

stable in size and location within the course of 1 year and between 2 or more years. A group of leks where males and females may interact within a breeding season or between years is called a lek complex. Males defend individual territories within leks and perform elaborate displays with their specialized plumage and vocalizations to attract females for mating.

Females may travel up to 35 km (22 mi) after mating, and typically select nest sites under sagebrush cover, although other shrub or bunchgrass species are sometimes used. Nests are relatively simple and consist of scrapes on the ground. Clutch sizes range from 6 to 13 eggs. Nest success ranges from 10 to 63 percent and is relatively low compared to other prairie grouse species. Shrub canopy and grass cover provide concealment for sage grouse nests and young, and may be critical for reproductive success.

Sage grouse typically live between 1 and 4 years; however, sage grouse up to 10 years of age have been recorded in the wild. The annual mortality rate for sage grouse is roughly 50 to 55 percent, which is relatively low compared to other prairie grouse species. Females generally have a higher survival rate than males, which accounts for a female-biased sex ratio in adult birds.

Prior to European expansion into western North America, sage grouse were believed to occur in the States of Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Colorado, Utah, South Dakota, North Dakota, Kansas, Oklahoma, Nebraska, New Mexico, Arizona, and the Canadian provinces of British Columbia, Alberta, and Saskatchewan (Schroeder *et al.* 1999). Currently, sage grouse occur in 11 states and 2 Canadian provinces, ranging from extreme southeastern Alberta and southwestern Saskatchewan, south to western Colorado, and west to eastern California, Oregon, and Washington. In addition, sage grouse occur in southern Idaho, the northern two-thirds of Nevada, parts of Utah, most of Wyoming, southern and eastern Montana, and extreme western North and South Dakota. Sage grouse have been extirpated from Nebraska, Kansas, Oklahoma, New Mexico, Arizona, and British Columbia (Schroeder *et al.* 1999).

The distribution of sage grouse has contracted in a number of areas, most notably along the northern and northwestern periphery and in the center of their historic range. There may have been between roughly 1.6 million and 16 million sage grouse rangewide prior to European expansion across western North America (65 FR 51578).

The Western States Sage Grouse Technical Committee (WSSGTC) (1999) estimated that there may have been about 1.1 million birds in 1800. Braun (1998) estimated that the 1998 rangewide spring population numbered about 157,000 sage grouse. More recent estimates put the number of sage grouse rangewide at between roughly 100,000 and 500,000 birds (65 FR 51578). Sage grouse population levels may have declined from historic to recent times between 69 and 99 percent (65 FR 51578). WSSGTC (1999) estimates the decline between historic and present day to have been about 86 percent.

Apparently, much of the overall decline in sage grouse populations occurred from the late 1800s to the mid-1900s (Hornaday 1916; Crawford 1982; Drut 1994; Washington Department of Fish and Wildlife (WDFW) 1995; Braun 1998; Schroeder *et al.* 1999). Other declines in sage grouse populations apparently occurred in the 1920s and 1930s, and then again in the 1960s and 1970s (Connelly and Braun 1997).

In Oregon, a 50 percent net loss in sage grouse distribution took place between about 1900 and the mid-1950s (Drut 1994). Since the 1950s, sage grouse distribution in Oregon has undergone only minor changes (Drut 1994). Between 1941 and 1952, hundreds of birds from Harney and Malheur counties were transplanted to Crook, Sherman, Wasco, and other counties (Crawford 1982). These transplants were not successful, and it is unclear what effect a successful translocation of sage grouse from the eastern population into the western population might have had on the genetics of sage grouse in Oregon.

Two subpopulations of sage grouse remain in Washington (WSGWG 1998). One occurs primarily on private and State-owned lands in Douglas County; the other occurs at the Yakima Training Center, administered by the U.S. Army in Kittitas and Yakima counties. These two subpopulations are isolated from the Oregon population and nearly isolated from one another (65 FR 51578).

Western sage grouse were first described in 1946 by Aldrich. Aldrich (1946) examined 11 specimens collected in Washington (3), Oregon (7), and California (1), and on the basis of slight color differences in the plumage, concluded that a subspecies existed in the western portion of the greater sage grouse range. The distribution of the western sage grouse was described as occurring from north to central-southern British Columbia; west to central Washington, central Oregon, and northeastern California; south to

northeastern California; east to southeast-central and northeastern Oregon (possibly central-western Idaho) and central-eastern Washington (Aldrich 1946). Later, the distribution was modified to reclassify sage grouse in northwestern Nevada and northern California as an intermediate form (Aldrich and Duvall 1955; AOU 1957; Aldrich 1963). The validity of the taxonomic separation between an eastern and a western subspecies has since been questioned (Johnsgard 1983; Johnsgard 2002; Benedict *et al.* in press).

In 1957, the AOU recognized a subspecies division within the sage grouse taxon. Since that time, however, it has not conducted a review of this subspecies distinction. The AOU stopped listing subspecies as of the 6th (1983) edition of its Checklist, although it recommended the continued use of the 5th edition for taxonomy at the subspecific level. The AOU has not formally or officially reviewed the subspecific treatment of most North American birds, although it is working towards that (Richard C. Banks, National Museum of Natural History, pers. comm., 2000, 2002). Therefore, the western and eastern subspecies of sage grouse are still recognized by the AOU. However, the Oregon Department of Fish and Wildlife and others do not agree with this subspecies designation (Drut 1994).

R. Banks of the National Museum of Natural History (*in litt.*, 1992) reviewed the same sage grouse specimens available to Aldrich in 1946 and concluded that there is only a weak basis for the separation into two subspecies. Braun stated that the so-called western race of sage grouse in Oregon and Washington does not differ from sage grouse in California, northern Colorado, Wyoming, and other States (Clait E. Braun, Colorado Division of Wildlife, *in litt.* 1992 cited in Drut 1994). Braun continued by stating that the inclusion of western sage grouse as a category 2 species/subspecies by the Service is without merit.

In 1990, protein and deoxyribonucleic acid (DNA) studies were initiated to clarify the status of sage grouse subspecies in Oregon. Preliminary results indicated no differentiation among birds collected from different areas (Drut 1994). However, because the sample size was small, these results were never published (M. Pope, Oregon State University, pers. comm., 2002). Benedict *et al.* (in press) recently collected 332 birds from 16 populations in Washington, Oregon, California, and Nevada to sequence a rapidly evolving portion of the mitochondrial control region. They collected samples from