

## Western Ecological Research Center

# Publication Brief for Resource Managers

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## Waterfowl Distribution and Abundance During Spring Migration in Southern Oregon and Northeastern California

The Klamath Basin and other areas in the southern Oregon, northeastern California, and extreme northwestern Nevada region (SONEC) provide important habitat for waterfowl in the Pacific Flyway. Situated directly between California's Central Valley, the main wintering area for Pacific Flyway waterfowl, and major breeding areas in Alaska and the Prairie-Parklands, SONEC is especially important during fall and spring migration. A previous USGS study reported that 77–87% of female northern pintails equipped with satellite transmitters during late winter in the Central Valley visited SONEC in spring on their way north, but abundance patterns were not studied. Another USGS study reported abundance for all waterfowl on national wildlife refuges in Klamath Basin, but not for the bulk of SONEC regions. In the current study, using aerial surveys, USGS scientists studied abundance and distribution of waterfowl in SONEC in spring to quantify the importance of the region to waterfowl and to collect the data necessary to estimate waterfowl habitat requirements and guide conservation efforts in the region. The 7 original subregions of SONEC and the Madeleine Plains part of the Honey Lake subregion were surveyed, comprising 76% of SONEC's land area and including 90% of SONEC's wetlands and 96% of PTT-tagged pintail locations during 2002–2003. USGS scientists Dr. Joseph Fleskes and Julie Yee reported their findings in the *Western North American Naturalist*.

The scientists found that total waterfowl-use days in SONEC during the 119-day, spring period (January 5 – May 3) was similar during 2002 and 2003, averaging 1,075,900 birds per day. Waterfowl abundance peaked in mid-March in both years: 2,095,700 in 2002 and 1,681,700 in 2003.

### Management Implications:

- The SONEC region is of critical importance as a spring staging area for waterfowl that winter in the Central Valley of California and other Pacific Flyway regions.
- A substantial proportion (25%) of the spring waterfowl use observed in this study occurred on unprotected habitat in SONEC.
- Diurnal surveys may underestimate the importance of private habitats to some species, such as night use of flooded pastures by northern pintails.
- Conservation of both public and private waterfowl habitats in SONEC is crucial for pintails and the numerous other waterfowl migrating through the region.
- These results indicate a possible need for a program to maintain and enhance spring habitats, especially on private lands, and to ensure that resources are adequate in years of below-average precipitation or when wintering waterfowl populations are larger than they were during 2002–2003.

Northern pintail was the most abundant species in both years, accounting for 25.6% of the 2002 and 24.5% of the 2003 waterfowl-use days. Pintail abundance peaked during the March 13 survey at 689,300 in 2002 and 532,100 in 2003. All other dabbling ducks accounted for 27.6% and 28.6%, diving ducks for 13.5% and 9.2%, geese for 24.6% and 29.3%, swans for 2.8% and 1.9%, and coots for 5.8% and 6.4% of the spring waterfowl-use days in SONEC during 2002 and 2003, respectively.

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Although use days changed little for total waterfowl (+0.08%) and dabbling ducks (-0.1%), diving duck use was lower (-32%), and goose use days were greater (+19%) in 2003 than in 2002. Distribution was similar in both years, with the most waterfowl use in the Lower (66%) and Upper (14%) Klamath subregions; 2%-6% occurred in each of the other subregions. Peak spring abundance in SONEC during 2002 and 2003 averaged 50.3% of the midwinter abundance in California (all survey regions) and southern Oregon (69-3 survey region) for all waterfowl, 46.1% for dabbling ducks, 62.4% for diving ducks, 68.8% for geese, 109.4% for swans, and 43.8% for coots. Estimated peak spring abundance of pintails in SONEC was 64.1% of their winter abundance in California and southern Oregon.

For each spring, 75% of all waterfowl use in SONEC occurred on federal, state, or Nature Conservancy lands (i.e., protected areas). On protected areas, there was a higher percentage of dabbling ducks (80.5%), geese (70.5%), and coots (81.5%) than diving ducks (60.4%) and swans (49%).

The data showed that SONEC provides critical spring habitat to a majority of waterfowl that winter in California and southern Oregon. Although the Lower Klamath subregion received the greatest overall waterfowl use, distribution among subregions varied among species and surveys, and all subregions were important during some part of the spring for 1 or more species.

The authors did not adjust peak spring abundance estimates for SONEC areas not surveyed, which might add an estimated 4%-10% more birds per day; nor did they account for the many individuals that migrated through the region before or after the peak. Also, true peak abundance may have occurred on a non-survey date. Thus, the measure of peak abundance presented should be considered only a minimal estimate of the true percentage of the wintering waterfowl population that uses SONEC during spring. A variety of factors including weather, waterfowl population size, available habitat, and each species' ecology likely influenced the magnitude, timing, and distribution of waterfowl use in SONEC during spring.

In addition to the estimates of waterfowl abundance and distribution provided in this study, data are also needed on habitat availability, habitat productivity, waterfowl food habits, and waterfowl energetic requirements during spring to develop an energetics-based model to guide habitat conservation planning for the region. Also needed is a better understanding of how annual variation in precipitation and changing water availability impact the carrying capacity of the SONEC landscape.

*Fleskes, J. P., and J. L. Yee. 2007. Waterfowl distribution and abundance during spring migration in southern Oregon and northeastern California. Western North American Naturalist 67:409-428.*