variable heights, but usually <6 meters (18 feet) above ground. Highly susceptible to parasitism from cowbirds. Nesting occurs primarily from early May through early July.

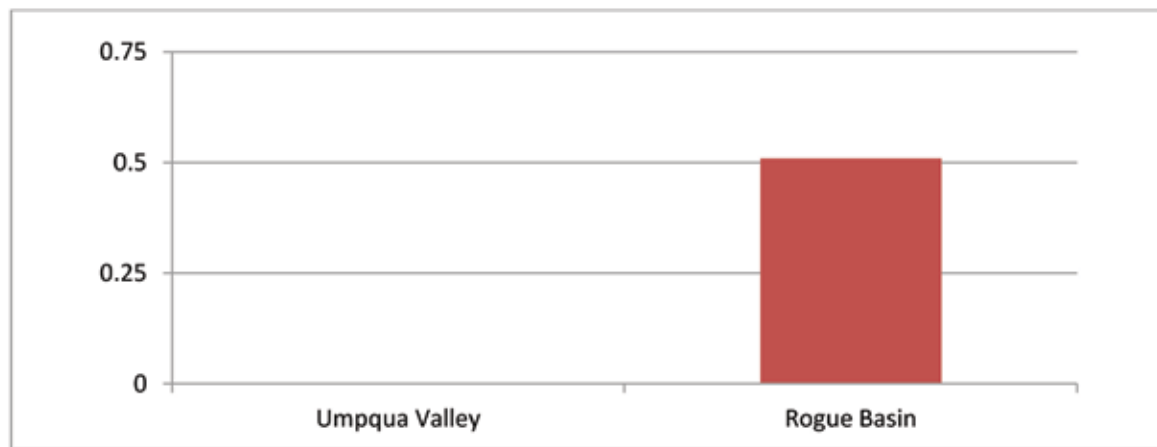


Greg Lavaty

Breeding Range in Oak Habitats: Distributed primarily in oak habitats of the Rogue Basin of the Klamath Mountains ecoregion, with some scattered breeding records in the Umpqua and southern Willamette Valleys.

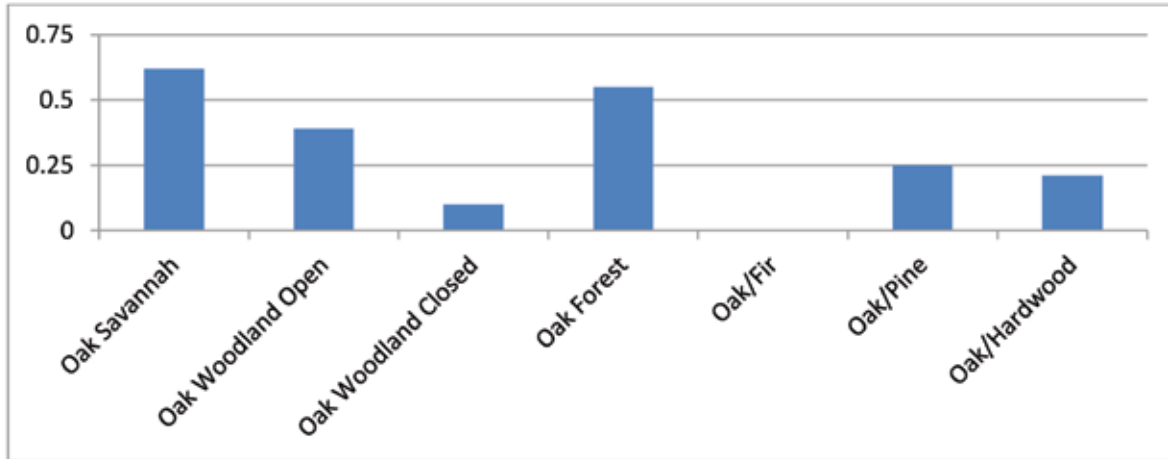
Comments: Long-distance migrant. A Klamath Mountains Oak/Chaparral species most associated with scattered canopy oak trees with a dense shrub layer, or young scrub oak trees that form a dense shrub layer. Structural complexity within the shrub layer is the dominant habitat characteristic, especially with the growth forms of *ceanothus* and manzanita. Absence from Oak/Fir is noteworthy.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Moderately high density estimates in the Rogue Basin (0.51 birds/ha).



BLUE-GRAY GNATCATCHER

Oak Habitat Type Regional Density Estimates: Relatively high density estimates in oak-dominant habitat types (> 0.30 birds/ha), except for Oak Woodland Closed (0.10 birds/ha). Relatively moderate density estimates in mixed oak types (0.21 - 0.25 birds/ha), except absent in Oak/Fir.



Oak Habitat Conditions/Relationships:

Rogue Basin

- significantly more abundant where canopy cover <25% than >25%, and tree dbh <38 cm (15 in) than 38-53 cm (15-21 in); general trend of decreasing abundance with increasing canopy cover, although similar between 50-75% and >75%⁴⁰
- abundance negatively associated with tree cover⁴⁷



Optimal Oak Breeding Habitat: Mature or young oak savannah or open woodland (<45% canopy cover) with a dense structurally diverse chaparral shrub layer (>40%), or dense scrub oak forest (>70% canopy cover) that functions as a shrub layer. Tree size and ground cover variable and likely less important.



BUSHTIT (*Psaltriparus minimus*)

Population Status and Trends: Historically, common or abundant throughout the region.²¹ BBS trend data indicates short-term mostly non-significant declining trends for all regional and sub-regional analyses, with significant long-term substantial declines in OR and CA, which are likely driving the regional long-term significant decline.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-1.75	-0.15
NPR – OR, WA, CA	-3.41	-2.16
NPR – WA	-1.10	1.89
NPR – OR	-5.18	-4.24
NPR - CA	-2.46	-2.68

Nest Location and Timing: A hanging, pendulous nest, suspended from a forked branch of a tree or tall shrub usually 2-5 meters (6-15 feet) above the ground. Will nest near or away from human settlement. Nesting occurs primarily from mid-April through late June.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.

Comments: Resident. A species most associated with structural diversity in the midstory and understory (sub-canopy and shrub layer) of woodland habitats. Canopy



Greg Homel, Natural Elements Productions

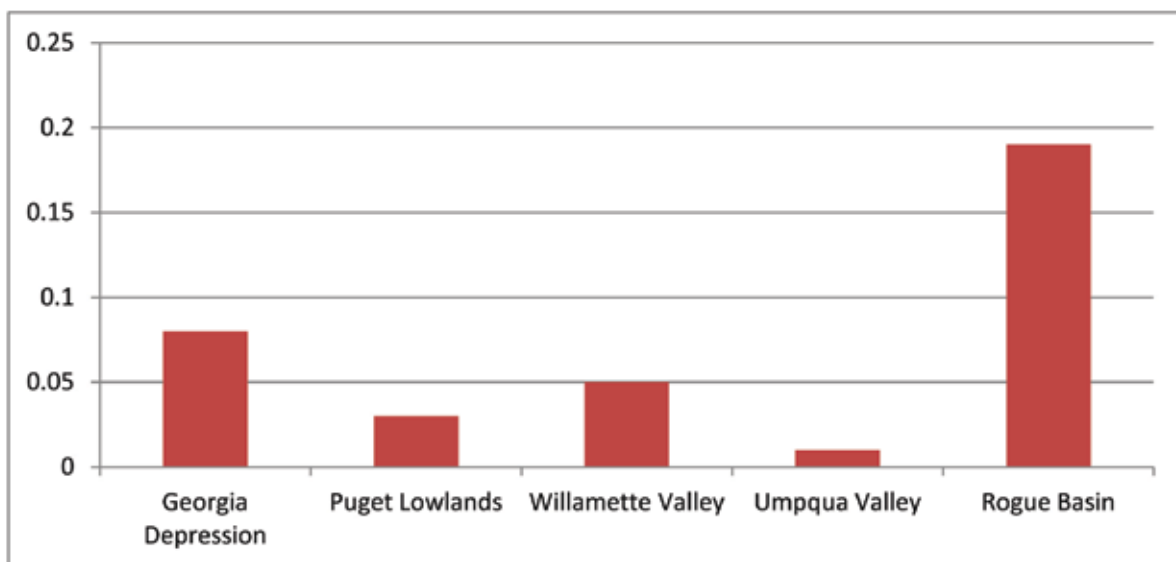
cover can be variable and likely not a determinant of habitat use. Suitable structural complexity is apparently most prevalent in Oak/Chaparral habitats of the Rogue Basin, where density estimates are substantially higher than any other ecoregion/sub-region.

Oak Habitat Conditions/Relationships:

Georgia Depression

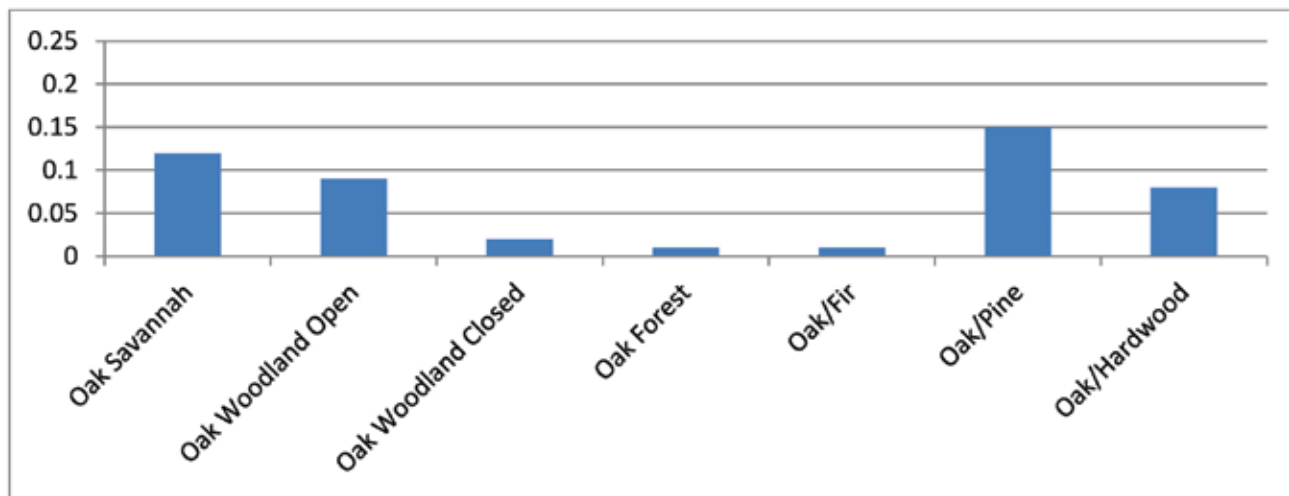
- highly associated with urban areas with a snowberry understory on Vancouver Island⁵⁴

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively low and similar density estimates (≤ 0.09 birds/ha) throughout the region, except for much higher density estimates in the Rogue Basin (0.19 birds/ha).



BUSHTIT

Oak Habitat Type Regional Density Estimates: Relatively low density estimates in all oak-dominant habitat types (< 0.13 birds/ha) and decreasing with increasing canopy cover. Highest density estimates in Oak/Pine (0.15 birds/ha), but nearly absent in Oak/Fir. This pattern is driven by high density estimates in Oak Savannah in the Rogue Basin (0.28 birds/ha). In the Willamette Valley and Umpqua Valley, absent or rare in Oak Savannah.



Willamette Valley

- occurred in sites with less Douglas-fir cover; presence significantly greater where less sub-canopy cover of Douglas-fir; highest abundance where lowest canopy cover (40%) and highest sub-canopy cover (37%); mean shrub cover at three sites where it occurred was 56% (range 50-65%)³⁷
- most abundant at sites with 61% and 82% canopy cover, one with numerous large oaks and many smaller ones, and a dense understory of sapling Douglas-fir and poison oak; and the other with a dense shrub understory, and little to no conifer encroachment; least abundant at site with least canopy cover (44%) and fewest trees (18/ha, 44/ac)⁵⁵
- territories in 100% of sites >10 ha (25 ac), but only 29% of sites <10 ha (25 ac)²³

Umpqua Valley

- absent or incidental except moderately abundant where relatively large madrone trees in the canopy, and relatively abundant, but generally smaller oaks in the sub-canopy, and substantial poison oak (27% cover) in the understory⁵⁰

Rogue Basin

- significantly more abundant in sites that had undergone fuel reduction treatments resulting in greater herbaceous cover and reduced shrub cover⁴⁷

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover <50% than 50-75%; general trend of increasing abundance with decreasing canopy cover and increasing tree size⁴⁰

Optimal Oak Breeding Habitat: Mature or young woodlands (30-70% canopy cover), including mixed oak/fir, with a dense midstory and sub-canopy structure (>25% cover), and a moderate but variable shrub understory (30-70% cover) of native species such as snowberry, California hazel, and poison oak. In Rogue Basin, oak savannah/chaparral meets habitat requirements.



Bob Allman

CALIFORNIA TOWHEE (*Pipilo crissalis*)

Population Status and Trends: BBS trend data indicates non-significant and relatively stable trends for all regional and sub-regional analyses.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	0.11	-0.02
NPR – OR, WA, CA	0.11	-0.02
NPR – WA	na	na
NPR – OR	-0.13	-0.05
NPR - CA	0.16	-0.06

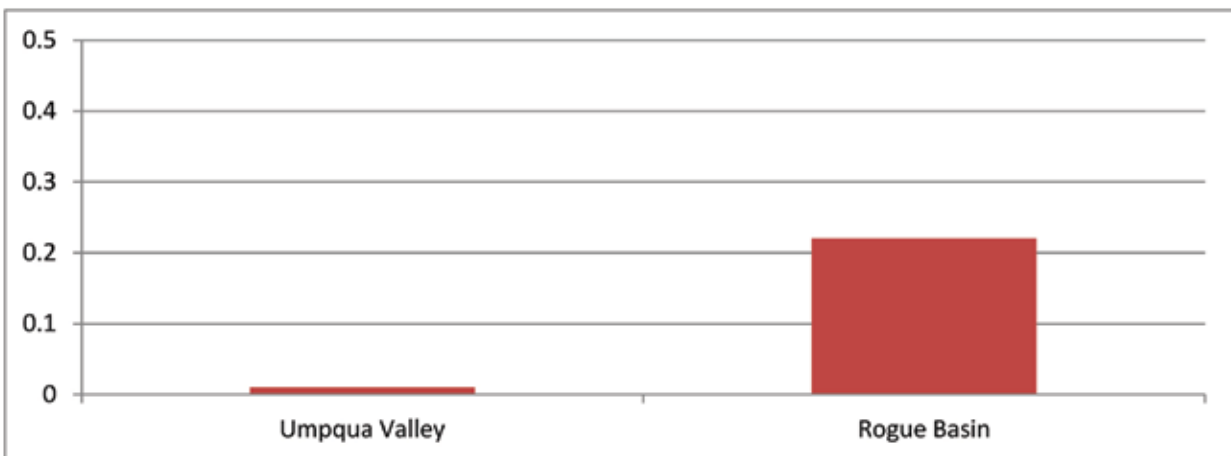
Nest Location and Timing: Open cup-nest in dense part of foliage of shrub or small tree usually 1-4 meters (3-12 feet) above ground. Nesting occurs primarily from late April through early July.

Breeding Range in Oak Habitats: Distributed almost exclusively in oak habitats of the Rogue Basin of the Klamath Mountains ecoregion, except for some local breeding in the southern part of the Umpqua Valley.



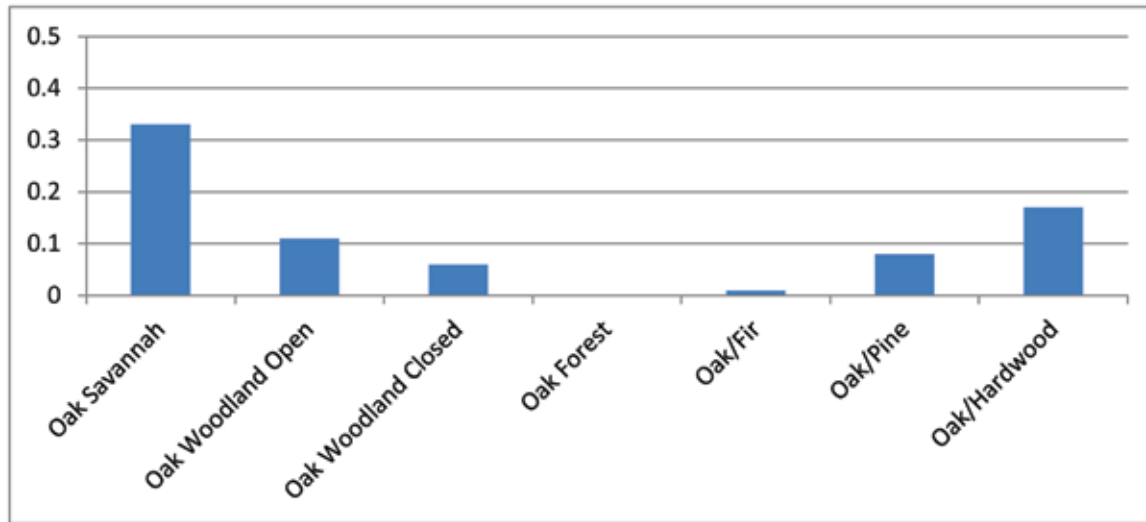
Comments: Resident. A Klamath Mountains species most associated with an Oak Savannah canopy with moderate to high shrub cover (i.e., Oak/Chaparral) interspersed with grassy patches, or dense young or mature scrub oak trees that function as shrub cover. Near absence in Oak/Fir habitat, and moderately high density estimates in Oak/Hardwood habitat indicates strong association with hardwoods.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Moderately high density estimates in the Rogue Basin (0.22 birds/ha).



CALIFORNIA TOWHEE

Oak Habitat Type Regional Density Estimates: Relatively moderate to high density estimates in Oak Savannah (0.33 birds/ha), decreasing substantially with increasing canopy cover and absent in Oak Forest. Low to moderate density estimates in Oak/Pine (0.08 birds/ha) and Oak/Hardwood (0.17 birds/ha), and nearly absent from Oak/Fir.



Oak Habitat Conditions/Relationships:

Rogue Basin

- significantly more abundant where canopy cover <25% than 25-75%; tree size <38 cm (15 in) than 38-53 cm (15-21 in); and shrub cover <25% than 50-75%; general trend of increasing abundance with increasing shrub cover except for >75%⁴⁰
- abundance positively associated with shrub cover and negatively associated with tree cover⁴⁷

Northern California

- abundance negatively correlated with average height of canopy⁴²



Tom Grey

Optimal Oak Breeding Habitat: Mature or young savannah or open woodland (<35% canopy cover) with <10% Douglas-fir in the canopy and sub-canopy, moderate to high native shrub cover (40-70%) in dense patches interspersed with grassy openings. Dense scrub oak can function as shrub cover and meet the habitat requirements if interspersed with grassy openings.



Bob Altman

CASSIN'S VIREO (*Vireo cassinii*)

Population Status and Trends: BBS trend data indicates relative stability with mostly non-significant trends (both positive and negative) for all regional and sub-regional analyses, except for a substantial long-term significant decline in WA.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-0.92	-0.11
NPR – OR, WA, CA	0.21	-0.52
NPR – WA	-4.02	-6.43
NPR – OR	-0.49	-0.06
NPR - CA	1.06	1.09

Nest Location and Timing: Open cup-nest away from trunk of tree or tall shrub in fork of twigs usually 2-5 meters (6-15 feet) above ground. Nesting occurs primarily from early May through early July.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.

Comments: Long-distance migrant. A canopy and sub-canopy species most associated with mature or young closed-canopy oak or oak-conifer (especially pine) forests. Shrub cover can be variable and is likely not a determinant of habitat use. Density estimates highest in the drier ecoregions, Klamath Mountains and the East-slope Cascades, where more mixed oak-conifer types occur.



Peter LaTourrette, www.birdphotography.com

Oak Habitat Conditions/Relationships:

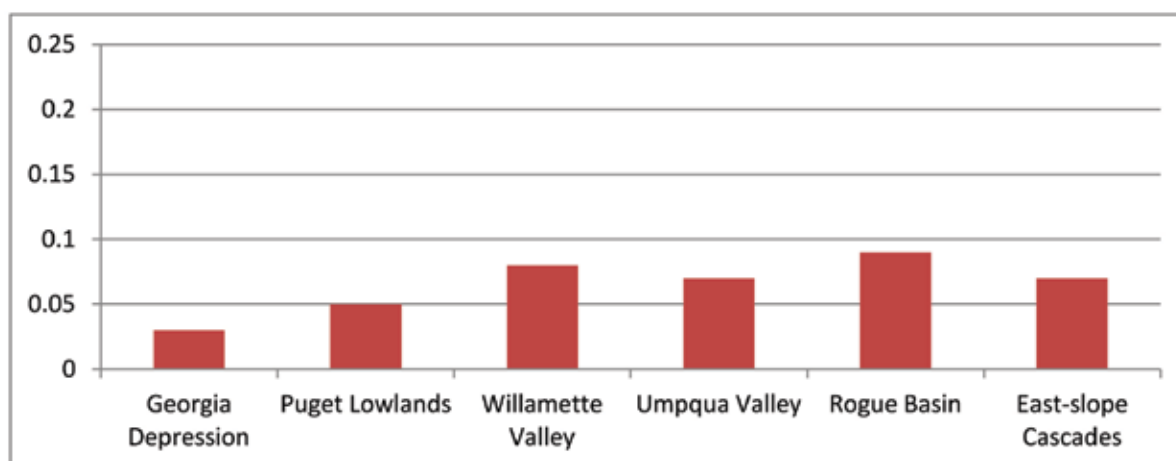
Puget Lowlands

- positive relationship with deciduous tree basal area⁵¹

Willamette Valley

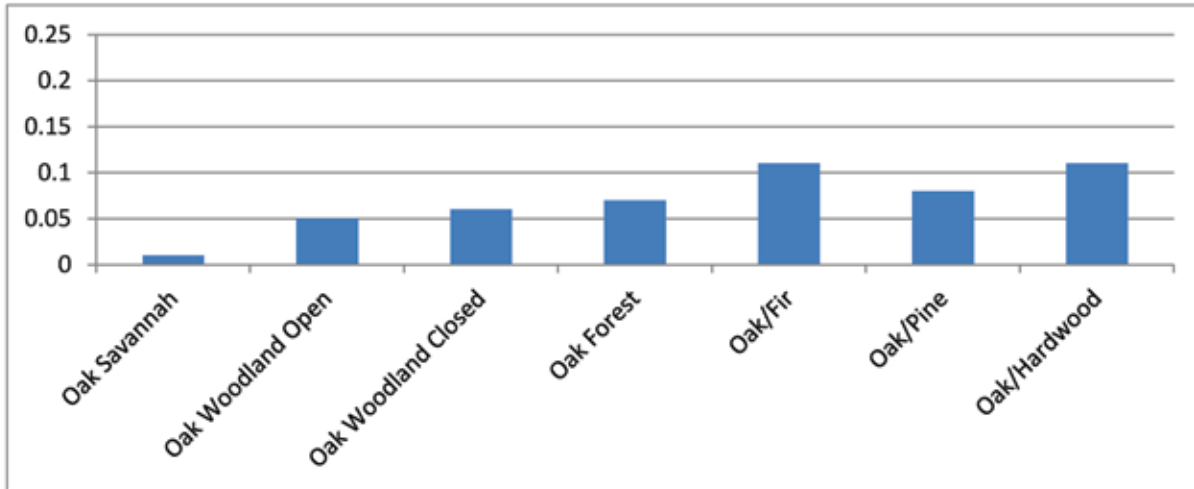
- abundance negatively correlated with mean tree dbh; three sites where most abundant were three of the four highest canopy cover sites (70-84%), had moderate sub-canopy cover (16-32%), and relatively high shrub cover (50-68%); site with lowest abundance had least sub-canopy cover (8%), and second-most shrub cover (65%)³⁷

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively low to moderate density estimates throughout the region (0.03 - 0.09 birds/ha), and increasing from north to south.



CASSIN'S VIREO

Oak Habitat Type Regional Density Estimates: Relatively low density estimates in all oak-dominant habitat types (0.05 - 0.07 birds/ha), except nearly absent from Oak Savannah (0.01 birds/ha). Density estimates increase with increasing canopy cover in oak-dominant types. Highest density estimates in the mixed oak types (0.08 – 0.11 birds/ha). This pattern is generally consistent throughout the region, although most pronounced in the Rogue Basin.



Rogue Basin

- significantly more abundant in sites that had undergone fuel reduction treatments resulting in greater herbaceous cover and reduced shrub cover but similar tree cover⁴⁷
- abundance decreased immediately post wildfire (1-2 years), but returned to pre-fire abundance at 3-8 years post wildfire in an oak/mixed-conifer forest in the Applegate Valley⁵²

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >50% than <25%, and >75% than 25-50%, and tree dbh 38-53 cm (15-21 in) than <23 cm (9 in); general trend of increasing abundance with increasing canopy cover and tree dbh⁴⁰

East-slope Cascades

- number of detections significantly correlated with number of oaks and number of pines⁴⁴

Optimal Oak Breeding Habitat: Mature or young forest or closed woodlands (>65% canopy cover), including mixed oak-conifer, with mean tree dbh >23 cm (9 in), moderate to high sub-canopy cover (>20%), and variable but less important native shrub cover (30-70%).



CHIPPING SPARROW (*Spizella passerina*)

Population Status and Trends: Historically, common or abundant throughout the region.¹⁸ Currently, uncommon or locally common with declines across the region.¹⁸ BBS trend data indicates short-term and long-term significant declines for all regional and sub-regional analyses except WA, with declines most pronounced in OR and CA.³⁶ A “Species of Greatest Conservation Need” in the Willamette Valley ecoregion.²⁵

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-2.80	-1.80
NPR – OR, WA, CA	-4.18	-2.50
NPR – WA	-1.78	0.85
NPR – OR	-4.36	-1.86
NPR - CA	-4.35	-3.81

Nest Location and Timing: Open cup-nest in foliage of trees or shrubs usually within 1-4 meters (3-12 feet) above ground. Poison oak shrub patches often used for nest sites. Highly susceptible to cowbird parasitism. Nesting occurs primarily from early May through early July.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.

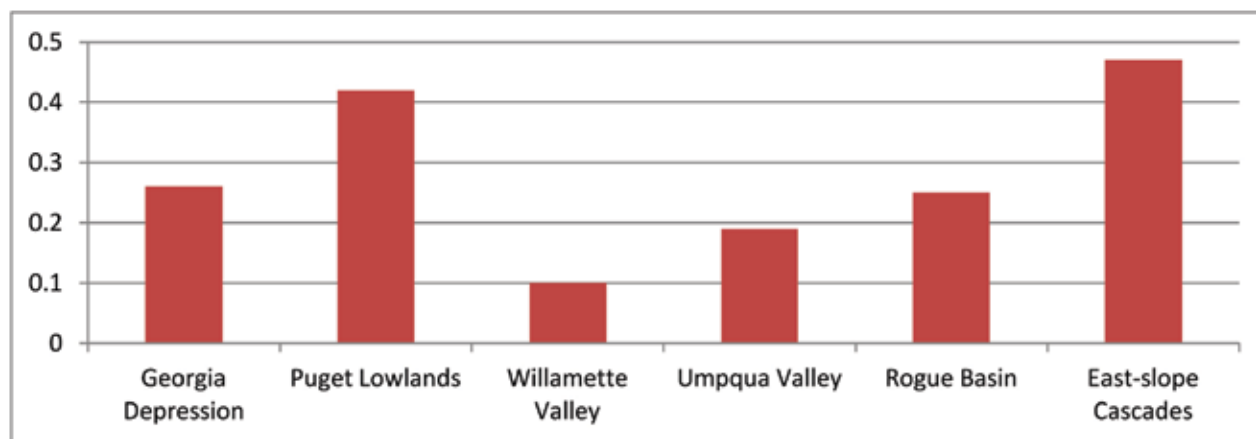
Comments: Short-distance migrant. An understory species and potential “early responder” to habitat management or restoration that opens up closed canopy and



Alan Wilson

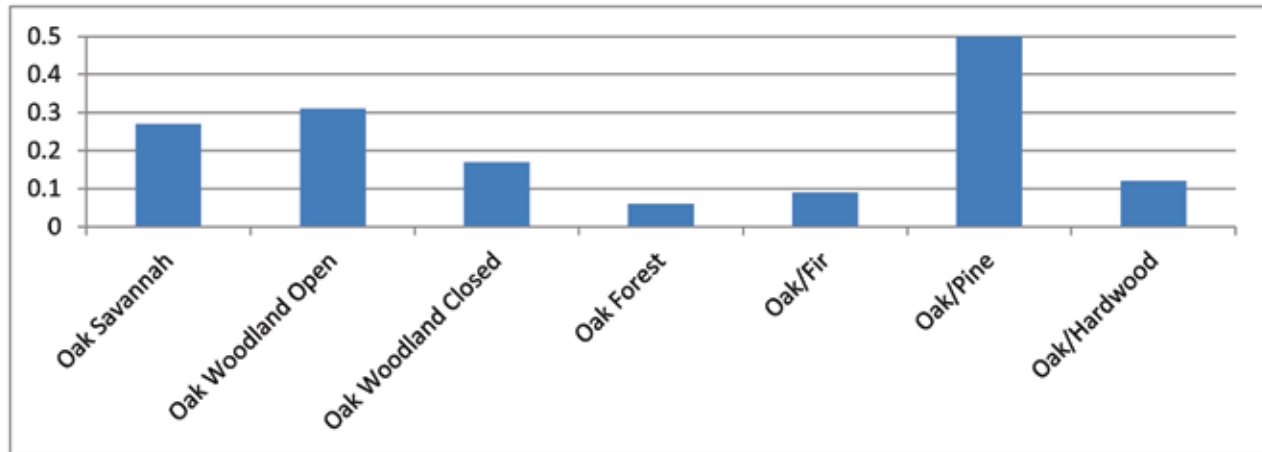
reduces understory shrub cover as long as grass/forb ground cover is short. Moderate to tall ground cover will preclude Chipping Sparrows which forage on the ground. Thus, they often occur in open oak habitats that are grazed or mowed, but not at restoration or other sites where the height of the ground cover is not naturally controlled (e.g., gravelly or other poor soils) or managed. Size of trees not a determinant of habitat use; thus, young trees in a savannah or open woodland setting can provide suitable habitat. Where populations are declining and most-reduced (e.g., Willamette Valley), recruitment into newly created suitable habitat may be problematic, especially when not near existing populations.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively moderate to high moderate density estimates throughout the region (0.19 - 0.47 birds/ha), except low density estimates in the Willamette Valley (0.10 birds/ha) likely reflects significant population declines that have occurred there.



CHIPPING SPARROW

Oak Habitat Type Regional Density Estimates: Relatively moderate density estimates in oak-dominant habitat types (0.17 - 0.31 birds/ha), decreasing with increasing canopy cover and very low in Oak Forest (0.06 birds/ha). This pattern is generally consistent throughout the region. Highest density estimates in Oak/Pine (0.52 birds/ha).



Oak Habitat Conditions/Relationships:

Puget Lowlands

- abundance positively associated with oak stem volume and negatively associated with oak patch size in urban areas on southeastern Vancouver Island⁵⁴
- primarily in open, grassy habitats with Scotch broom and small Douglas-fir and avoided areas with dense shrub cover on McChord Air Force Base⁵¹
- relatively abundant in where mean tree cover 25-50% (closer to 50), mean shrub cover 50-75% (closer to 50), and herbaceous cover 50-75% (closer to 50) on Fort Lewis Military Installation⁴⁹

Willamette Valley

- most abundant at sites with sparse understory vegetation and ground layer dominated by grasses in south-central Willamette Valley⁵⁵

Umpqua Valley

- most abundant species in stand with least canopy cover (89%), least shrub cover (14%), and most herbaceous ground cover (37%)⁵⁰

Rogue Basin

- abundance positively associated with herbaceous cover and negatively associated with shrub cover⁴⁷

East-slope Cascades

- most abundant species in small pine-small oak habitats; abundance positively correlated with number of oak

and number of pine, negatively correlated with height of oak and height of other tree species, dbh of oak, and number of non-oak and pine in south-central WA⁴⁴

Willamette/Umpqua/Rogue

- significantly more abundant where shrub cover <25% than 50-75%; general trend of decreasing abundance with increasing shrub cover⁴⁰

California

- abundance negatively correlated with residential development and positively correlated with amount of oak habitat in the landscape⁴²

Optimal Oak Breeding Habitat: Mature or young savannah or open woodland (<50% canopy cover,) dominated by low-statured (<15 cm [6 in] high) herbaceous ground cover (mostly grasses with >50% cover), and limited native shrub cover (<20%), but especially poison oak.



Bob Altman

DOWNY WOODPECKER (*Picoides pubescens*)

Population Status and Trends: Historically, common or abundant throughout the region.²¹ BBS trend data indicates relatively stable short-term and long-term non-significant declining trends for all regional and sub-regional analyses.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-1.09	-1.06
NPR – OR, WA, CA	-0.87	-0.59
NPR – WA	-1.07	-0.89
NPR – OR	-0.52	-0.33
NPR - CA	-1.19	-1.11

Nest Location and Timing: Nest in natural cavities or those they excavate at variable heights, but usually 2-9 meters (6-30 feet). Nesting usually occurs from late April through early July.

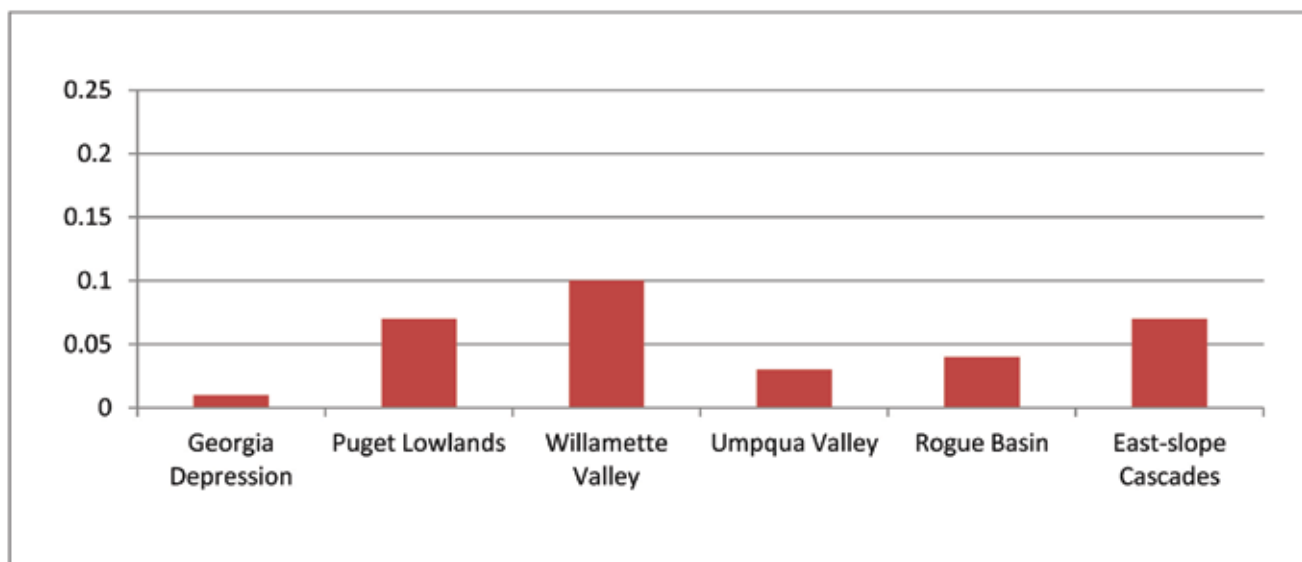
Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.

Comments: Resident. A species most associated with young or mature woodland or forest conditions with a moderate sub-canopy cover. Shrub cover can be variable and is likely not a determinant of habitat use. Near absence in Oak/Fir habitat indicates strong association with hardwoods.



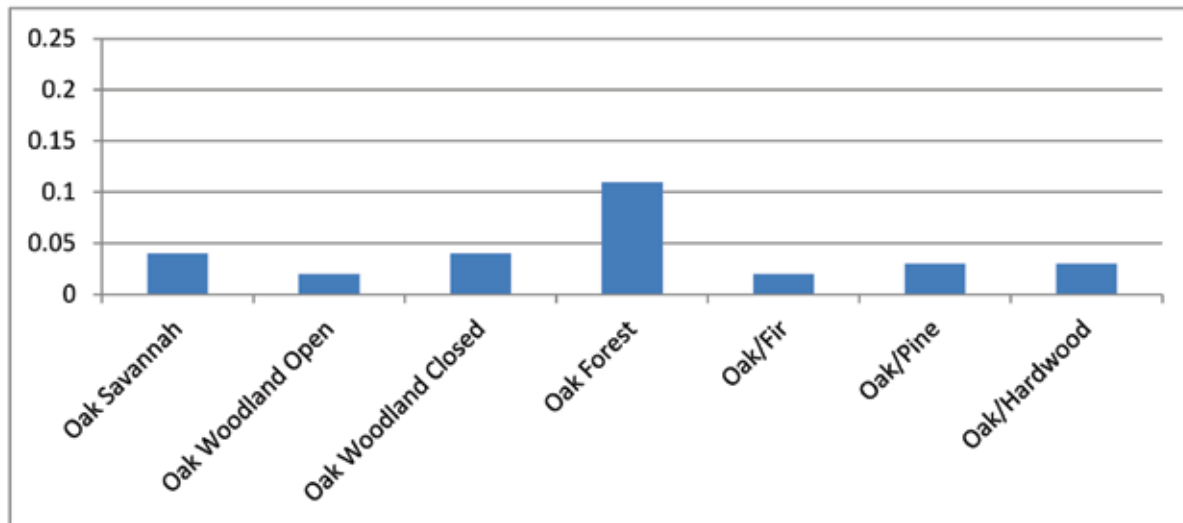
Greg Homel, Natural Elements Productions

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively low and similar density estimates throughout the region (< 0.11 birds/ha), except highest in the Willamette Valley (0.10 birds/ha).



DOWNY WOODPECKER

Oak Habitat Type Regional Density Estimates: Relatively low and similar density estimates in all oak-dominant habitat types (< 0.05 birds/ha), except highest density estimates in Oak Forest (0.11 birds/ha). This pattern is generally consistent throughout the region, except for the Rogue Basin where densities are highest in Oak Savannah and lower in Oak Forest.



Oak Habitat Conditions/Relationships:

Willamette Valley

- abundance positively correlated with sub-canopy cover³⁷

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >75% than <75%, tree dbh >38 cm (15 in) than <38 cm (15 in), and shrub cover >50% than 25-50% or <25% than 25-50%; general trend of increasing abundance with increasing tree size⁴⁰

Optimal Oak Breeding Habitat: Mature or young woodlands or forests (>50% canopy cover) with <10% Douglas-fir in the canopy and sub-canopy, mean tree dbh >30 cm (12 in), and moderate sub-canopy cover (>20%). Shrub and ground cover are variable and likely less important.



Ralph Wright



Bob Altman

HOUSE WREN (*Troglodytes aedon*)

Population Status and Trends: BBS trend data indicates long-term substantial and significant declines for all regional analyses, except for a non-significant increase in WA, and mostly non-significant slight declines in the short-term, except for an increase in WA and a significant decrease in CA.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-3.27	-0.60
NPR – OR, WA, CA	-3.40	-0.52
NPR – WA	3.38	2.49
NPR – OR	-4.13	-0.99
NPR - CA	-1.66	-0.36

Nest Location and Timing: Nest in natural cavities or those excavated by woodpeckers. Will use nest boxes. Will nest near or away from human settlement. Nesting occurs primarily from early May through early July.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.

Comments: Long-distance migrant. An understory species most associated with woodland habitat with large, widely-spaced oak trees that provide significant natural cavities, and a moderate shrub cover, especially snowberry or poison oak. Canopy cover or habitat type seems less important than the availability of cavities and a moderately dense shrub layer. Near absence in Oak/Fir habitat indicates strong association with hardwoods.



Greg Hensel, Natural Elements Productions

Oak Habitat Conditions/Relationships:

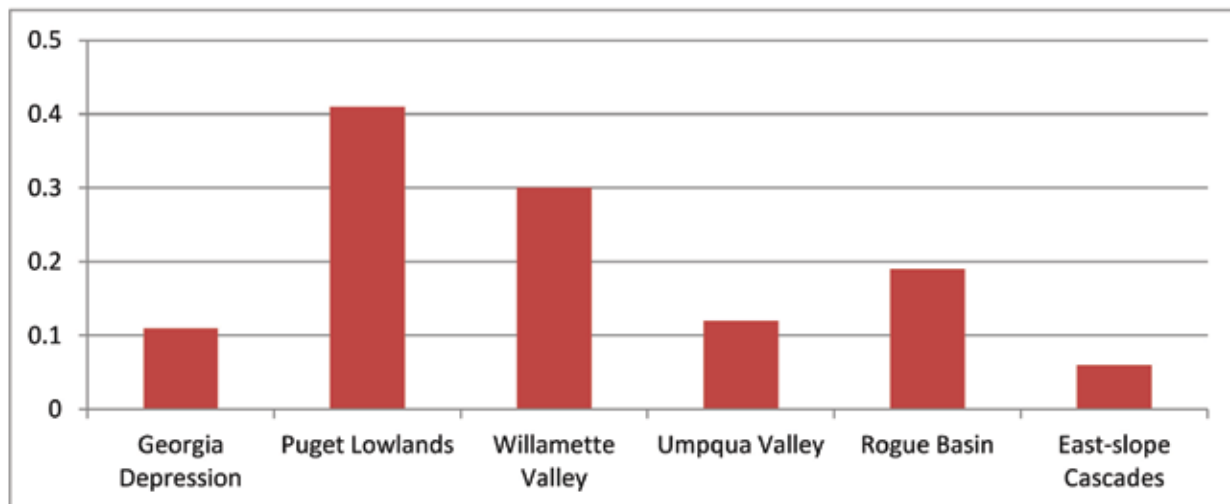
Georgia Depression

- abundance equally associated with oak and conifer trees in urban areas on southeastern Vancouver Island⁵⁴

Puget Lowlands

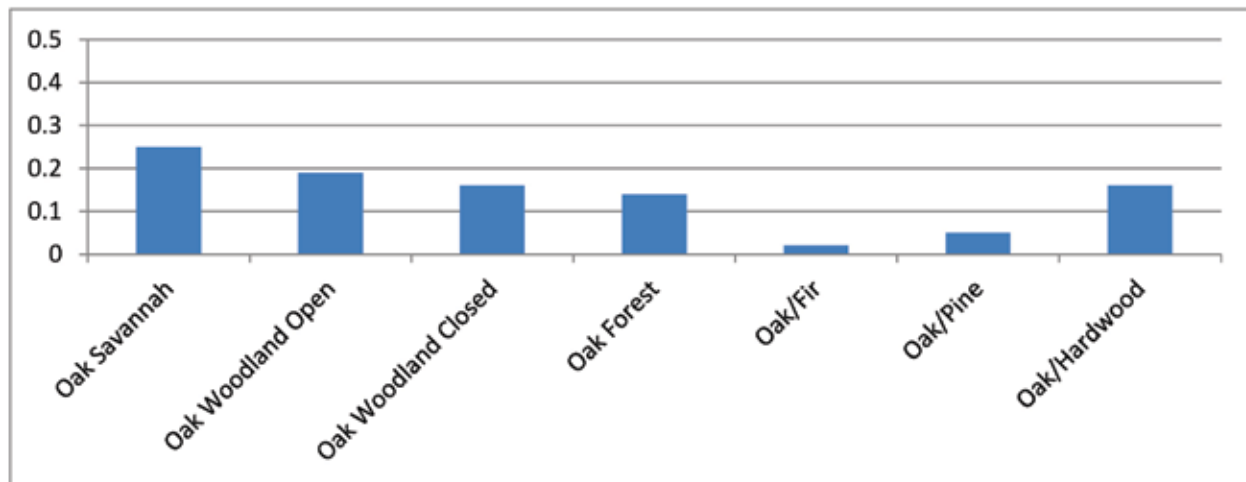
- abundance positively associated with basal area of oak, including basal area of oaks >30 cm (12 in) dbh, and percent cover grasses and snowberry; negative correlations with percent cover mosses; restricted to habitats with large oak trees and a mostly grass and snowberry understory⁵¹
- moderately abundant where mean tree cover 25-50% (closer to 50), mean shrub cover 50-75% (closer to 50),

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively moderate to high density estimates throughout most of the region (0.11 - 0.41 birds/ha) except in East-slope Cascades (0.06 birds/ha).



HOUSE WREN

Oak Habitat Type Regional Density Estimates: Relatively moderate and similar density estimates in all oak-dominant habitat types (decreasing with increasing canopy cover) and Oak/Hardwood (0.14 - 0.25 birds/ha), with very low density estimates in the two oak/conifer types (< 0.06 birds/ha). This pattern generally is driven by high densities in the Willamette Valley, but different in the Umpqua Valley where densities are similar in all oak-dominant types, and in the Rogue Basin where density estimates are highest in Oak Forest (0.30 birds/ha) and lowest in Oak Savannah (0.13 birds/ha).



and herbaceous cover 50-75% (closer to 50) on Fort Lewis Military Installation⁴⁹

Willamette Valley

- abundance negatively associated with canopy cover (both Douglas-fir and oak), but positively correlated with snowberry cover and mean dbh of oaks, indicating a preference for larger, more widely-spaced oaks with a snowberry understory; most abundant in site with highest snowberry cover (44%), least abundant at three sites with least snowberry cover³⁷

Umpqua Valley

- moderately abundant at site with relatively large madrone trees in the canopy, and relatively abundant, but generally smaller oaks in the sub-canopy, and substantial poison oak (26% cover) in the understory⁵⁰

Willamette/Umpqua/Rogue

- significantly more abundant where tree dbh >38 cm (15 in) than 23-38 cm (9-15 in) and >53 cm (21 in) than <23 cm (9 in), and shrub cover <25% than 25-50%; general trend of increasing abundance with increasing tree dbh >15 in⁴⁰

Optimal Oak Breeding Habitat: Mature woodland (25-70% canopy cover) with <10% Douglas-fir in the canopy and sub-canopy, mean tree dbh >38 cm (15 in) with >20% of the trees >53 cm (21 in), >30% shrub cover with >50% in native species, especially snowberry or poison oak, and herbaceous openings in the shrub layer <25% of the understory.



Bob Altman

HUTTON'S VIREO (*Vireo huttoni*)

Population Status and Trends: BBS trend data indicates non-significant and relatively stable trends for all regional and sub-regional analyses, except for long-term substantial and significant increases in OR.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	1.07	0.84
NPR – OR, WA, CA	1.05	0.54
NPR – WA	1.46	-2.48
NPR – OR	4.28	3.88
NPR - CA	-0.19	-0.56

Nest Location and Timing: Open cup-nest away from trunk of tree or tall shrub in fork of twigs usually 2-6 meters (6-18 feet) above ground. Nesting occurs primarily from mid-April through late June.

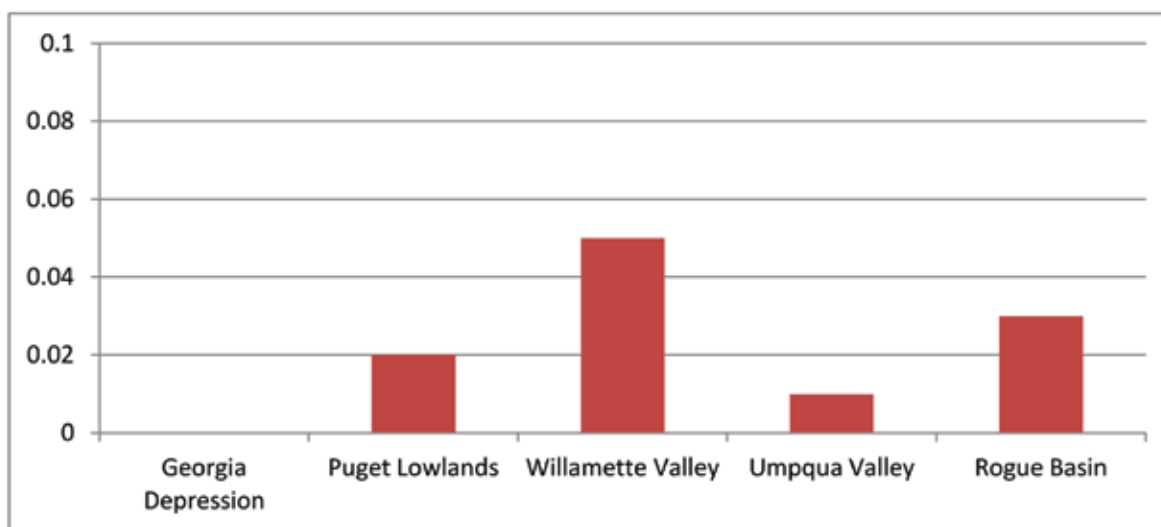
Breeding Range in Oak Habitats: Distributed throughout oak habitats in all westside ecoregions, but only rarely in the East-slope Cascades ecoregion.



Peter LaTourrette, www.birdphotography.com

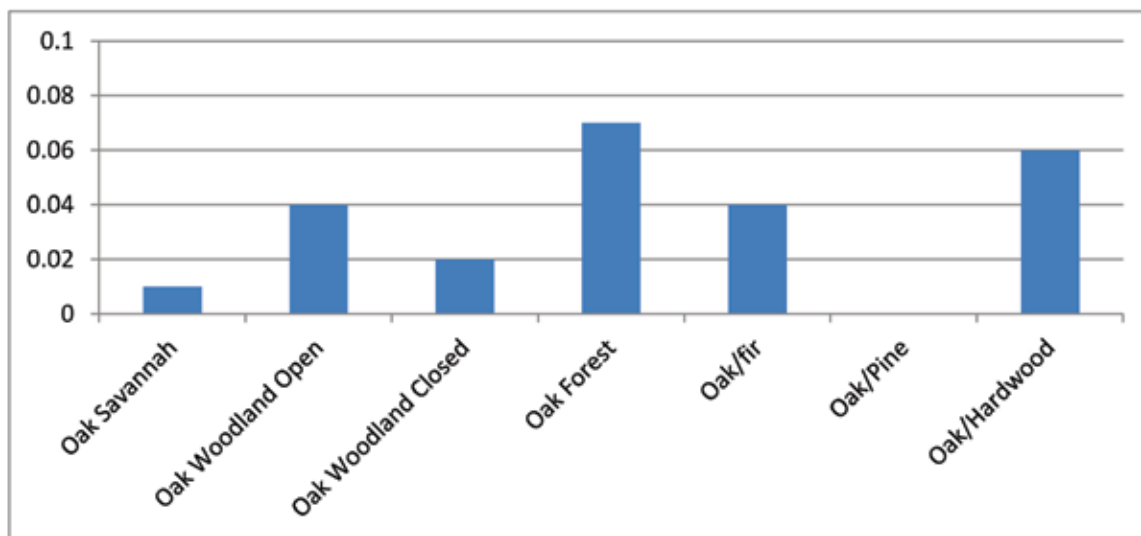
Comments: Resident. A species most associated with a closed canopy and a dense midstory and understory with structural complexity. This often occurs in Oak Riparian habitats where this species can reach its greatest densities. Smaller patches of forest (<10 ha[25 ac]) may not be as suitable.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Low density estimates (< 0.06 birds/ha) throughout the region; highest in Willamette Valley (0.05 birds/ha).



HUTTON'S VIREO

Oak Habitat Type Regional Density Estimates: Relatively low density estimates in all habitat types (< 0.08 birds/ha); highest in Oak Forest (0.07 birds/ha) and Oak/Hardwood (0.06 birds/ha), absent from Oak/Pine and mostly absent from Oak Savannah. This pattern is generally consistent throughout the region.



Oak Habitat Conditions/Relationships:

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >75% than <25%, tree dbh 38-53 cm (15-21 in) than <23 cm (9 in), and shrub cover >75% than <50%; general trend of increasing abundance with increasing canopy cover, tree dbh up to 53 cm (21 in), and shrub cover >50%⁴⁰
- most associated with larger patches²²

Northern California

- abundance positively correlated to amount of oak habitat in the landscape and number of black oak trees >5 cm (2 in) dbh⁴²
- abundance positively correlated with shrubs⁴⁶

Optimal Oak Breeding Habitat: Mature or young woodland or forest (>50% canopy cover), including mixed oak-fir habitats, with moderate to high sub-canopy and/or shrub cover (>60% combined).



Tom Grey



Bob Allman

LAZULI BUNTING (*Passerina amoena*)

Population Status and Trends: BBS trend data indicates a long-term, substantial and significant increase in WA, with moderate significant decreases in OR and for all other regional and sub-regional analyses.³⁶ Short-term trends are all relatively stable and non-significant except for an increase in WA.

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-0.96	-0.22
NPR – OR, WA, CA	-1.05	-0.33
NPR – WA	5.79	5.03
NPR – OR	-2.02	-0.85
NPR - CA	-0.44	-0.42

Nest Location and Timing: Open cup-nest in dense foliage of shrub or small tree usually 1-3 meters (3-9 feet) above ground. Nesting occurs primarily from late May through mid-July.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region except for the San Juan Islands, Washington.

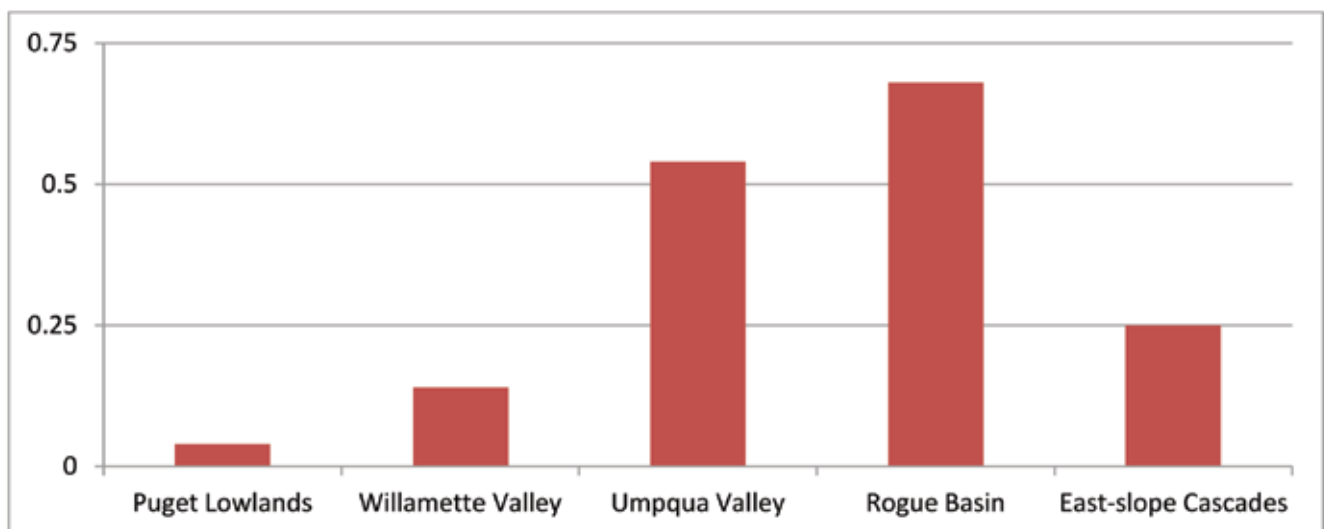
Comments: Long-distance migrant. A species most associated with open habitat and potential “early responder” to management or restoration that opens up the canopy to



Greg Lavaty

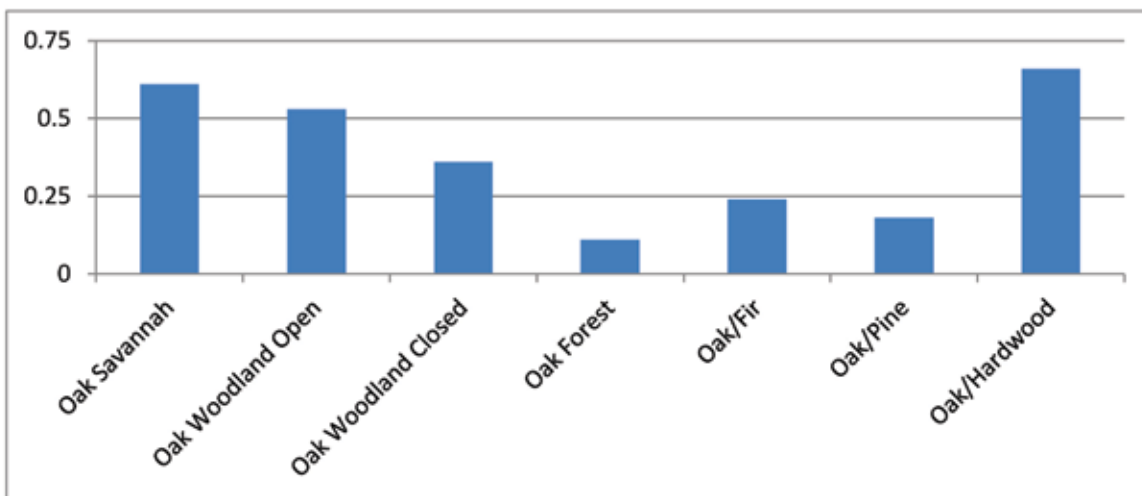
create oak savannah or open woodland as long as moderate shrub cover is retained. Size of trees variable and not likely a determinant of habitat use; thus, young trees in a savannah or open woodland setting can provide suitable habitat. However, the absence or limited amount of shrub cover will likely reduce or preclude their occurrence. Density estimates increase as you move south in the region, and are substantially higher in the drier ecoregions, Klamath Mountains and East-slope Cascades.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively high density estimates in the Klamath Mountains ecoregion (0.54 - 0.68 birds/ha), moderate in the Willamette Valley and East-slope Cascades (0.14 - 0.25 birds/ha), and very low in the Puget Lowlands (0.04 birds/ha). Density increases from north to south.



LAZULI BUNTING

Oak Habitat Type Regional Density Estimates: Relatively moderate to high density estimates in all habitat types (0.36 - 0.61 birds/ha), except Oak Forest (0.11 birds/ha). In oak-dominant habitat types, density estimates decrease with increasing canopy cover. Highest density estimates in Oak/Hardwood (0.66 birds/ha), and moderate in the two oak-conifer types (0.18 – 0.24 birds/ha). This pattern is generally consistent throughout the region.



Oak Habitat Conditions/Relationships:

Willamette Valley

- most abundant at site dominated by patchy oak, sparse shrub layer, and ground cover dominated by grasses in south-central Willamette Valley⁵⁵
- percent cover big leaf maple greater at sites used than not used; most abundant at site with 59% canopy cover (>95% oak), 14% sub-canopy cover (dominated by oak), and 24% shrub cover (>95% poison oak)³⁷

Rogue Basin

- abundance significantly associated with low grazing utilization (0-40%) as compared to high utilization (>40%) in the Cascade-Siskiyou National Monument⁵⁶
- abundance increased post wildfire (1-8 years post fire) in an oak/mixed-conifer forest in the Applegate Valley⁵²

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover <25% than >75%, and shrub cover 50-75% than >75%; general trend of decreasing abundance with increasing canopy cover and shrub cover except 50-75% for both⁴⁰

Optimal Oak Breeding Habitat: Mature or young oak savannah or open oak woodland (<40% canopy cover) with moderate and patchy native shrub cover (20-50%), and an interspersed of grass patches.



Bob Altman

LESSER GOLDFINCH (*Carduelis psaltria*)

Population Status and Trends: BBS trend data indicates non-significant and relatively stable trends for all regional and sub-regional analyses.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	0.14	-0.58
NPR – OR, WA, CA	-0.14	-0.58
NPR – WA	na	na
NPR – OR	0.61	1.51
NPR - CA	-0.03	-1.34

Nest Location and Timing: Open cup-nest in dense foliage of shrub or small tree away from trunk and usually 2-4 meters (6-12 feet) above ground. Will nest near or away from human habitation. Nesting occurs primarily from early May through mid-July, although can be later in years with good seed production.

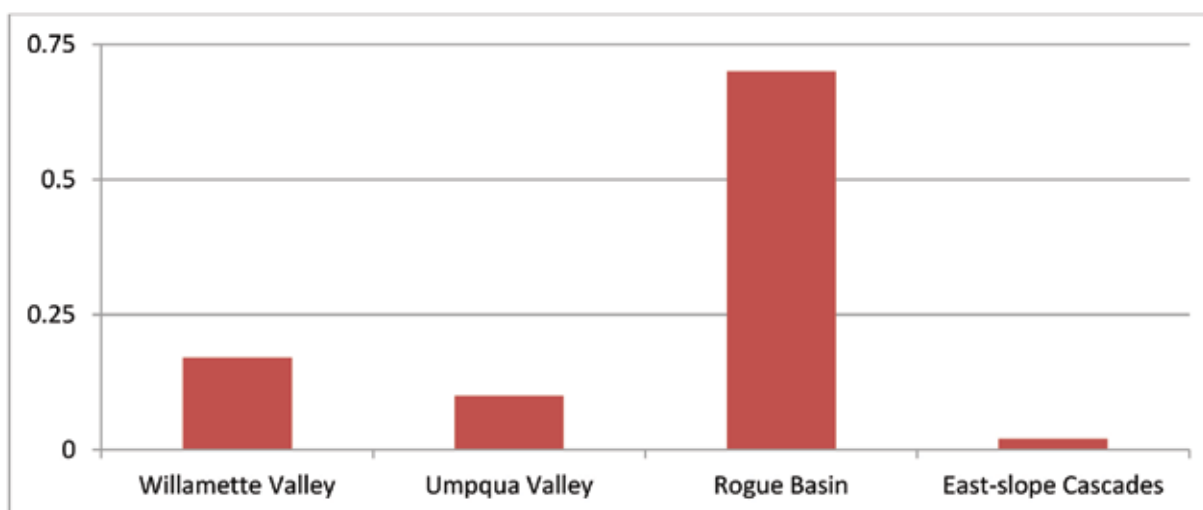
Breeding Range in Oak Habitats: Occurs throughout the Willamette Valley and Klamath Mountains ecoregions, with local and disjunct populations in the East-slope Cascades ecoregion.



Greg Lavaty

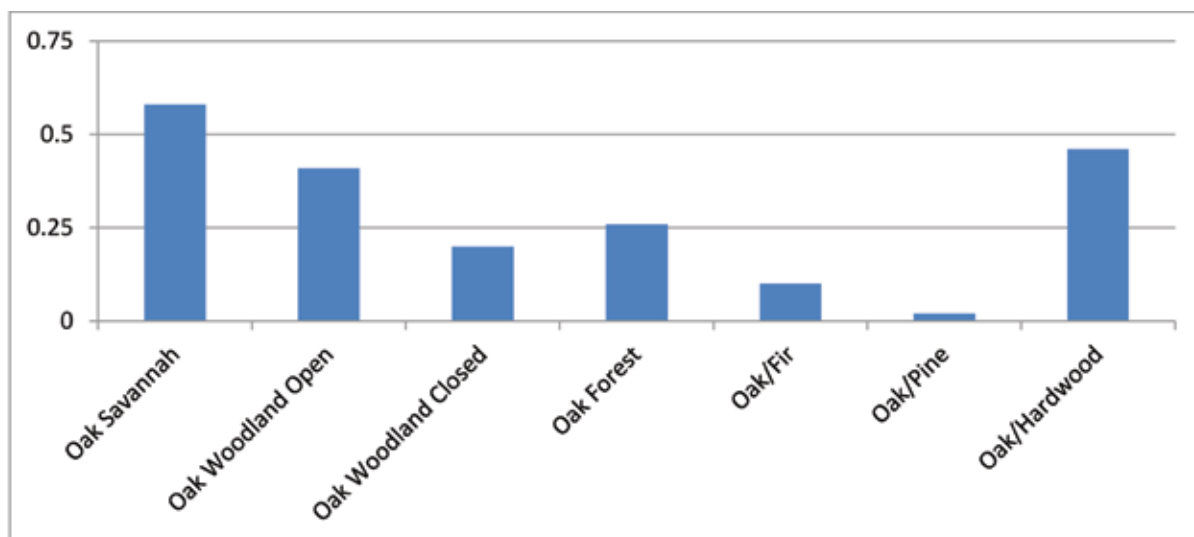
Comments: Resident. A species associated with variable habitat types, perhaps most associated with edges where trees meet shrubs or shrubs meet grasses. In the Rogue Basin, high density estimates in all types, but highest at the ends of the oak gradient in Oak Savannah and Oak Forest. In the Willamette and Umpqua Valleys, stronger associations with more closed canopies. This is likely due to the dense shrub understory in short-statured Oak/Chaparral of the Rogue Basin functioning as an edge between the trees and shrubs. The near absence in oak-conifer types is noteworthy.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: High density estimates in the Rogue Basin (0.70 birds/ha), with substantially lower density estimates in the Willamette and Umpqua Valleys (< 0.18 birds/ha), and very low density estimates in the East-slope Cascades (0.02 birds/ha).



LESSER GOLDFINCH

Oak Habitat Type Regional Density Estimates: Highest density estimates in Oak Savannah (0.58 birds/ha), and declining with increasing canopy cover in oak-dominant habitat types. This pattern is the opposite in the Willamette Valley, but is driven by the high densities in the Rogue Basin. High density estimates also in Oak/Hardwood (0.46 birds/ha), but nearly absent from both oak-conifer types.



Oak Habitat Conditions/Relationships:

Rogue Basin

- abundance negatively associated with both shrub and tree cover⁴⁷

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover <25% than 50-75%, and shrub cover 50-75% than >75%; general trend of decreasing abundance with increasing shrub cover and also canopy cover except for >75%⁴⁰

Northern California

- significantly more abundant in plots with moderate tree density (100-180 trees/ha [40-73/ac]) and moderate tree diameter (mean dbh 31 cm [12 in])⁴³

Optimal Oak Breeding Habitat: Mature or young oak-dominant habitats (more open canopies in Rogue Basin and closed canopies elsewhere) with the combination of tree and shrub cover moderately high (40-80%), interspersed with patches of grass openings to create significant edge habitat.



Tom Grey



Bob Altman

NASHVILLE WARBLER (*Vermivora ruficapilla*)

Population Status and Trends: BBS trend data indicates non-significant and relatively stable trends for all regional and sub-regional analyses, except non-significant and relatively large long-term increasing trends in WA.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	0.56	1.97
NPR – OR, WA, CA	-0.11	-0.00
NPR – WA	4.39	1.92
NPR – OR	-0.23	-0.02
NPR - CA	-0.16	-0.24

Nest Location and Timing: Open cup-nest on ground well-hidden in dense vegetation often under a shrub or at base of clump grasses. Nesting occurs primarily from early May through early July.

Breeding Range in Oak Habitats: Distributed primarily in oak habitats of the Klamath Mountains and East-slope Cascades ecoregions, with some local breeding in the southern Willamette Valley.

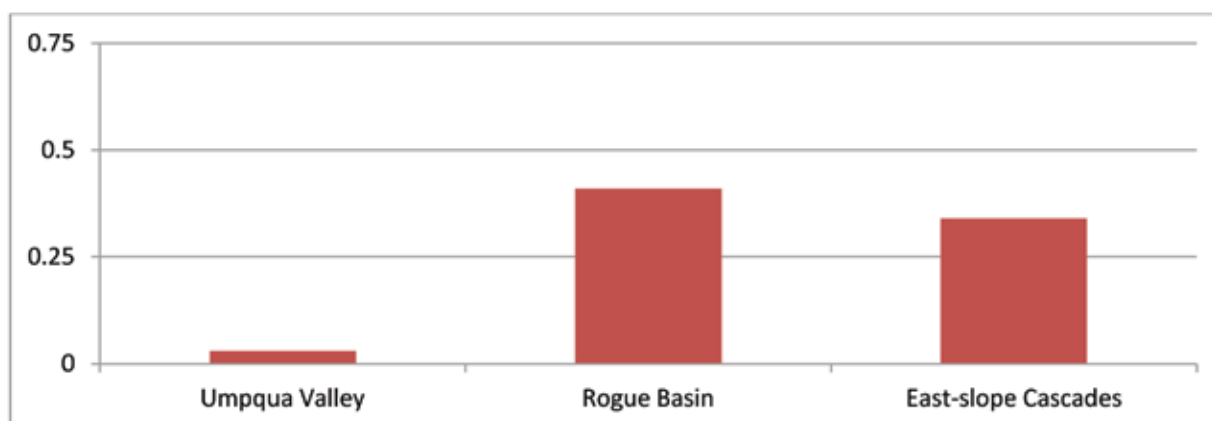
Comments: Long-distance migrant. A midstory and understory (sub-canopy and shrub) species most associated with taller, older oak or mixed forests, but equally as abundant in younger or shorter-statured scrub oak forest that grows in poorer soils (often slopes) of southwest Oregon and on the eastern slope of the Cascade



Greg Lavaty

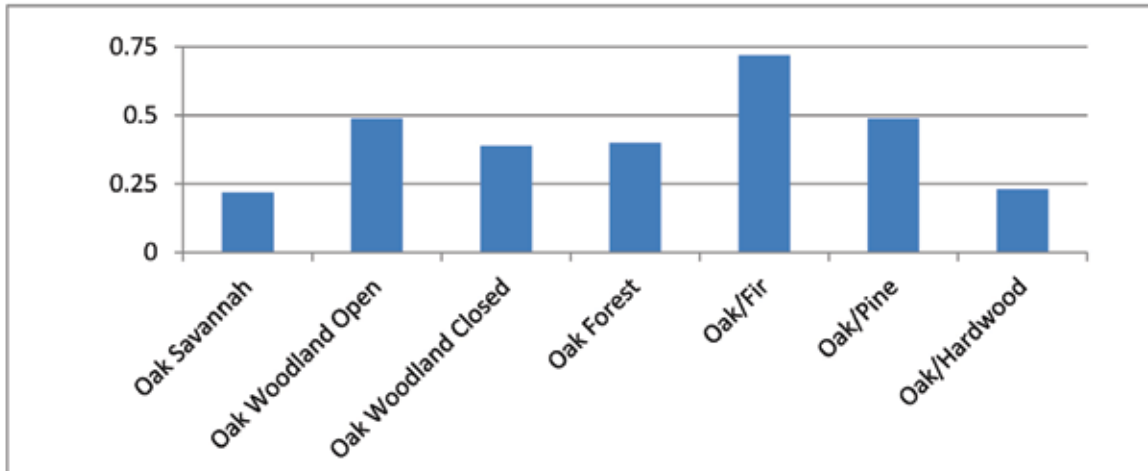
Mountains. Moderate to high density estimates in all habitat types indicating less dependence on the type of oak-dominant or co-dominant habitat based on canopy cover, but likely most dependent on the extent of the mid-story and shrub layers.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Moderately high density estimates in the Rogue Basin and East-slope Cascades (0.34 - 0.41 birds/ha). Very low density estimates in the Umpqua Valley (0.03 birds/ha).



NASHVILLE WARBLER

Oak Habitat Type Regional Density Estimates: Relatively moderate to high density estimates in most habitat types (0.22 - 0.72 birds/ha); lowest in Oak Savannah (0.22 birds/ha) and Oak/Hardwood (0.23 birds/ha), and highest in both oak-conifer types.



Oak Habitat Conditions/Relationships:

Rogue Basin

- abundance positively correlated with tree cover and largest tree dbh⁴⁷

East-slope Cascades

- abundance positively correlated with height of non-oak, non-pine species, and negatively correlated with height of pine⁴⁴

Optimal Oak Breeding Habitat: Mature or young woodland and forest (>50% canopy cover), including oak-conifer types, with moderate to high sub-canopy and/or native shrub cover (40-80% combined), or short-statured scrub oak forest (>75% canopy cover) which functions like a shrub layer.



Greg Lavaty



Bob Allman

OAK TITMOUSE (*Baeolophus inornatus*)

Population Status and Trends: BBS trend data indicates non-significant and relatively stable trends for all regional and sub-regional analyses.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-0.32	-0.15
NPR – OR, WA, CA	-0.32	-0.15
NPR – WA	na	na
NPR – OR	-0.54	1.87
NPR - CA	-0.07	-1.13

Nest Location and Timing: Nest in natural cavities or those excavated by woodpeckers. Will use nest boxes and nest in close association with human settlement. In areas near human settlement, can be negatively affected by non-native competitors for cavities such as European Starling and House Sparrow. Nesting occurs primarily from mid-April through late June.

Breeding Range in Oak Habitats: Distributed almost exclusively in oak habitats of the Rogue Basin of the Klamath Mountains ecoregion, except for some rare local breeding in the southern part of the Umpqua Valley.

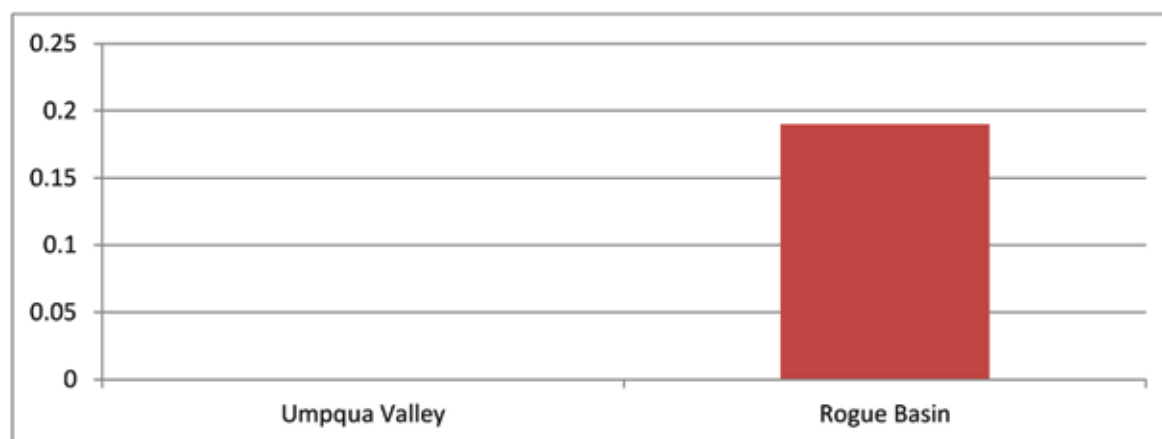
Comments: Resident. A Rogue Basin species most associated with relatively low elevation savannah and woodland habitats with mature trees for cavities, but will forage



Peter LaTourrette, www.birdphotography.com

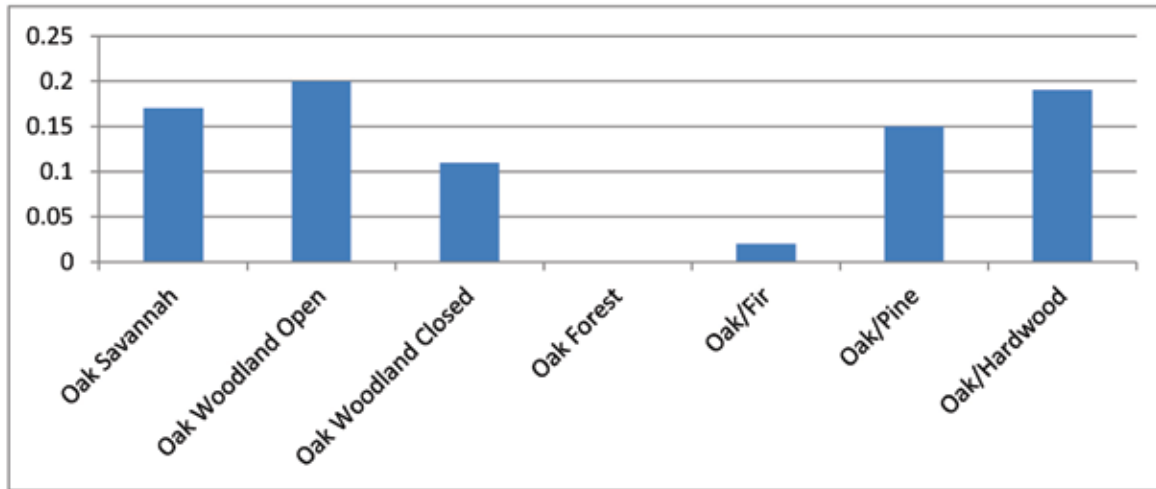
in younger trees. In Oak/Chaparral, foraging also occurs in dense shrubby undergrowth. Near-obligate status to oak habitats, narrow elevation band, and small and year-round territories limit the likelihood of range expansion. Near absence from Oak/Fir is noteworthy, although moderate density estimates in Oak/Pine.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively moderate density estimates in the Rogue Basin (0.19 birds/ha).



OAK TITMOUSE

Oak Habitat Type Regional Density Estimates: Relatively moderate density estimates in oak-dominant habitat types (0.11 - 0.20 birds/ha), except absent from Oak Forest, and substantially declining density estimates as canopy cover increases above 50%. Density estimates moderate in Oak/Hardwood (0.19 birds/ha) and Oak/Pine (0.15 birds/ha), but nearly absent from Oak/Fir.



Oak Habitat Conditions/Relationships:

Rogue Basin

- significantly more abundant where canopy cover <50% than 50-75%, and tree dbh <23 cm (9 in) than 23-53 cm (9-21 in)⁴⁰

Northern California

- prefer areas of moderate canopy cover (40-70%)⁵⁷
- significantly more abundant in plots with moderate tree density (100-180 trees/ha [40-73/ac]) and moderate tree diameter (mean dbh 31 cm [12 in])⁴³
- abundance negatively associated with number of shrubs¹⁹



James Livaudais

Optimal Oak Breeding Habitat: Mature or young savannah and woodlands (20-70% canopy cover) with mean tree dbh >23 cm (9 in), and variable but moderate native shrub cover (20-70%), or short-statured scrub oak forest (>50% canopy cover) which functions like a shrub layer.



Bob Altman

PURPLE FINCH (*Carpodacus purpureus*)

Population Status and Trends: BBS trend data indicates relatively stable mostly non-significant trends for all regional and sub-regional short-term analyses, with some significant long-term declines in CA and for the entire region.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-0.95	0.53
NPR – OR, WA, CA	-0.95	0.94
NPR – WA	0.01	1.05
NPR – OR	-1.37	1.52
NPR - CA	-1.68	-1.11

Nest Location and Timing: Open cup-nest away from trunk of tree on branch in dense foliage usually 5-12 meters (15-36 feet) above ground. Nesting occurs primarily from early May through early July.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.

Comments: Short-distance migrant. A canopy and sub-canopy species most associated with the high canopy cover of closed woodlands and forest, including mixed oak types. In Oak/Chaparral of the Rogue Basin, shrub cover takes the place of sub-canopy cover. Smaller patches of



Greg Homel, Natural Elements Productions

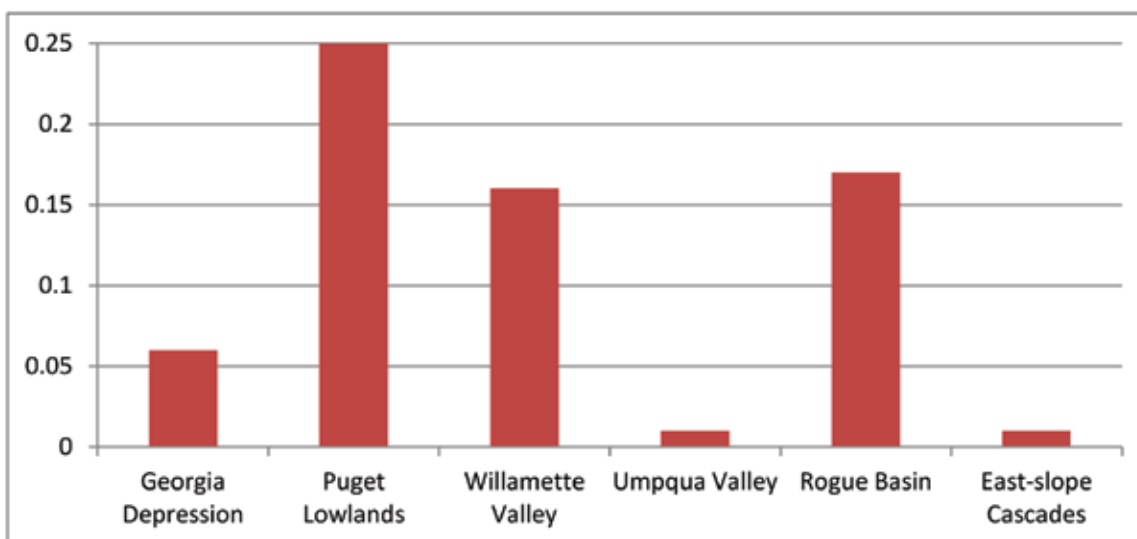
forest (<10 ha [25 ac]) may not be as suitable. Highly variable density estimates by ecoregion/sub-region with no apparent ecological or geographic patterns suggest potential for further research into patch size limitations.

Oak Habitat Conditions/Relationships:

Georgia Depression

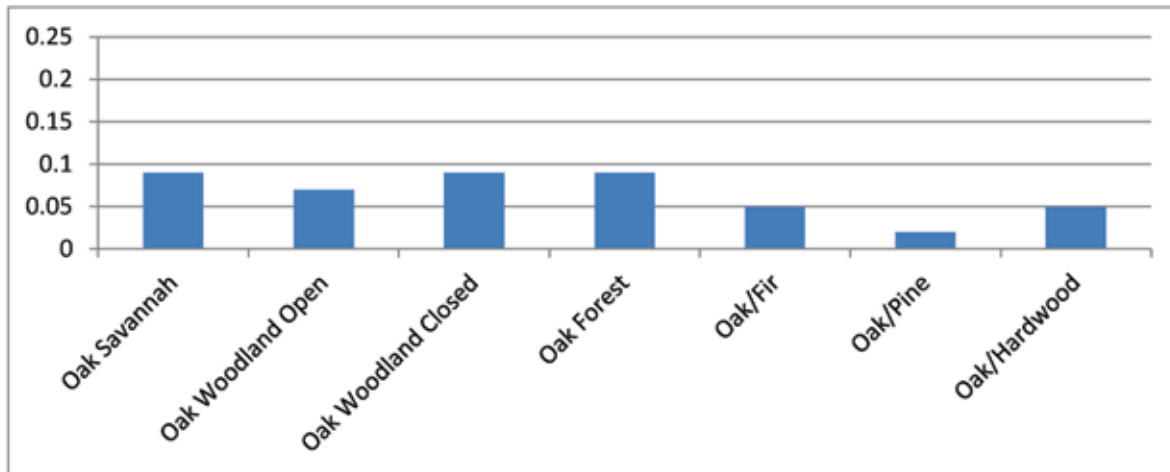
- abundance associated with oak patches surrounded by coniferous forest in urban areas on southeastern Vancouver Island⁵⁴

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively moderate density estimates in the Puget Lowlands (0.28 birds/ha), Willamette Valley (0.16 birds/ha), and Rogue Basin (0.17 birds/ha); and low in the Georgia Depression (0.067 birds/ha), and Umpqua Valley and East-slope Cascades (0.01 birds/ha).



PURPLE FINCH

Oak Habitat Type Regional Density Estimates: Density estimates relatively low and similar in all oak habitat types (0.02 - 0.09 birds/ha). This pattern is consistent throughout the region except for the lowest density estimates in Oak Savannah and highest in Oak Forest (0.10 birds/ha) in the Willamette Valley, and the opposite in the Rogue Basin with highest in Oak Savannah (0.16 birds/ha) and lowest in Oak Forest.



Willamette Valley

- abundance positively correlated with percent canopy cover and negatively with mean tree dbh; most abundant at site with 75% canopy cover (>90% oak), 32% sub-canopy cover (diverse mix of species), and 50% shrub cover (dominated by poison oak and serviceberry); least abundant at site with 62% canopy cover (>95% oak), 8% sub-canopy cover (diverse mix of species), and 65% shrub cover (dominated by snowberry)³⁷
- territories in 100% of sites >10 ha (25 ac) but in only 29% of sites <10 ha (25 ac)²³

Umpqua Valley

- moderately abundant at site characterized by relatively large madrone trees in the canopy, and relatively abundant, but generally smaller oaks in the sub-canopy, and substantial poison oak (26% cover) in the understory⁵⁰

Rogue Basin

- significantly more abundant in sites having undergone fuel reduction treatments resulting in greater herbaceous cover and reduced shrub cover⁴⁷

Willamette/Umpqua/Rogue

- significantly more abundant where tree dbh >38 cm (15 in) than <38 cm (15 in); general trend of increasing abundance with increasing canopy cover and tree size except similar abundance for canopy cover <50% and tree dbh <38 cm (15 in)⁴⁰

Optimal Oak Breeding Habitat: Mature woodland and forest (>40% canopy cover) in patches >10 ha (25 ac), mean tree dbh >30 cm (12 in), moderate sub-canopy cover (>20%), and low, native shrub cover (<50%).



SPOTTED TOWHEE (*Pipilo maculatus*)

Population Status and Trends: BBS trend data indicates relatively stable and non-significant short-term trends for all regional and sub-regional analyses, with significantly increasing long-term trends in WA being countered by significantly long-term declining trends in OR.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	0.39	0.62
NPR – OR, WA, CA	0.19	0.19
NPR – WA	2.29	0.94
NPR – OR	-1.04	-0.58
NPR - CA	0.79	0.43

Nest Location and Timing: Open cup-nest on the ground or low in shrubs usually <1 meter above ground. Nesting occurs primarily from late April through early July. Will nest near or away from human settlement.

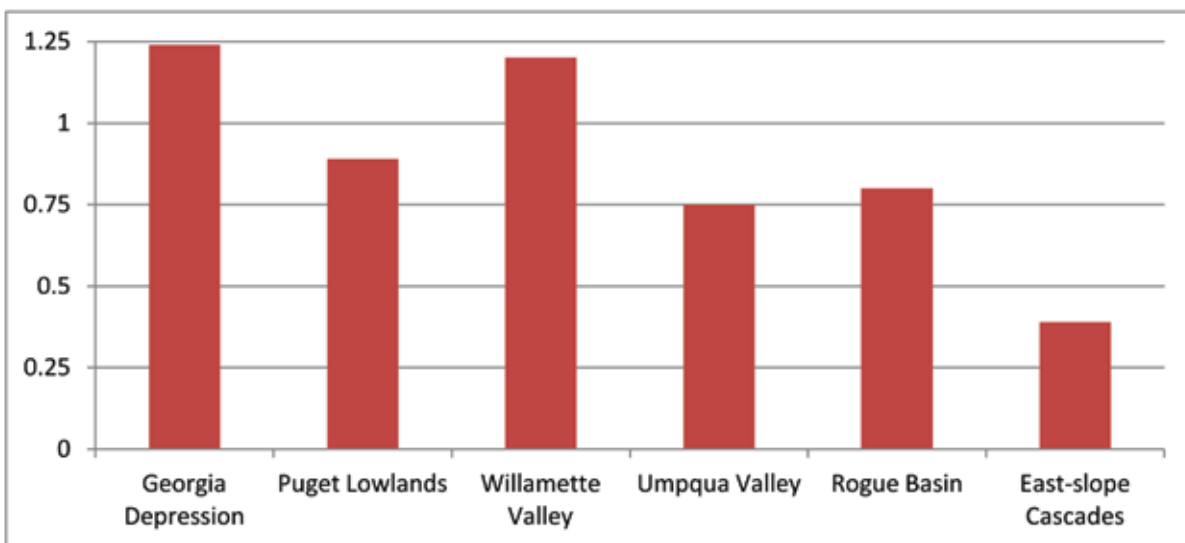
Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.



Greg Homel, Natural Elements Productions

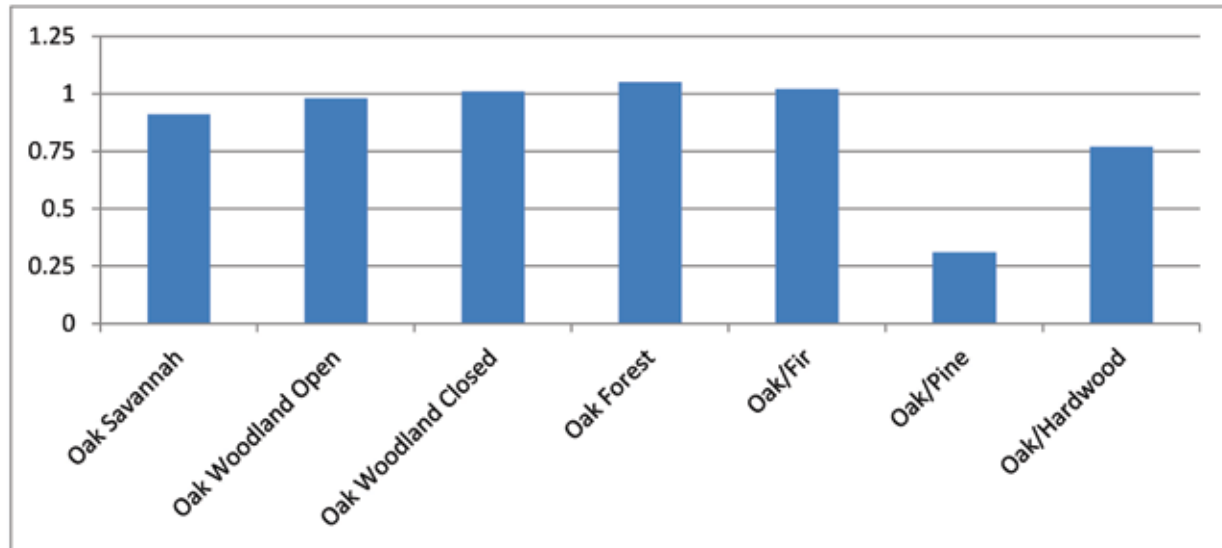
Comments: Resident. An understory species most associated with a relatively dense shrub layer and little to no relationship to canopy cover or oak habitat type. Often, the most common bird in the understory if suitable shrub cover is available. Density estimates lower in drier ecoregions, Klamath Mountains and East-slope Cascades, and in Oak/Pine habitat, likely due to relatively reduced understory shrub layer development.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: High density estimates (≥ 0.75 birds/ha) in all ecoregions except moderate in East-slope Cascades (0.39 birds/ha).



SPOTTED TOWHEE

Oak Habitat Type Regional Density Estimates: High and relatively similar density estimates in all habitat types (> 0.75 birds/ha) except for Oak/Pine (0.31 birds/ha). Density estimates increase slightly with increasing canopy cover in oak-dominant habitats. This pattern is variable throughout the region with the highest density estimates in Oak Savannah in the Rogue Basin, Oak Woodland Closed in the Umpqua Valley, and Oak Woodland Open in the Willamette Valley.



Oak Habitat Conditions/Relationships:

Georgia Depression

- abundance positively associated with human population/urbanization on southeastern Vancouver Island⁵⁴

Puget Lowlands

- positive relationship with total basal area of oak trees and negative with Douglas-fir and all tree species combined; positive relationship with Oregon grape and snowberry in the understory on McChord Air Force Base⁵¹

Willamette Valley

- most abundant at site with least canopy cover (40%) and highest sub-canopy cover (37%, mostly oak) and moderate shrub cover (52%); least abundant at site with lowest shrub cover (24%), second lowest sub-canopy cover (14%) and moderate canopy cover (59%)³⁷

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >50% than 25-50%; tree dbh >38 cm (15 in) than <38 cm (15 in); and shrub cover >50% than <50%; general trend of increasing abundance with increasing canopy and shrub cover above 25%⁴⁰

Northern California

- abundance positively correlated with amount of oak habitat in the landscape and number of snags >13 cm (5 in) dbh and negatively correlated with average dbh of all trees⁴²

Optimal Oak Breeding Habitat: Mature or young savannah, woodland, or forest with moderate to high sub-canopy cover (>20%) and shrub cover (>50%). Canopy and ground cover variable and likely less important.



Bob Altman

WESTERN BLUEBIRD (*Sialia mexicana*)

Population Status and Trends: Historically, common throughout the region; currently, common to uncommon in the Klamath Mountains and Willamette Valley with very local populations in the south Puget Lowlands and a reintroduced population on San Juan Island.¹⁸ BBS trend data indicates non-significant and relatively stable trends for all regional and sub-regional analyses.³⁶ A “Species of Greatest Conservation Need” in the Willamette Valley²⁵ and Puget Lowlands ecoregions.²⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-0.73	0.04
NPR – OR, WA, CA	-0.73	0.04
NPR – WA	na	Na
NPR – OR	0.81	1.62
NPR - CA	-1.67	-1.62

Nest Location and Timing: Nest in natural cavities or those excavated by woodpeckers. Will use nest boxes and nest in close association with human settlement. In areas near human settlement, can be negatively affected by non-native competitors for cavities such as European Starling and House Sparrow. Nesting occurs primarily from mid-April through early July.

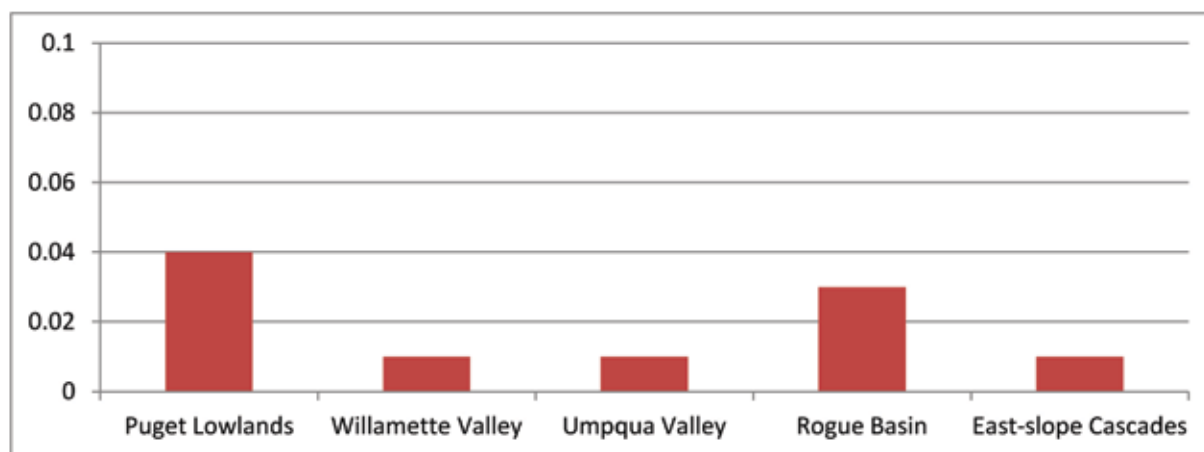
Breeding Range in Oak Habitats: Distributed throughout oak habitats in all ecoregions except the Georgia Depression and a few scattered nesting populations in the north Puget Lowlands ecoregion (including reintroduced population on San Juan Island).



Tom Grey

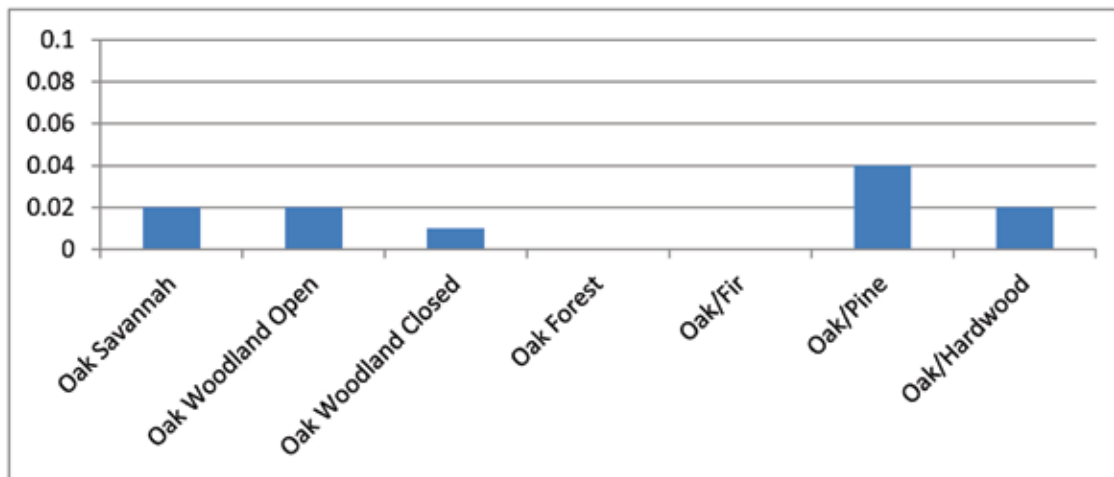
Comments: Short-distance migrant. An oak savannah or very open woodland specialist species most associated with limited shrub cover and a ground cover dominated by relatively short grasses. Foraging occurs mostly on the ground, thus tall grasses can preclude their occurrence. Nesting habitat requires mature trees for cavity sites, but foraging habitat can be young trees and become nesting habitat with nest boxes.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Very low and similar density estimates throughout the region (< 0.05 birds/ha).



WESTERN BLUEBIRD

Oak Habitat Type Regional Density Estimates: Very low density estimates in all oak-dominant habitat types (≤ 0.02 birds/ha) that decrease with increasing canopy cover. Highest density estimates in Oak/Pine (0.04 birds/ha).



Oak Habitat Conditions/Relationships:

Willamette/Umpqua/Rogue

- significantly more abundant where tree size <23 cm (9 in) dbh than 23-38 cm (9-15 in) dbh⁴⁰

Northern California

- abundance positively correlated with average dbh of all trees⁴²
- significantly more abundant in plots with low tree density (<100 trees/ha [40/ac]) and large tree diameter (mean dbh 45 cm [18 in])⁴³
- abundance negatively associated with number of conifer trees¹⁹

Optimal Oak Breeding Habitat: Mature savannah or open woodland ($<35\%$ canopy cover) with mean tree dbh >38 cm (15 in) and $>20\%$ of the trees >53 cm (21 in) dbh, $<15\%$ shrub cover, and ground cover dominated by grasses <30 cm (12 in) high.



Tom Grey



Bob Allman

WESTERN SCRUB-JAY (*Aphelocoma californica*)

Population Status and Trends: Historically, fairly common in the Klamath Mountains and southern Willamette Valley ecoregion, but has expanded and continues to expand north and east.¹⁸ Currently, fairly common to common in the south Puget Lowlands.¹⁸ BBS trend data indicates significant short-term and long-term increases for all regional and sub-regional analyses except CA.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	1.09	1.28
NPR – OR, WA, CA	1.09	1.28
NPR – WA	6.87	6.33
NPR – OR	1.34	1.51
NPR - CA	0.67	0.65

Nest Location and Timing: Open cup-nest in dense foliage of shrub or small tree usually 1-4 meters (3-12 feet) above ground. Will nest near or away from human settlement. Nesting primarily occurs from late April through late June.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the Klamath Mountains and Willamette Valley ecoregions; recent expansion into the Puget Lowlands ecoregion north to Seattle.

Comments: Resident. A species most associated with large trees with a relatively open canopy with lots of edge, and moderate shrub cover with short grass heights. The



Tom Grey

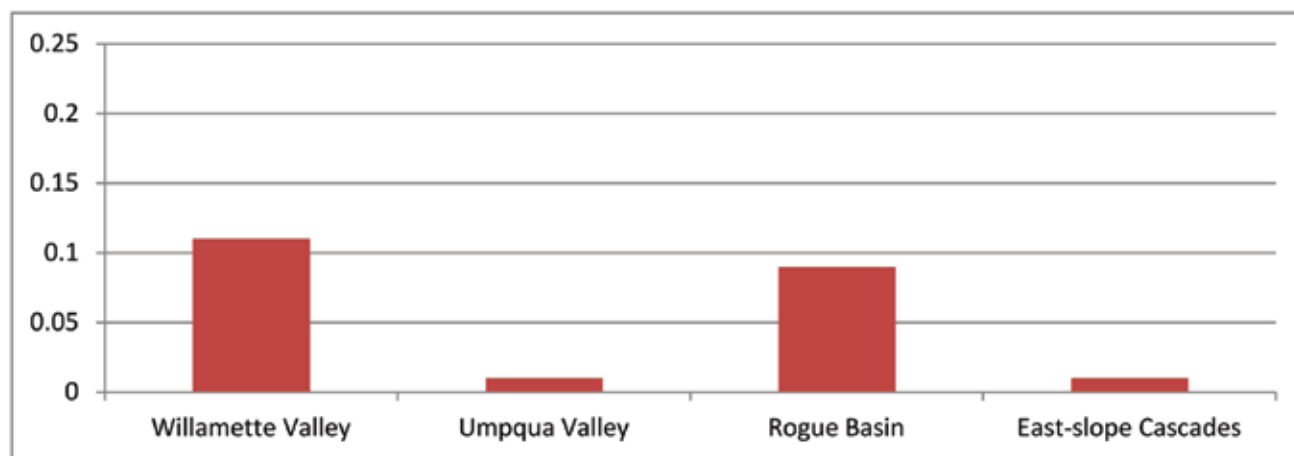
large trees provide potential for better acorn productivity, the shrubs provide nesting opportunities, and the short grass provides more opportunities for ground foraging. Its expanding range, positive response to residential development, and association with edge habitats due to fragmentation, indicate little conservation concern for this species. It can be a predator on eggs and nestlings of small birds.

Oak Habitat Conditions/Relationships:

Willamette Valley

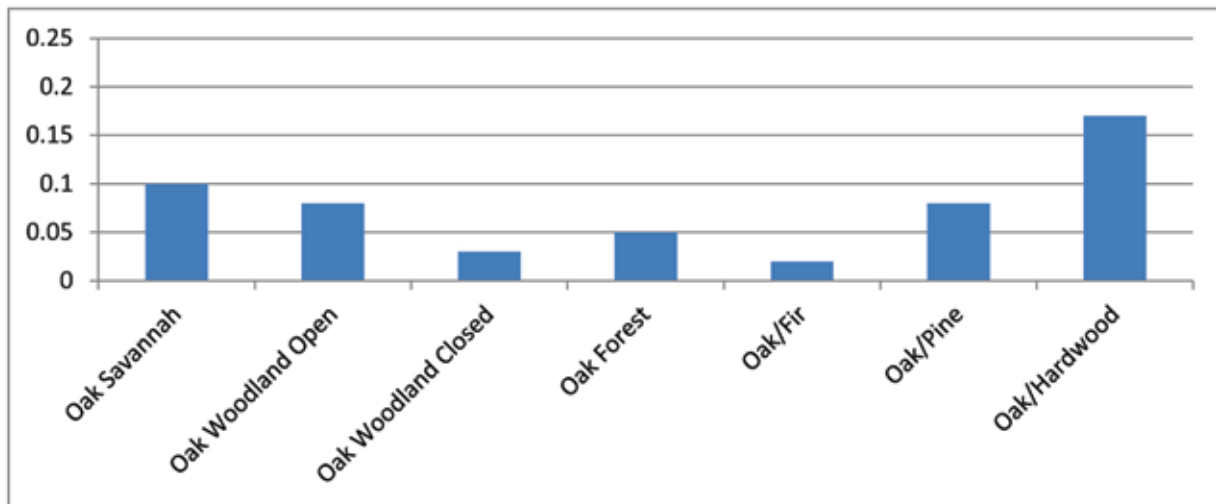
- most abundant at site with high canopy cover (82%) and 48 trees/ha (120/ac) of which 45% were >60 feet tall, but also abundant in stand with low canopy cover (44%) and only 112 trees/ha (44/ac) in south-central Willamette Valley⁵⁵

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Density estimates highest in the Willamette Valley (0.11 birds/ha) and the Rogue Basin (0.09 birds/ha). Much lower density estimates (nearly absent) in the Umpqua Valley and East-slope Cascades (0.01 birds/ha).



WESTERN SCRUB-JAY

Oak Habitat Type Regional Density Estimates: Relatively low density estimates in all oak-dominant habitat types (< 0.11 birds/ha), decreasing with increasing canopy cover above 50%. Density estimates in both oak-conifer types similar to that of oak-dominant types, and highest density estimates in Oak/Hardwood (0.17 birds/ha). This pattern is generally consistent throughout the region.



- abundance positively correlated with mean tree dbh and negatively correlated with canopy cover; most abundant at site with least canopy cover (40%) and most sub-canopy cover (37%, diverse species composition), and relatively moderate shrub cover (52%, diverse species composition)³⁷

Rogue Basin

- significantly less abundant at sites that had undergone fuel reduction treatments resulting in greater herbaceous cover and reduced shrub cover but similar tree cover⁴⁷

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover <25% than 25-75%; tree size >38 cm (15 in) dbh than <23 cm (9 in) dbh and >53 cm (21 in) dbh than 23-38 cm (9-15 in) dbh, and shrub cover >75% than <75%; general trend of increasing abundance with increasing tree size⁴⁰

Northern California

- abundance positively correlated to residential development, number of valley oaks >5 cm (2 in) dbh, and the amount of habitat edge; negatively correlated with the amount of oak in the landscape and number of trees >5 cm (2 in) dbh⁴²
- significantly more abundant in plots with moderate tree density (100-180 trees/ha [40-73/ac]) and moderate

tree diameter (mean dbh 31 cm [12 in]) in a clumped distribution⁴³

- abundance positively associated with canopy cover (in clumped distribution) and negatively associated with the number of snags¹⁹

Optimal Oak Breeding Habitat: Mature savannah or woodland (20-60% canopy cover) with mean tree dbh >38 cm (15 in), significant edges and openings, low to moderate sub-canopy cover (<25%) and shrub cover (20-60%), with low-statured grasses (<30 cm [12 in]) in the ground cover.



Bob Allman

WESTERN TANAGER (*Piranga ludoviciana*)

Population Status and Trends: BBS trend data indicates significantly increasing short-term and long-term trends for the region, with stable or increasing trends for all sub-regional analyses, except in OR with significantly decreasing long-term trends.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	0.89	1.37
NPR – OR, WA, CA	0.19	0.38
NPR – WA	2.78	1.92
NPR – OR	-0.98	-0.30
NPR - CA	0.84	0.21

Nest Location and Timing: Open cup-nest on a branch well out from the trunk at varying heights above ground (3–18 m [10–60 ft]). Nesting occurs primarily from late May through mid-July.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.

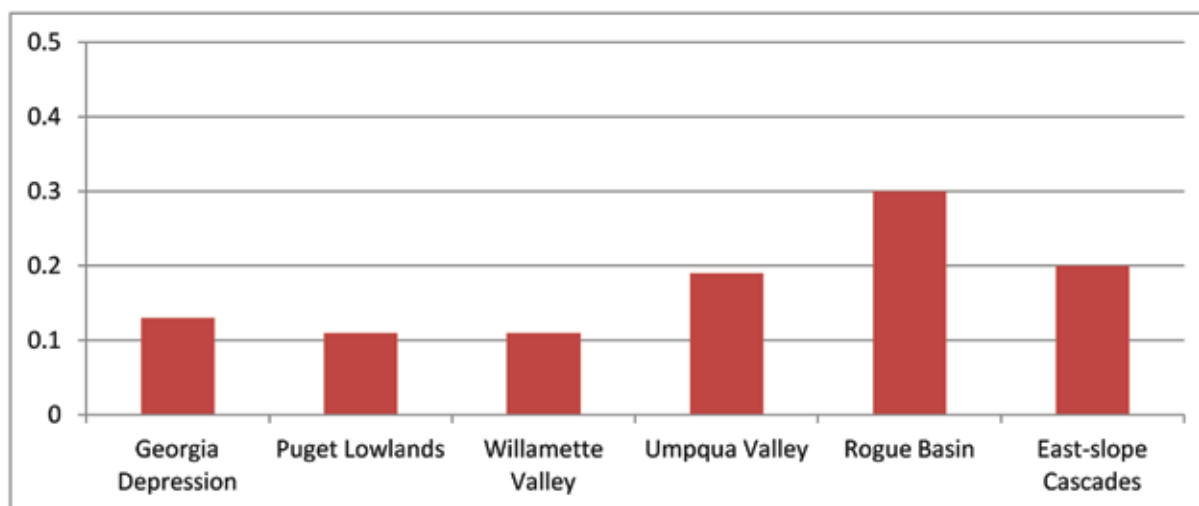
Comments: Long-distance migrant. A canopy and sub-canopy species of mature woodlands with broken canopy gaps. Strong association with both mixed oak-conifer types, Oak/Pine and Oak/Fir, where there is edge habitat in the canopy openings created by tree height differences and a limited sub-canopy. Further, density estimates



Peter LaTourrette, www.birdphotography.com

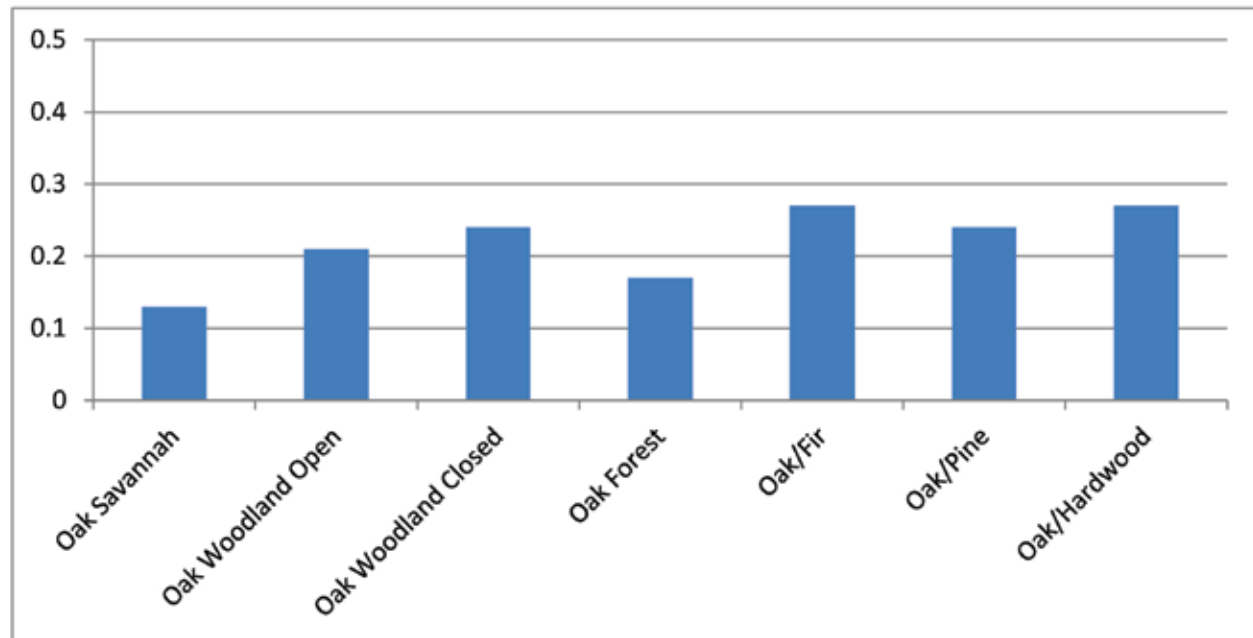
highest in drier ecoregions, Klamath Mountains and East-slope Cascades, where more mixed oak-conifer and Oak/Hardwood types occur.

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Low to moderate density estimates (0.11 – 0.30 birds/ha); lowest in Puget Lowlands and Willamette Valley (0.11 birds/ha) and highest in Rogue Basin (0.30 birds/ha).



WESTERN TANAGER

Oak Habitat Type Regional Density Estimates: Low to moderate and similar density estimates in all habitat types (0.14 - 0.27 birds/ha), lowest in Oak Savannah (0.14 bird/ha), and highest in both mixed oak-conifer types (0.24 - 0.27 birds/ha) and Oak/Hardwood (0.27 birds/ha).



Oak Habitat Conditions/Relationships:

Puget Lowlands

- positive relationship with total basal area of Douglas-fir and all negative relationship with basal area of all tree species combined; positive relationship with mean canopy cover, swordfern, and snags and negative with manzanita, Scotch broom and grasses on McChord Air Force Base⁵¹

Willamette Valley

- most abundant at two sites with moderate canopy cover (57% and 70%), relatively high sub-canopy cover (30% and 37%), and relatively moderate shrub cover (32% and 57%); least abundant at site with lowest sub-canopy cover (8%) and highest shrub cover (65%) and moderate canopy cover (62%)³⁷

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >25% than <25%; tree dbh 38-53 cm (15-21 in) than <23 cm (9 in); and no association with shrub cover; general trend of increasing abundance with increasing canopy cover⁴⁰

Optimal Oak Breeding Habitat: Mature woodland (>40% canopy cover), including mixed oak-conifer in the canopy, with mean tree dbh >30 cm (12 in), significant edge habitat in canopy gaps, and low sub-canopy cover (<15%). Understory shrub and ground cover variable and likely less important.



Bob Altman

WESTERN WOOD-PEWEE (*Contopus sordidulus*)

Population Status and Trends: Historically and currently, common throughout the region.²¹ BBS trend data indicates short-term and long-term significant declines for all regional and sub-regional analyses except in WA.³⁶

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-2.10	-1.70
NPR – OR, WA, CA	-1.97	-1.46
NPR – WA	0.64	1.22
NPR – OR	-2.52	-1.85
NPR - CA	-1.41	-1.59

Nest Location and Timing: Open cup-nest away from trunk on branch or on forked branch of tree usually 4-13 meters (12-40 feet) above ground. Nesting occurs primarily from late May through mid-July.

Breeding Range in Oak Habitats: Distributed throughout oak habitats in the region.

Comments: Long-distance migrant. A canopy and sub-canopy species and potential “early responder” to overstory thinning or conifer removal that opens up the canopy of oak or oak-fir forest and creates edges and openings for sallying out to capture flying insects. Data on preferred amount of shrub and ground cover are variable, although aerial insect productivity could be enhanced with good shrub cover. Much lower density estimates in mixed oak types indicates strong association with oak trees. Although



Greg Lavaty

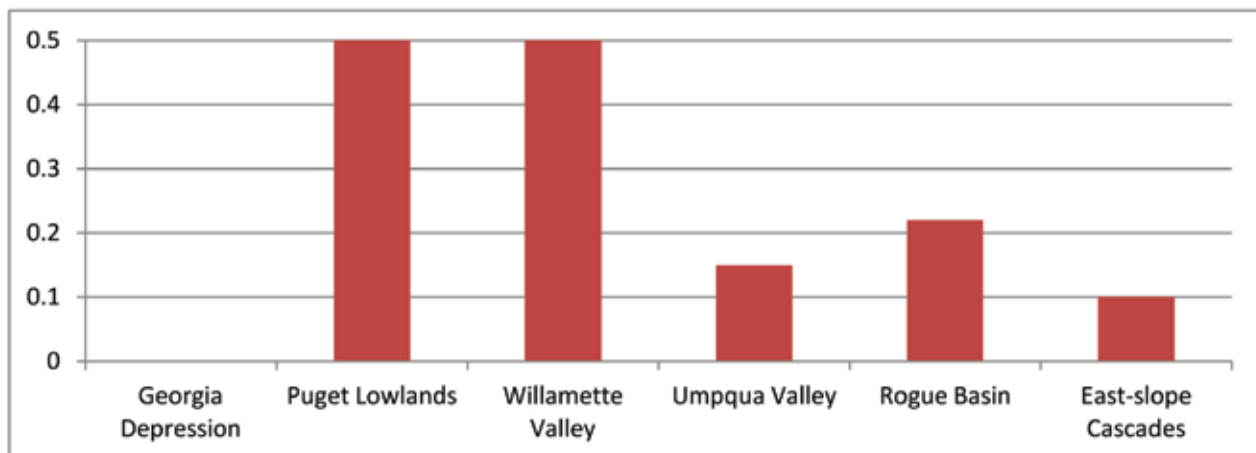
this species has significant population declines, densities are relatively moderate to high, and it does not appear to be an uncommon species anywhere in the region. However, its detectability is high due to association with edge habitat and frequent and characteristic vocalizations, which may give the perception of a relatively larger population than many other less detectable species.

Oak Habitat Conditions/Relationships:

Puget Lowlands

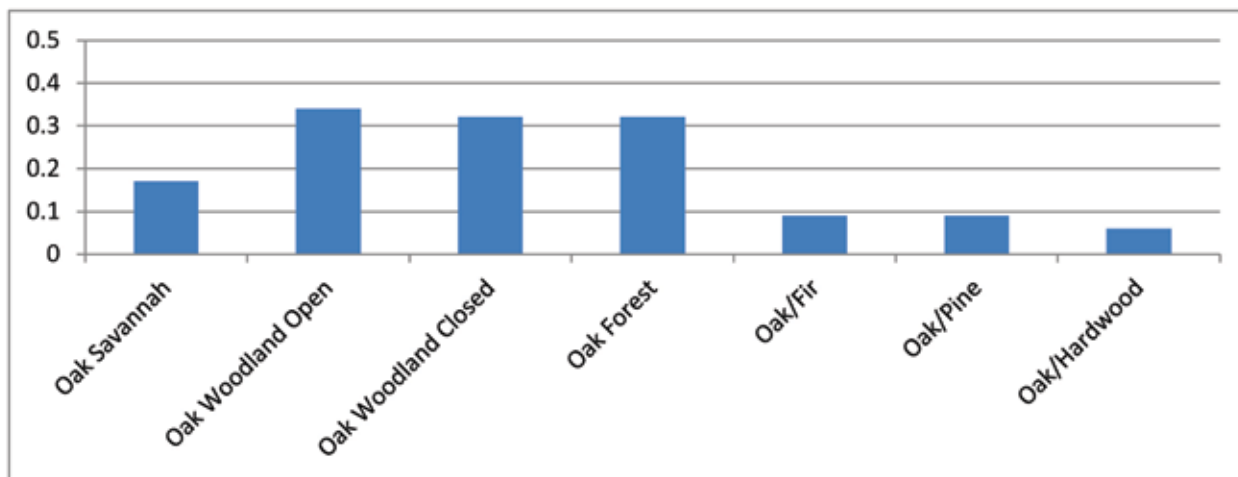
- positive relationship with basal area of oak including basal area of oaks >30 cm (12 in) dbh, oak cover and snowberry cover, and density of serviceberry, crabapple, and Indian plum on McChord Air Force Base; negative relationship with tree basal area and basal area of Douglas-fir⁵¹

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively moderate density estimates (0.10 - 0.22 birds/ha) throughout the region, except nearly absent in the Georgia Depression, and substantially higher (0.52 - 0.60 birds/ha) in the lowland and valleys ecoregions (Puget Lowlands and Willamette Valley).



WESTERN WOOD-PEWEE

Oak Habitat Type Regional Density Estimates: Relatively moderate and similar density estimates (0.32 - 0.34 birds/ha) in the woodland and forest oak-dominant types, but reduced in Oak Savannah (0.17 birds/ha). Low density estimates (<0.10 birds/ha) in all mixed oak types. This pattern is generally consistent throughout the region.



- moderately abundant at sites characterized by mean tree cover 25-50% (closer to 50), mean shrub cover 50-75% (closer to 50), and herbaceous cover 50-75% (closer to 50) on Fort Lewis Military Installation⁴⁹

Willamette Valley

- most abundant at site with least canopy cover (44%) and fewest trees (18/ha, 44/ac); relatively abundant at site with 82% canopy cover and 48 trees/ha (120/ac) of which 45% were >18 m (60 ft) tall in south-central Willamette Valley⁵⁵
- significant negative relationship with canopy cover of Douglas-fir; at three sites where most abundant, mean canopy cover of oaks 68% (range 50-84), and at three sites where least abundant mean canopy cover of oaks 54% (range 30-74); no patterns of abundance relative to size of site, tree density, or average site-level dbh of oaks throughout the Willamette Valley³⁷

Rogue Basin

- significantly more abundant in sites that had undergone fuel reduction treatments resulting in greater herbaceous cover and reduced shrub cover; abundance negatively associated with shrub cover⁴⁷

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >75% than <75%, tree dbh >38 cm (15 in) than <38 cm (15 in), and shrub cover >25% than 25-50% and >75% than <75%; general trend of increasing abundance with increasing canopy cover >50% and tree dbh >38 cm (15 in)⁴⁰

Optimal Oak Breeding Habitat: Mature oak woodlands (35-85% canopy cover) with high edge to opening ratios, mean dbh >38 cm (15 in), and <5% Douglas-fir canopy cover. Understory shrub and ground cover variable and likely less important.



WHITE-BREASTED NUTHATCH (*Sitta carolinesis*)

Population Status and Trends: Historically, common to uncommon throughout the region except at the northern extent of its range in the south Puget Lowlands where it was rare to uncommon.¹⁸ Currently, extirpated as a breeding species from the Puget Lowlands since the early 1990s, and uncommon or locally common with declines noted elsewhere in the region.¹⁸ BBS trend data indicates long-term significant regional declines, and non-significant trends for all other analyses in the region, with mostly increases in the short-term (except CA) and decreases in the long-term.³⁶ The westside subspecies, Slender-billed *aculeate*, is a “Species of Greatest Conservation Need” in the Willamette Valley²⁵ and Puget Lowlands ecoregions,²⁶ and a State Candidate for listing as Endangered in WA.

Bird Conservation Region/Sub-Region	Annual Percent Change	
	1966-2010	2000-2010
NPR	-1.78	2.22
NPR – OR, WA, CA	-1.78	2.22
NPR – WA	na	na
NPR – OR	-2.01	5.91
NPR - CA	-1.21	-1.88

Nest Location and Timing: Nest in natural cavities or those excavated by woodpeckers at highly variable heights above ground. Will use nest boxes. Will nest near or away from human settlement. Nesting occurs primarily from mid-April through late June.

Breeding Range in Oak Habitats: *Aculeate* subspecies distributed throughout oak habitats in the Klamath



Tom Grey

Mountains and Willamette Valley ecoregions only. East-side subspecies *tenuissima* in East-slope Cascades ecoregion.

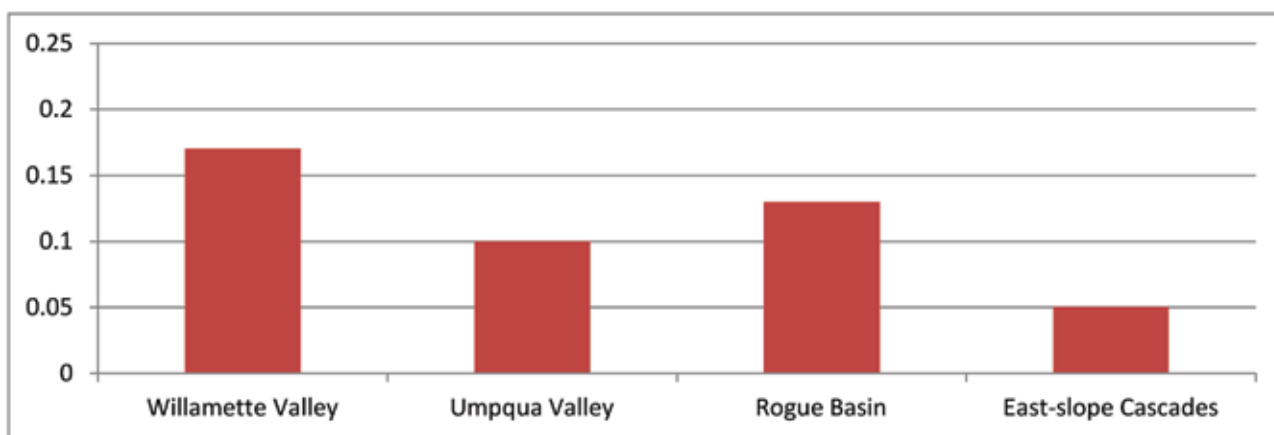
Comments: Resident. A woodland and forest species most associated with small habitat patches with edges that are loosely connected with other patches and other edges to support their territory requirements, rather than the interiors of large patches. Although they have relatively large territories (4-5 ha/pair [10-12 acres]), patch size does not appear to be as important a factor as the amount of oak habitat in the landscape.

Oak Habitat Conditions/Relationships:

Willamette Valley

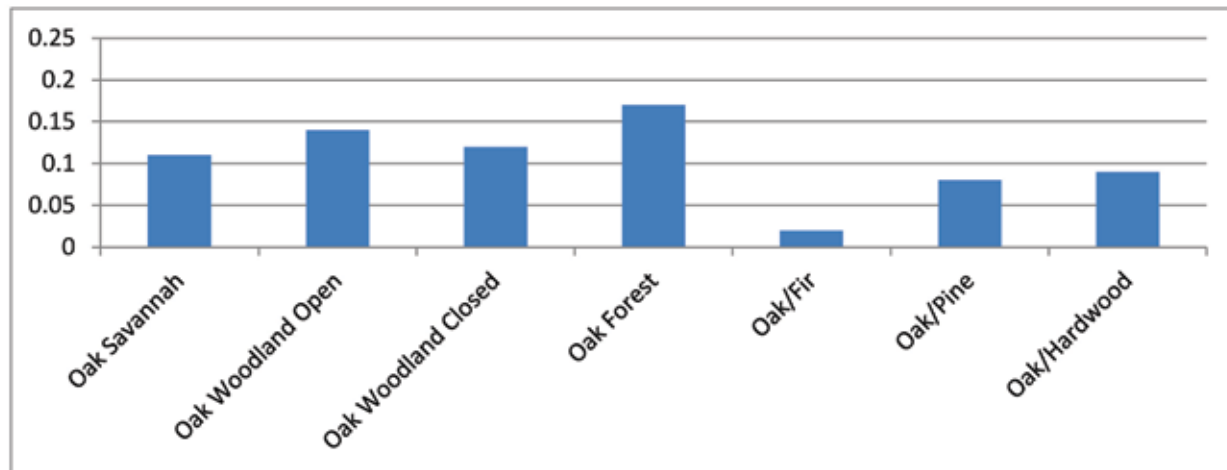
- positive correlation with large diameter oaks and negative correlation with sub-canopy cover of oaks and percent Douglas-fir cover; abundance generally higher with larger mean dbh of oaks, highest abundance where

Ecoregional/Sub-Regional Oak Habitat Density Estimates: Relatively low to moderate density estimates in the western Oregon ecoregions (0.10 - 0.17 birds/ha), and much lower in the East-slope Cascades (0.05 birds/ha).



WHITE-BREASTED NUTHATCH

Oak Habitat Type Regional Density Estimates: Relatively low to moderate and similar density estimates in all oak-dominant habitat types (0.11 - 0.17 birds/ha). Lower density estimates in mixed oak types, and very low in Oak/Fir (0.02 birds/ha). This pattern is generally consistent throughout the region, with the highest density estimate in Oak Forest in each ecoregion.



largest mean dbh of oaks (76 cm [30 in]); mean dbh of oaks at three sites with highest abundance 60 cm (24 in); overall mean dbh 55 cm (22 in) (range 39-77 cm [15-30 in]); highest abundance in largest sites (i.e., >36 ha [90 ac]); mean canopy cover with moderate and high abundance 44-69%; extremes (29% and 83%) had relatively low abundance³⁷

- density increased with combination of oak cover within a 1-km radius, edge density within a 178-m radius, and number of oak trees >50 cm (20 in) dbh within a 100-m radius; woodland structure at nest locations characterized by larger trees, and greater canopy cover and basal area of oaks than at random locations; density significantly higher in small woodlands than in edges of large woodlands, which had higher density than woodland interiors²²

Umpqua Valley

- most abundant at site with largest madrone trees and highest dominance of oak in the canopy; least abundant at site with lowest density and importance of oaks⁵⁰

Rogue Basin

- significantly more abundant in sites that had undergone fuel reduction treatments resulting in greater herbaceous cover and reduced shrub cover; abundance negatively associated with shrub cover⁴⁷

Willamette/Umpqua/Rogue

- significantly more abundant where canopy cover >75% than <75%, tree dbh >38 cm (15 in) than <23 cm (9 in) and >53 cm (21 in) than 23-53 cm (9-21 in), and shrub cover <25% than 25-50% and >75% than 25-50%; general trend of increasing abundance with increasing tree dbh⁴⁰

Optimal Oak Breeding Habitat: Mature oak woodlands (40-80% canopy cover) in loosely connected patches with significant edges and <10% Douglas-fir in the canopy and sub-canopy, mean dbh >53 cm (21 in) with >20% of oak trees with >70 cm (28 in) dbh, and sub-canopy cover <20%. Understory shrub and ground cover variable and likely less important.



Appendix B. Data Sources for Oak Bird Species Accounts

Georgia Depression

- 351 point counts at seven sites during one year on southeastern Vancouver Island⁵⁴
- 328 point counts at 14 sites during two years on southeastern Vancouver Island⁵⁹

Puget Lowlands

- 27 point counts at 10 sites during one year on San Juan Island (K. Foley unpublished data)
- 42 point counts at 14 point count stations during one year on McChord Air Force Base⁵¹
- 131 point counts at 43 point count stations during one year on Fort Lewis Military Installation⁴⁹
- 434 point counts at 26 point count stations during nine years on Fort Lewis Military Installation (I. Gruhn unpublished data)
- 200 point counts at 10 point count stations during seven years at Scatter Creek Wildlife Area (K. McAllister unpublished data)
- 75 point counts at five point count stations during five years at Glacial Heritage Preserve (E. Delvin unpublished data)
- One spot-mapping plot (7.5 ha) during one year near Maytown⁶⁰
- One spot-mapping plot (6.8 ha) during one year on San Juan Island²³
- Six spot-mapping plots (3.9-9.9 ha) during one year at two sites in the south Puget Sound²³

Willamette Valley

- 144 point counts at six point count stations during four years at Oak Island on Sauvie Island Wildlife Management Area (W. Gross unpublished data)
- 60 point counts at five point count stations during three years at Willamette Narrows (K. Weil unpublished data)
- 185 point counts at five point count stations during eight years at Cooper Mountain (K. Weil unpublished data)
- Nine point counts at three point count stations during one year at Big Four Corners (R. Thompson unpublished data)

- 178 point counts at 60 point count stations during one year at multiple sites in the central and southern Willamette Valley (K. Viste-Sparkman unpublished data)
- 588 point counts at 74 point count stations at nine sites during three years throughout the Willamette Valley³⁷
- 192 point counts at 8 point count stations during three years at Owens Farm in the central Willamette Valley (B. Altman unpublished data)
- 56 point counts and 22 point count stations at nine sites during one year in the central and southern Willamette Valley (B. Altman unpublished data)
- 251 point counts at 15 point count stations during three years at Coburg Hills in the southern Willamette Valley (B. Altman unpublished data)
- 67 point counts at 50 point count stations during one year in oak/conifer in the central and southern Willamette Valley (B. Altman unpublished data)
- 33 point counts at 13 point count stations during one year at three sites in the central Willamette Valley (B. Altman unpublished data)
- Two spot-mapping plots (6.2-29.0 ha) during one year at Oak Island on Sauvie Island²³
- 14 spot-mapping plots (1.4 - 52.9 ha) during one year at 11 sites in the central and southern Willamette Valley²³

Umpqua Valley

- 220 point counts at 22 point counts stations during one year near Roseburg⁵⁰
- 298 point counts at 101 point count stations during one year at 11 sites throughout the northern Umpqua Valley (Klamath Bird Observatory unpublished data)
- Seven spot-mapping plots (2.7-9.5 ha) during one year at three sites in the northern Umpqua Valley²³



Blue-gray Gnatcatcher

Greg Lavaty

Appendix B. Data Sources for Oak Bird Species Accounts

Rogue Basin

- 240 point counts at 120 point count stations during two years in the Applegate Valley BLM land (Klamath Bird Observatory unpublished data)
- 610 point counts at 214 point count stations during four years in the Applegate Valley (Klamath Bird Observatory unpublished data)
- 140 point counts at 70 point count stations during two years near Grants Pass (D. Vroman unpublished data)
- 332 point counts at 332 point count stations during one year throughout the Rogue Basin (Klamath Bird Observatory unpublished data)
- 109 point counts at 109 point count stations during one year in oak/conifer throughout the Rogue Basin (Klamath Bird Observatory unpublished data)
- 74 point counts at 74 point count stations during one year in oak/hardwood throughout the Rogue Basin (Klamath Bird Observatory unpublished data)
- Four spot-mapping plots (5.6-22.5 ha) during one year at three sites in the Rogue Valley²³

East-slope Cascades

- 1200 point counts at 120 point count stations during two years in south-central Washington⁴⁴
 - 300 points at three large oak sites
 - 300 points at three small oak sites
 - 300 points at three small oak/pine sites
 - 300 points at three large oak/pine sites
- 216 point counts at 36 point count stations during one year in south-central Washington⁵⁸
 - 72 points at three oak/pine sites
- 12 point counts at one site during three years in central Washington (J. Evans unpublished data)



Western Scrub-Jay

Owen Deutsch

