

DISTRIBUTION OF *NEUROTRICHUS GIBBSII* IN CALIFORNIA WITH A RANGE EXTENSION IN THE SIERRA NEVADA

Leslie N. Carraway¹, B.J. Verts¹, and J.W. Goertz²

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Published distribution maps for the shrew-mole (*Neurotrichus gibbsii*) in California depict widely variable occupied ranges (Figs. 1A–C). In our review of published information on the species (Carraway and Verts 1991), we chose to use a modification of Hall's (1981:67, Map 39) distribution map because it was based on published locality records. It showed no records for the Sierra Nevada. Regrettably, we overlooked the statement by Jameson and Peeters (1988:107) that the species "is found in the northern Sierra Nevada south at least to Plumas County."

On 15 June 1999, one of us (JWG) found a dead specimen about 6 miles S, 4 miles E of Nevada City, Nevada County, California. The specimen, preserved in alcohol, is deposited in the Museum of Vertebrate Zoology, University of California, Berkeley (MVZ 196311). The locality extends the range approximately 203 km (127 miles) SSE from previous published records at Carberry Ranch (about 9 miles E of the town of Montgomery Creek), Shasta County; about 189 km (118 miles) ESE of South Yolla Bolly Mountain, Tehama County; and about 155 km (97 miles) E of Mill Creek, Lake County (Williams 1975, Hall 1981). The locality is approximately 114 km (71 miles) south of the northern border of Plumas County in the Sierra Nevada.

The extensive distances between published locality records and the site of the new Nevada County record, combined with the widely variable ranges depicted in published maps (Figs. 1A–C), caused us to produce a specimen-based distribution map for the species in California (Fig. 1D). We plotted localities ($n = 185$) for specimens ($n = 466$) obtained from curators of 15 museum collections (Appendix).

Three additional localities from which 4 specimens were collected were not plotted because of inadequate or contradictory information. Because all unplotted localities occurred in counties (Humboldt and Marin) containing other collection sites, we do not believe their deletion was significant. Symbols for 39 localities were obscured by those nearby (Fig. 1D).

The distribution of *N. gibbsii* in California is considerably more widespread than depicted in previous publications (Fig. 1). Although our specimen remains the southernmost record for the species in the Sierra Nevada, other localities in Plumas and Nevada counties confirm the occurrence of the species in that mountain range (Fig. 1D). We postulate that specimens from these localities and others outside previously depicted ranges are not the result of recent invasion of new territory by the species, but represent collections in previously unsampled areas or are samples obtained from disjunct and scattered residual populations.

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¹Department of Fisheries and Wildlife, Nash 104, Oregon State University, Corvallis, OR 97331-3803.

²1402 Caddo St., Ruston, LA 71270-5220.

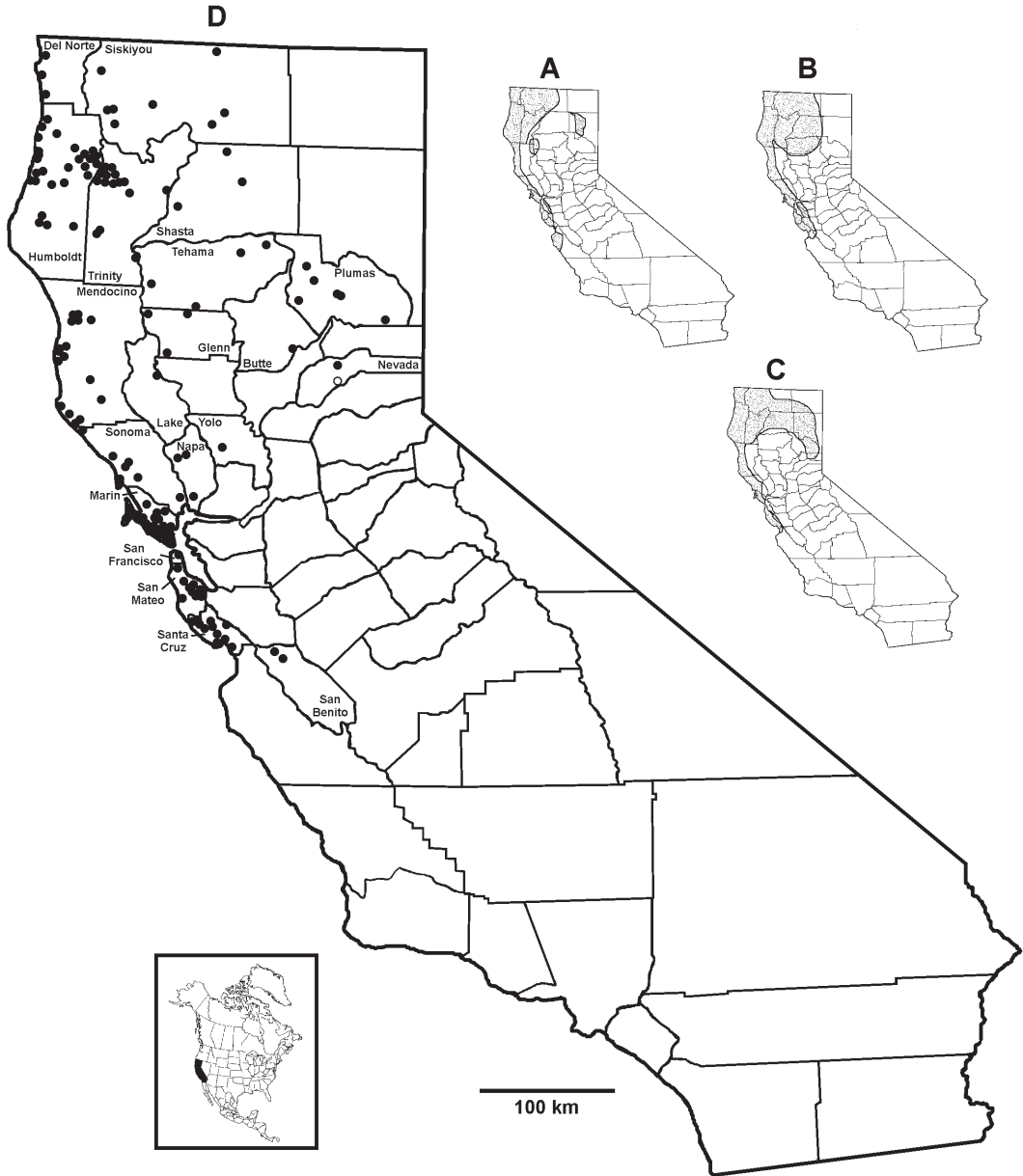


Fig. 1. Distribution of the shrew-mole, *Neurotrichus gibbsii*, in California as indicated by A, Ingles (1965); B, Hall (1981); and C, Jameson and Peeters (1988); D, 185 localities at which 466 museum specimens of shrew-moles were collected (see Appendix). Three localities were not mapped; symbols for 39 localities are obscured by those nearby. Open symbol indicates new southernmost record in the Sierra Nevada (MVZ 196311).

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- APPENDIX. Specimen localities for *Neurotrichus gibbsii* in California. Localities followed by an asterisk (*) were not plotted on Figure 1D.
- U.S.A.—California, **Butte Co.:** 1 mi W Forbestown (1 MVZ). **Del Norte Co.:** Crescent City (2 USNM); Requa (1 SBMNH, 1 CAS); Smith River, 0.25 mi W Douglas Park (1 MVZ). **Glenn Co.:** Brittan Ranch, Mendocino National Forest, 39°23'45.9"N, 122°39'29.2"W (1 CAS); Masterson Camp (1 MVZ); Telephone Campground, 1.5 mi NNW Blackbutte (1 MVZ). **Humboldt Co.:** 7.2 km N, 1.6 km E Salyer (1 MVZ); Ammon Creek, 6.9 km S Salyer (2 HSU); Arboritos, 15.3 km S, 1.9 km W Salyer (1 MVZ); Arcata (1 MVZ, 5 HSU); 1 mi E Arcata (1 LACM); Big Lagoon (3 MVZ); Big Rock, 5.5 km S, 3.9 km W Salyer (1 MVZ); 2 mi N, 4 mi E Bridgeville (1 HSU); Brush Mountain, 3 mi W Salyer (1 MWFB); Brush Mountain, 0.5 km S, 7.1 km W Salyer (1 MVZ); Carlotta (2 MVZ, 1 SDNHM, 1 HSU, 12 UCLA, 1 KU, 3 CAS); 1 mi E Carlotta (4 UCLA); Cedar Creek, 1.6 km N, 8 km E Willow Creek (2 MVZ); Clam Beach (3 HSU); Clam Beach County Park (1 HSU); Cuddeback (9 MVZ); Despenadero, 1.6 km S, 6.4 km W Salyer (1 MVZ); Eureka (6 FMNH, 1 MVZ, 1 HSU); 4 mi N Eureka (1 HSU); 4 mi E Fortuna, T3N, R1W, sec. 34 [sic]* (1 HSU); Halcon, 5.6 km S, 2.9 km E Salyer (1 MVZ); Hatchery Inlet Creek (1 HSU); Hoopa Valley (1 USNM); Humboldt State University (2 HSU); 1 mi NE Humboldt State University (1 HSU); Kneeland (1 HSU); Maple Creek, 1 mi N jct Mad River (2 MVZ); Orick (3 SDNHM); 3 mi N Orick (1 USNM); 6 mi S, 6 mi E Orick (1 LACM); Six Rivers National Forest* (1 MWFB); Trinidad (1 USNM, 4 MVZ, 2 SDNHM, 1 HSU, 2 UCLA, 2 CAS); 3 mi N Trinidad (2 MWFB); 4 mi N Trinidad (3 MWFB); 1.5 mi N, 2 mi W Willow Creek (1 HSU); 3 mi N Willow Creek (5 MVZ, 1 HSU); 4.5 mi N, 1.5 mi E Willow Creek (3 MVZ); 1 mi N, 14 mi W Willow Creek (1 HSU); 2 mi S, 12 mi E Willow Creek, T6N, R3E, sec. 8 and 17 [sic]* (2 HSU). **Lake Co.:** Mill Creek, 4000 ft (1 CSCS). **Marin Co.:** Audubon Canyon Ranch (1 CAS); Abalone Point, 3 mi NW Bolinas (1 MVZ); 3 mi N Bolinas (1 MVZ); 1 mi W Bolinas (1 MVZ); Bolinas Bay (1 MWFB); W end Elk Valley [37.84187N, 122.550963W] (32 MVZ); Fort Baker (2 CAS); Camp Taylor, 2 mi WNW Lagunitas (1 MVZ); Fairfax (1 CAS); Canyon near Fairfax (1 MVZ); W Portal of Tunnel, Fort Baker (1 MVZ); West Portal area, Fort Barry Military Reservation (1 MVZ); Fort Cronkhite (1 MVZ); Inverness (1 USNM, 1 MVZ, 1 CAS); 1 mi S Inverness (1 MVZ); 1 mi SE Inverness (2 MVZ); 2 mi WNW Inverness (19 MVZ); 3 mi W Inverness (5 MVZ); 4 mi NW Inverness (2 SDNHM); 5 mi W Inverness (1 MVZ); Lagunitas (2 MVZ); Lagunitas Canyon (1 MVZ); Marin Headlands, Golden Gate National Recreational Area (1 CAS); Mill Valley (7 CAS); Muir Beach (3 CAS); Muir Woods (1 MVZ); Murphy's Ranch, 3.5 mi W Point Reyes Hill (1 MVZ); Nicasio (2 USNM, 1 AMNH, 5 CAS); 3 mi W Novato (1 CAS); 5 mi NNE Point Reyes Lighthouse (8 MVZ); Point Reyes National Seashore (1 CAS); Point Reyes, Umentore [= Limentour] Beach (1 SBMNH); 6 mi SSE Tomales Bluff (2 CAS); San Geronoms [= San Geronimo] (1 FMNH, 1 MVZ); San Rafael, 82 Southern Heights Blvd (1 MVZ); Sausalito (1 CAS); 1 mi N Stinson Beach (1 CAS); Mount Tamalpais (1 CAS). **Mendocino Co.:** 0.5 mi E Albion (4 AMNH); 0.5 mi NE Albion (1 CSCS); Point Arena (4 CM, 4 MVZ); 6 mi SE Point Arena (1 CM); 8 mi SE Boonville (1 HSU); Brandon Gulch, Jackson State Park (1 MVZ); 5 mi N, 3.5 mi W Branscomb (1 HSU); 6 mi N, 0.5 mi W Branscomb (1 HSU); 7 mi N, 1.5 mi E Branscomb (1 HSU); 8 mi N, 3 mi W Branscomb (1 HSU); Gualala (1 CM, 1 MVZ); Gualala River, near Gualala (1 CM); 2 mi N. Gualala (1 MVZ); Laytonville (1 MVZ); Mendocino City (1 MVZ); 4.3 mi E Navarro (2 MVZ); Russian Gulch (1 MVZ); Russian Gulch State Park (16 MVZ); Van Damme Beach State Park (1 CAS); 5 mi NW Yorkville (1 MVZ, 6 CAS). **Napa Co.:** Angwin [T8N, R5W] (1 MVZ); Bothe State Park, Napa Valley (1 MVZ); Napa Valley, 1 mi W Napa, Portrich Rd (1 MVZ). **Nevada Co.:** 8 mi NE Nevada City (1 MWFB); 6 miles S, 4 miles E, Nevada City (1 MVZ). **Plumas Co.:** Buck Ranch, 39°55'N, 121°20'W (1 UCLA); Butt Creek, 8 mi S Chester (1 MVZ); Quincy (3 MWFB); 2 mi E Quincy (2 MWFB, 1 MVZ); Rich Gulch, 8 mi N, 11 mi W Quincy (5 MVZ); Sierra Valley (1 CAS). **San Benito Co.:** Fremont Peak (1 USNM); Gabilan Mountains, 3.5 mi W San Juan Bautista (1 MVZ). **San Francisco Co.:** San Francisco, near SW corner Olympic Club, Lakeside (1 MVZ); San Francisco, S end Lake Merced (3 CAS). **San Mateo Co.:** Colma (1 CAS); 0.9 mi NE Colma (1 CAS); Crystal Springs (1 CAS); Palo Alto (1 FMNH); Portola (1 UCLA); 2 mi WNW Portola (3 MVZ); Portola Valley (2 CAS); Tunitas (8 SDNHM); Woodside (1 CAS); 2 mi N Woodside [Filoli] (1 MVZ). **Santa Cruz Co.:** 5 mi S Aptos (10 USNM); 2 mi N Ben Lomond (1 CAS); Bear Creek, 2 mi N Boulder Creek [T9S, R2W] (2 MVZ); Big Basin, E Wad-dell Creek (1 MVZ); Greenly Farm, 4 mi from Boulder

Creek (1 CAS); Santa Cruz (5 USNM, 2 MVZ, 1 SBMNH); 7 mi N Santa Cruz (1 CAS); Santa Cruz Mountains between Santa Cruz and Los Gatos (1 CAS); 7 mi W Stanford University (2 CAS); Valencia Park Ranch [T11 S, R1E] (1 MVZ); Waddell Creek, 1 mi N, 3 mi E Ano Neuvo Point (1 MVZ); Waddell Creek, 0.5 mi N, 4 mi E Ano Neuvo Point (1 MVZ); Waddell Creek [T9S, R4W] (1 MVZ). **Shasta Co.:** Carberry Ranch, between Mt. Shasta and Mt. Lassen [about 9 miles E town of Montgomery Creek] (3 USNM); 12 mi S McCloud River (1 MWFB); Tower House (2 MVZ). **Siskiyou Co.:** Beswick (1 USNM); Clear Creek, 3 mi W Klamath River (1 MVZ); Davis Creek, 2 km N, 0.5 km E Somes Bar (1 MVZ); 8 mi SE Somes Bar (1 MVZ); Mt. Shasta, Upper Mud Creek (3 USNM); Mt. Shasta, Wagon Camp (1 USNM); Mt. Shasta City (2 UCLA); 0.5 mi SW Mt. Shasta City (1 MVZ); Salmon Mountains, near Etna Mills (1 USNM); Ukonom Station, 1 km N, 1.6 km E Somes Bar (2 MVZ). **Sonoma Co.:** 7 mi W Cazadero (1 MVZ); Duncan's Mills (1 MVZ); Freestone (1 MVZ); Gualala, S side Gualala River (8 MVZ); 1 mi W Guerneville (5 MVZ); Salmon Creek, 2 mi

N Bogeda Bay (3 LACM); Salmon Creek, 2 mi NW Bogeda Bay (6 LACM); Salmon Creek, 3 mi N Bogeda Bay (1 LACM); Sonoma (1 CAS). **Tehama Co.:** 2 mi W Black Butte (2 MVZ); Lyman, 4 mi NW Lyonsville (1 MVZ); 2 mi E Mineral (1 MVZ); 2 mi S South Yolla Bolly Mountain (1 MVZ). **Trinity Co.:** Beartooth Mountain, 4.8 km N, 10 km E Burnt Ranch (6 MVZ); 1.6 km N, 6.9 km E Burnt Ranch (1 HSU); Cedar Basin, 1 mi SW North Yolla Bolly Mountain (1 AMNH); Dyer Creek, 0.8 km S, 9 km E Salyer (1 MVZ); Eastman Gulch [40°45'22"N, 122°46'35"W] (1 SDNHM); Hennessy Peak, 3.2 km W Burnt Ranch (3 MVZ); Dulce, 3.5 km S, 5.5 km E Big Bar (1 MVZ); 4.5 km W, 7.2 km N Big Bar (1 HSU); Hennessy Ridge, 1.5 km E Salyer (1 MVZ); 4.8 km E Salyer (2 HSU); 1.5 mi N Mad River Bridge, South Fork Mountain (3 MVZ); 3 mi N Mad River Bridge, South Fork Mountain (1 MVZ); Nogaar's Ranch, South Fork Trinity River [40.415129N, 123.408238W] (1 MVZ); South Fork, 6 km S, 1.6 km E Salyer (1 MVZ); Swede Creek, 7.4 km N, 8 km W Big Bar (4 MVZ). **Yolo Co.:** Copay Valley (1 MWFB).
