

## Humboldt Marten Species Information

### Distribution

In California, the Humboldt marten (*Marten americana humboldtensis*) historically occurred in coastal forests from Sonoma County, California north to Curry County, Oregon (Slauson et al. 2001). Grinnel et al. (1937) described the range of the “well-marked race” as the coastal redwood (*Sequoia sempervirens*) zone from Sonoma County north to the Oregon border (Kucera 1998). There are natural heritage records for this subspecies from Colusa, Del Norte, Glenn, Humboldt, Lake, Mendocino, Siskiyou, Tehama, and Trinity counties in California (NatureServe 2010). The Humboldt marten has been extirpated from more than 95 percent of its historic range in California (Slauson et al. 2007).

In northwestern California, the Klamath River separates the historical range of the Humboldt marten from the range of the Sierra Nevada marten (*M. a. sierrae*). Slauson and Zielinski (2004, p. 62) suggest that the xeric forest types in the river’s canyon may act as a physical barrier between these two subspecies. The coastal northern California marten population rediscovered in 1996 and 1997 is located in the north-central portion of the described range for *M. a. humboldtensis* (Grinnell and Dixon 1926, p. 413; Slauson et al. 2009a, p. 1338). Based on results of a 2000–2001 grid-based survey of the single marten population rediscovered in coastal northern California in 1996, Slauson et al. (2009b, p. 13) concluded that the entire Humboldt marten population in California likely consists of fewer than 100 individuals with the single known extant population occupying an estimated area of only 170,000 acres (ac) (68,797 hectares (ha)) (Service 2010, p. 34).

Distribution Map: See page 10 of the report at:

[http://www.biologicaldiversity.org/species/mammals/Humboldt\\_marten/pdfs/Humboldt\\_Marten\\_Petition.pdf](http://www.biologicaldiversity.org/species/mammals/Humboldt_marten/pdfs/Humboldt_Marten_Petition.pdf)

### Habitat Requirements

Historical records of the distribution of Humboldt martens in California suggest that the subspecies was closely tied to coastal old-growth redwood forests (Slauson et al. 2003, p. 3). However, the one known remnant Humboldt marten population in California occurs in the northcentral portion of the described range in an area dominated by Douglas-fir (*Pseudotsuga menziesii*) and tanoak (*Lithocarpus densiflora*) forest associations (Slauson et al. 2007, p. 459). This population uses two structurally distinct, fog-influenced forest types, one on serpentine soils and one on more productive non-serpentine soils (Slauson 2003, p. 59; Slauson et al. 2009b, p. 3). The non-serpentine habitats contain old-growth Douglas-fir forests, and the serpentine types contain mixed conifer forests that include Douglas-fir, sugar pine (*Pinus lambertiana*), western white pine (*P. monticola*), and lodgepole pine (*P. contorta*) (Slauson et al. 2009b, p. 3).

At the home range scale, Humboldt martens in California select the largest available patch sizes of old-growth, old-growth and late-mature (i.e., late-successional), and

serpentine habitat (Slauson et al. 2007, p. 466). Slauson et al. (2009b, p. 12) found that the biggest difference between sites in California with stable Humboldt marten occupancy versus unstable occupancy is patch size of old-growth forest, with sites with more stable Humboldt marten occupancy associated with larger patches of old-growth forest. The probability that a Humboldt marten is detected increases as the following home range characteristics increase in size: largest contiguous patch of late-successional forest; total amount of late-successional forest; and total area of serpentine habitat (Slauson 2003, p. 67). In non-serpentine habitats, conifer-dominated, late-successional stands with dense shrub cover in patches greater than or equal to 445 ac (180 ha) are estimated to be a minimum criterion to identify potential Humboldt marten home range areas (Slauson 2003, p. 70).

Compared to martens in the Sierra Nevada and Cascade mountains, Humboldt martens occupy low-elevation areas with little or no snowfall and select forest habitats with some distinctly different features, such as dense, extensive shrub cover (Slauson et al. 2009b, p. 3). Serpentine habitats occupied by Humboldt martens have open tree canopies, dense shrub cover, and an abundance of boulder piles, while non-serpentine sites have closed, multi-layered tree canopies, dense shrub cover, and older age-class stands (Slauson 2003, p. 59). Serpentine sites sometimes lack trees, suggesting that dense shrub layers may provide the necessary overhead cover (Slauson 2003, pp. 60–61). In addition, prey species, such as chipmunks (*Tamias* spp.) and golden-mantled ground squirrels (*Spermophilus lateralis*), may use boulder-sized surface rocks for escape cover in serpentine sites where trees are sparse (Slauson 2003, p. 61). Recent Humboldt marten population monitoring suggests that serpentine areas may represent lower quality habitat than late-successional Douglas-fir forest (Slauson et al. 2009b, p. 12). In nonserpentine habitats, Humboldt martens use old-growth stands much more than expected based on availability, use late-mature stands commensurate with availability, and make little or no use of all other seral stages (Slauson et al. 2007, p. 462). All earlier seral stages are selected against, probably because of the lack of one or more key structural features (Slauson 2003, p. 62). Dense shrub cover is the most consistent habitat feature at sites selected by Humboldt martens in both serpentine and non-serpentine habitats (Slauson et al. 2007, p. 465).

Humboldt martens show the strongest selection for conifer stands with greater than 80 percent shrub cover and select against stands with less than 60 percent shrub cover (Slauson and Zielinski 2007b, p. 242). Plant species dominating the shrub layers are shade-tolerant, long-lived, mast- and berry-producing species, including salal (*Gaultheria shallon*), evergreen huckleberry (*Vaccinium ovatum*), Pacific rhododendron (*Rhododendron macrophyllum*), and shrub oaks (huckleberry oak (*Quercus vaccinifolia*) and bush tanoak (*Lithocarpus densiflorus* var. *echinoides*)) (Slauson and Zielinski 2009, p. 42). In contrast, Humboldt martens do not use disturbance-associated species of shrubs, such as *Ceanothus* spp. (Slauson and Zielinski 2009, p. 42). Dense stands of mature shrubs provide refuge from predators, cover for prey species, and mast (berries and acorns) for prey species and Humboldt martens, and such stands may also deter larger-bodied competitors, such as fisher and gray fox (*Urocyon cinereoargenteus*), by limiting their foraging abilities (Slauson and Zielinski 2009, p. 42). Shrubs also

contribute to the formation of some resting locations and resting structures (Slauson and Zielinski 2009, p. 42).

During the late summer and fall, Humboldt martens in California used cavities, den chambers, and broken tops of standing dead trees for 87 percent of their resting locations, and branch platforms, ground sites, and basal hollows for the remainder of their resting locations (Slauson and Zielinski 2009, p. 39). Large snags were the most frequently used resting structure with mean diameter-at-breast-height (dbh) for conifers of 36.6 in (93 cm) (Slauson and Zielinski 2009, p. 40). Conifer logs used as resting structures had a mean diameter of 29.5 in (75 cm) (Slauson and Zielinski 2009, p. 40). Forty-two percent of the resting structures used in serpentine habitats were located in rock and shrub clumps (Slauson and Zielinski 2009, p. 40). All resting sites in serpentine and non-serpentine habitats had dense shrub cover (Slauson and Zielinski 2009, p. 42).

### **Literature Cited**

See:

[http://www.biologicaldiversity.org/species/mammals/Humboldt\\_marten/pdfs/Humboldt\\_Marten\\_Petition.pdf](http://www.biologicaldiversity.org/species/mammals/Humboldt_marten/pdfs/Humboldt_Marten_Petition.pdf)