

Least Bell's Vireos nest in Stanislaus County: Are they coming back?

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The Least Bell's Vireo (*Vireo bellii pusillus*) is one of four subspecies of Bell's Vireo recognized by the American Ornithologist's Union (AOU 1957). It is the western-most subspecies, breeding entirely within California and northern Baja California. Historically, the Least Bell's Vireo was a common to locally abundant species in lowland riparian habitat, ranging from coastal southern California through the Sacramento and San Joaquin valleys as far north as Red Bluff (Tehama County) (Goldman 1908, Linton 1908, Grinnell and Miller 1944).

Grinnell and Miller (1944) recorded a noticeable decline in numbers in the Sacramento and San Joaquin valleys beginning in the early 1930s. State sponsored surveys in the 1970s failed to detect a single Least Bell's Vireo in northern California, leading to the conclusion that "no other California passerine has declined so dramatically in historic times" (Goldwasser et al. 1980). The loss of approximately 90% of riparian habitat resulted in its extirpation from the Valley and the dramatic declines elsewhere in the state. By 1986, the population had declined to an estimated 300 pairs, with the majority occurring in San Diego County (Kus 2002). The Least Bell's Vireo was listed as a state endangered species in 1980 and as a federally endangered species in 1986.

On 10 June 2005 PRBO biologists heard a singing male Least Bell's Vireo at the San Joaquin River National Wildlife Refuge (SJRNR), Stanislaus County. Further observation revealed two adult Least Bell's Vireo feeding two fledglings. A second nest from the presumed same pair was located on 29 June 2005 with two eggs and two nestlings. The nest was located in a low arroyo willow (*Salix lasiolepis*) branch, concealed by a dense stand of mugwort (*Artemisia douglasiana*) (Figure 1, Back Cover).

This Least Bell's Vireo pair fledged six or more young during the 2005 breeding season, showing unusually high reproductive success. Multiple long-term studies indicate an average of 2.6 young are fledged per pair (USFWS 1988). Least Bell's Vireos are extremely vulnerable to cowbird parasitism and in heavily parasitized areas, up to four cowbird eggs may be found in vireo nests (Salata 1983; B. Jones, unpubl. data). Fifty percent of the Spotted Towhee nests and 37% of Song Sparrow nests were parasitized on the refuge during 2000 and 2001 indicating the potential for parasitism on Least Bell's Vireo (PRBO 2002). Even in areas with cowbird management, up to 43% of nests can be parasitized (Kus 1999). Thus, it is noteworthy that both nests at SJRNR escaped parasitism.



Figure 1. Julian Wood measures height of a Least Bell's Vireo nest at the San Joaquin River National Wildlife Refuge, Stanislaus Co., summer 2005.

photo by Po-Hon Liu

Early to mid-successional riparian habitat is typically used for nesting by the Least Bell's Vireo because it supports the dense shrub cover required for nest concealment as well as a structurally diverse canopy for foraging (Kus 2002). Least Bell's Vireos respond favorably to restoration efforts, particularly when restoration sites are located adjacent to established riparian habitat. Restored riparian in the coastal lowlands of southern California has the habitat structure to support breeding vireos within 3-5 years (Kus 1998).

The success of the Central Valley pair may be attributed to the quality of the riparian restoration at the refuge. Three years ago, as part of a CALFED-funded restoration project, River Partners developed the SJRNWR restoration design, one of the largest riparian restoration efforts ever undertaken in the Central Valley. Using recommendations from the California Partners in Flight Riparian Bird Conservation Plan (RHJV 2004), the restoration incorporated native riparian vegetation such as mugwort, California wild rose (*Rosa californica*), arroyo willow, and valley oak (*Quercus lobata*); plant species known to benefit riparian-associated birds. The restoration design also integrated the Riparian Plan recommendation to promote a dense, shrubby understory, an important component in the breeding habitat of Least Bell's Vireo. Moreover, River Partners planted vegetation in a mosaic-design with shrub patches interspersed with trees

under the assumption that plantings that are concentrated into clumps will more quickly create productive patches of habitat for nesting birds than plantings uniformly spaced over a large area (RHJV 2004).

Although still extremely rare in the Central Valley, Least Bell's Vireo numbers have increased tenfold in southern California due to the tremendous efforts of a broad partnership of local, state and federal agencies. In 1998, the population size was estimated at 2,000 pairs (L. Hays, USFWS, pers. comm.). Nesting vireos have recolonized the Santa Clara River (Ventura County) to the north, where 67 pairs nested in 1998 (J. Greaves, pers. comm.), and the Mojave River (San Bernardino County) to the northeast (Kus and Beck 1998). Prior to 2005, the northernmost reported sighting of a nesting pair was near Gilroy (Santa Clara County) in 1997 (M. Rogers, pers. comm.).

Data collected for color-banded birds indicate that site fidelity is high among adults, with many birds not only returning to the same territory, but also placing nests in the same shrub used the previous year (Salata 1983, Kus unpubl. data). This high site fidelity, in concert with the recent population increases and large scale restoration efforts, provides hope for Least Bell's Vireo recolonization throughout its historic breeding range in the Central Valley. The recent documentation of Least Bell's Vireos breeding at the SJRNWR underscores the role that habitat restoration can play in conserving biodiversity. Even highly disturbed ecosystems hold the potential for healthy habitat to recover and for many dependent species to return.

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