



CALIFORNIA FORESTRY NOTE

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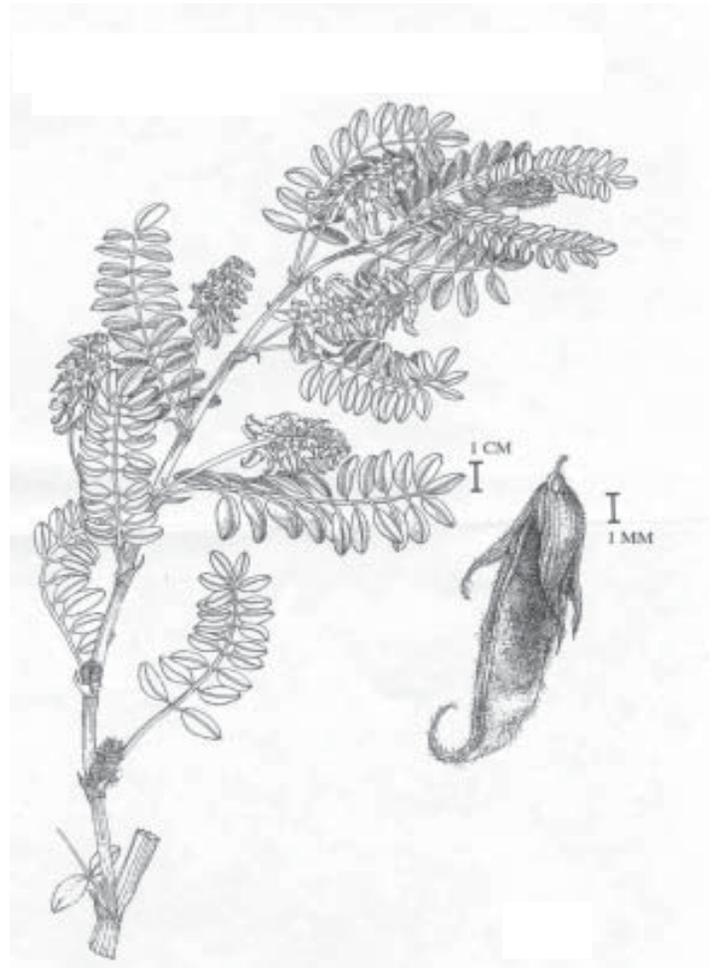
A NEW LOCATION FOR THE HUMBOLDT MILK-VETCH (*Astragalus agnicidus*)

Walt Decker, Bill Baxter and Gordon McBride

The Humboldt milk-vetch (*Astragalus agnicidus*) was originally described as a plant species in 1957 from a location on the Tosten and Peirce Ranch south of Miranda in southern Humboldt County. The Humboldt milk-vetch is toxic to sheep and eradication was actively attempted in the 1930s, before it had been officially listed (Berg and Bittman, 1988). Subsequent efforts to find the Humboldt milk-vetch failed and it was placed on the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* in List 1A – Plants Presumed Extinct in California. In 1987 the Humboldt milk-vetch was rediscovered on the ranch where it was originally found. Subsequent observations indicated that it prospered in areas where the soil was disturbed and the overstory canopy was opened from logging (Hiss and Pickart, 1992).

Since its rediscovery in Humboldt County, a thriving population of the Humboldt milk-vetch has been discovered in Jackson Demonstration State Forest (JDSF) in Mendocino County.

In 1997 JDSF Staff Forester Fay Yee noticed a verdant legume growing along Road 330 in JDSF in disturbed habitat and keyed it to *Astragalus*. She noted that it may be an uncommon native, but did not pursue the matter beyond that point. Later Forester Yee was working with trainees, one of whom claimed to have seen *Astragalus* growing in a nearby area (Bear Gulch) in undisturbed habitat. That observation has never been confirmed.



The Humboldt milk-vetch has straw-colored stems up to three feet tall and dense racemes of white flowers that develop into characteristic pods. Drawing by Loran May.

In March of 1999, Walt Decker of JDSF was flying in a helicopter during logging operations in the Parlin Creek drainage, in the South Fork watershed of Noyo River, north of Parlin Fork Conservation Camp. From the helicopter he noticed a verdant plant population growing along haul road 330, near road 334 (Fig. 1). Forest manager Marc Jameson was in the area looking for a permanent growth plot during the summer of 1999 when he observed the thick new *astragalus* growth extending well downslope of Road 330. Thinking it may be a new invasive species, he instructed forester Walt Decker to collect a sample and take it to a qualified botanist to have the species identified. Decker brought collections of the plant to Dave Bengston, the Mendocino County Agricultural Commissioner, who referred Decker to Fred Hrusa, Senior Plant Taxonomist of the California Department of Food and Agriculture in Sacramento. Hrusa identified the plant as the Humboldt milk-vetch.

In September of 1999, Gordon McBride was working in another part of JDSF and met with John Griffen, Assistant Manager of JDSF, who mentioned the Humboldt milk-vetch discovery. They visited the site and McBride photographed the *Astragalus* population,



Figure 1 - Humboldt milk-vetch on JDSF

collected material and keyed it to *A. agnicidus*. McBride sent specimens off to *Astragalus* specialist Dr. Richard Spellenberg at New Mexico State University, Las Cruces, New Mexico. Spellenberg also confirmed the identification, then prepared and submitted specimens to the herbaria at New Mexico State University at Las Cruces and the University of California at Berkeley*.

Subsequent to their discovery at JDSF, Humboldt milk-vetch, along with showy Indian clover and water howellia, have been transferred from the California Native Plant Society's List 1A, Plants Presumed Extinct in California to List 1B, Plants Rare and Endangered in California and



Figure 2 - Humboldt milk-vetch along road 330 on JDSF



Figure 3 - Humboldt milk-vetch along road 330 on JDSF

Elsewhere.

The report of the discovery of Humboldt milk-vetch by Berg and Bittman and the rediscovery and subsequent study published by Hiss and Pickart both indicate that it appears to be a plant that is adapted to both soil disturbance and sufficient sunlight. Observations on the JDSF population support these findings as there is a Humboldt milk-vetch population growing along a logging road built through steep terrain in disturbed soil above and below the road. There are also numerous individuals growing well away from the road in areas where a portion of the overstory has been harvested but the soil is relatively undisturbed.



Figure 4 - Humboldt milk-vetch on JDSF

In the spring of 2000, the Humboldt milk-vetch population extended for almost a mile along road 330 in JDSF (Fig. 2, Fig. 3) and comprised perhaps several thousand vigorous plants, based on a California Department of Fish and Game estimate. Forester Yee has also located another smaller population of Humboldt milk-vetch growing along road 305. Jameson observed numerous *Astragalus* seedlings during 2001 that had recently emerged from undisturbed duff opened to direct sunlight as the result of recent removal of the conifer overstory. This general location is immediately down slope of two log landing sites along the upper Bear Gulch road (Road 334). At that time, a few plants were also observed growing from the disturbed road surface at the base of the cut bank. It is entirely possible that, now alerted to the plant, JDSF staff will discover additional populations.

The Humboldt milk-vetch population in JDSF is vigorous and shows no signs of stress or grazing by herbivores (Fig. 4). The soil type where the Humboldt milk-vetch is growing is Vandamme soil series (Soil-Vegetation Survey, U.S.D.A. Soil Conservation Service, 1985). Livestock are not grazed on JDSF, however there is a healthy deer population. Recent observation by Jameson in October of 2002 in the general area where the vetch was most noticeably distributed has revealed that the population appears to have declined markedly. This is apparently due to local revegetation and competition from other native species, including ceanothus, fire weed, redwood, tanoak and Douglas-fir.

Our observations clearly agree with those of Berg, Bittman, Hiss and Picart that the

Humboldt milk-vetch is a colonizing species and apparently prefers some soil disturbance, although it is not required, and increased incident sunlight to germinate, grow and prosper. In a typical successional sequence, disturbance and/or increased sunlight is followed by colonization, succession and, eventually, re-establishment of climax vegetation. In this sequence, the Humboldt milk-vetch could be expected to first prosper, then survive, and subsequently die out. It would be eventually represented only by seed that may remain dormant until some change in light or ground conditions trigger germination. Legumes in general and a number of *Astragalus* species do have long seed dormancy capability.

At first we were tempted to speculate that Humboldt milk-vetch seeds had been transported to this location in JDSF by logging equipment. Licensed Timber Operators (LTO) from Humboldt County have worked in JDSF. However, detailed research by Decker could show no clear evidence that any given LTO had worked first in southern Humboldt County near the Humboldt milk-vetch type locality on the Tosten Ranch and thereafter in JDSF. This research did indicate that one LTO was logging other portions of the Tosten Ranch and bringing logs to the Eel River Sawmills of Fortuna at about the same time JDSF Camp 7 THP logs were being hauled to the same sawmill. Inasmuch as logging trucks may have been dispatched to the Tosten Ranch on one day and Jackson State Forest on another, the possibility of inadvertent seed transport remains possible.

The other alternative would be for the Humboldt milk-vetch to have existed as a relict population in undisturbed areas of JDSF. When logging disturbed the soil and opened up the canopy, seeds that may have lain dormant for years germinated and prospered. The necessity for disturbance is not supported by Forester Yee's trainee's observation that the Humboldt milk-vetch had been seen in an undisturbed area of Bear Gulch, however this early observation can no longer be substantiated.

Clearly, the well-being of the Humboldt milk-vetch in JDSF should be monitored over the next several decades. Because JDSF is a state-run experimental forest it presents a unique opportunity to follow the natural colonization of the Humboldt milk-vetch into new areas.

References

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Notes on Contributors:

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Bill Baxter is a Forester and Silviculturist, California Department of Forestry and Fire Protection, JDSF.

Gordon McBride, PhD, is an independent consulting botanist working with rare or endangered plants in Mendocino, Lake, Sonoma and Napa counties.

* documenting specimen label:

ASTRAGALUS AGNICIDUS Barneby

Coll: G. McBride s.n.

8 Sept. 1999

USA, California, Mendocino Co., 14 air km. E of Fort Bragg in Jackson State Forest, along road 330, near road 334, accessed by State Hwy. 20, NE ¼ S28 T18N R16W, Parlin Creek drainage. Steep terrain, redwood/doug fir forest, logged in 1920's and again in 1933, canopy well thinned, light penetration good. Population with several hundred plants.

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