

2013

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### Recommended Citation

Eddy, Thomas L. (2013) "A New Plant Record for Iowa: *Lactuca hirsuta* (Asteraceae)," *Journal of the Iowa Academy of Science: JIAS*, 120(1-4), 16-20.

Available at: <https://scholarworks.uni.edu/jias/vol120/iss1/4>

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## A New Plant Record for Iowa: *Lactuca hirsuta* (Asteraceae)

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A new record of a native vascular plant, *Lactuca hirsuta* Muhlenberg ex Nuttall var. *sanguinea* (Bigelow) Fernald, is reported for Iowa. A specimen was collected in 1983 by the author during a study of the Swaledale railroad prairie in Cerro Gordo County, north central Iowa (Eddy 1988). The plant was inexplicably excluded in the species catalogue when a Swaledale railroad flora was published in 1988; thus, this “new” Iowa record in 2013 was collected 30 years prior. The voucher specimen was “re-discovered” by Dr. Neil A. Harriman at the University of Wisconsin-Oshkosh (OSH), and its identification verified.

INDEX DESCRIPTORS: *Lactuca hirsuta*, railroad prairie, Swaledale.

The objective of this paper is to report a new native vascular plant for Iowa: *Lactuca hirsuta* Muhlenberg ex Nuttall var. *sanguinea* (Bigelow) Fernald. As reported in the online Flora of North America, *L. hirsuta* is one of 10 species recognized in North America (Strother 2006). The USDA’s PLANTS Database lists three varieties of *L. hirsuta*: *albiflora*, *hirsuta*, and the more widely distributed *sanguinea* (PLANTS 2012). Common names include hairy wild lettuce, hairy tall lettuce, and red-flowered wild lettuce.

The specific epithet *hirsuta* is first ascribed to Muhlenberg (1813), but the name was applied without a valid description. Nuttall (1818) provided the first valid description and conserved the name *hirsuta*. Bigelow’s *L. sanguinea* (1824) was recognized as a variety of *L. hirsuta* by Fernald (1938).

### Plant Records

Prior to this report, eight *Lactuca* species were documented for Iowa: *L. biennis*, *L. canadensis*, *L. floridana*, *L. ludoviciana*, *L. saligna*, *L. serriola*, and *L. tatarica* (Eilers and Roosa 2010). The discovery of *L. hirsuta* in Iowa extends the known range for the species, filling a gap in its upper Midwest US range.

According to herbaria curators from UM Herbarium (MIN), University of Minnesota, and the Ada Hayden Herbarium (ISC) at Iowa State University (which includes the collection from the former University of Iowa Herbarium), their collections contain no Iowa or Minnesota *L. hirsuta* voucher specimens. Reports of *L. hirsuta* in the literature or online sources are erroneous in that there are no supporting vouchers from Iowa and Minnesota (pers. comm. to author via email from Dr. Neil A. Harriman 23 March 2012, reporting pers. comms. from Dr. Anita F. Cholewa (MIN) 8 March 2012; and Deborah Q. Lewis (ISC), 22 March 2012). For example, *L. hirsuta* appears in an unpublished dissertation by Radloff (unpubl. data), which is cited by the USDA PLANTS Database as the source for mapping *L. hirsuta* for Minnesota.

*L. hirsuta* is reported from Clay and Pope Counties in the southern half of Illinois by Mohlenbrock (1975), where the status of the plant is a rare state threatened species (PLANTS 2012). In Michigan, Voss (1996) reports *L. hirsuta* from 15 counties in the Lower Peninsula and from Menominee County in the Upper Peninsula. Swink and Wilhelm (1994) map *L. hirsuta* in Porter County, IN.

A first-time collection of *L. hirsuta* from Wisconsin by Steven Garske led to a serendipitous “re-discovery” of the Iowa *L. hirsuta*

record. Garske collected *L. hirsuta* in a wooded clearing from Douglas County, WI, on 1 August 2011 and donated a specimen to the Neil A. Harriman Herbarium, OSH. From there, an OSH voucher specimen of *L. hirsuta* from Cerro Gordo County, Iowa, was re-examined by Dr. Neil A. Harriman, professor emeritus and former OSH curator. The Iowa specimen, OSH 67011, was collected on 23 July 1983 from a railroad prairie north of Swaledale by the author of this report (Figure 1). The voucher was correctly identified as *L. hirsuta*, but was inexplicably excluded from the species catalogue in a 1988 published flora of the Swaledale railroad prairie (Eddy 1988).

### Range, Habitat, Plant Description

A biennial, *L. hirsuta* flowers from June to September throughout its range, from Prince Edward Island to northern Florida, west to Michigan, Missouri, and Texas (Gleason and Cronquist 1991). The plant occurs in dry open woods, clearings, and grasslands. Based on the floristic quality assessment method, the C value (coefficient of conservatism) for *L. hirsuta* is 10, representing a high probability that *L. hirsuta* occurs in a landscape relatively unaltered from what is believed to be a pre-settlement condition. The National Wetlands Category is UPL (upland); *L. hirsuta* almost never (<1% probability) occurs in wetlands under natural conditions.

The color of the ligulate-only flower varies from pale salmon-color to red, although flower color is not a reliable character for identification. *L. hirsuta* is similar to *L. canadensis*, but in mature fruit, *L. hirsuta* has longer involucre bracts (15 – 22 mm) and achenes (7 – 9 mm, including the beak, Figure 2) (Gleason and Cronquist 1991). Like *L. canadensis* and *L. ludoviciana*, the achenes of *L. hirsuta* are transversely rugulose, with one prominent median nerve on each face. The pappus of *L. hirsuta* is white, 8 – 12 mm, while *L. ludoviciana* is 7 – 10 mm and tawny or gray colored. *L. hirsuta* and *L. ludoviciana* have larger heads than *L. canadensis*, but *L. hirsuta* has fewer ray florets (13 – 25) per head than *L. ludoviciana* (20 – 56). A comprehensive description of *L. hirsuta* from the online resource “Illinois Wildflowers” is offered by Hilty (2012):

This native biennial wildflower forms a low rosette of leaves about 8 – 12” across during the first year. During the second year, it bolts and becomes 2 – 7’ tall. Usually, this wildflower is



Fig. 1 *Lactuca hirsuta* collected 23 July 1983, Cerro Gordo County, IA. OSH specimen voucher, accession 67011. Photograph by the author

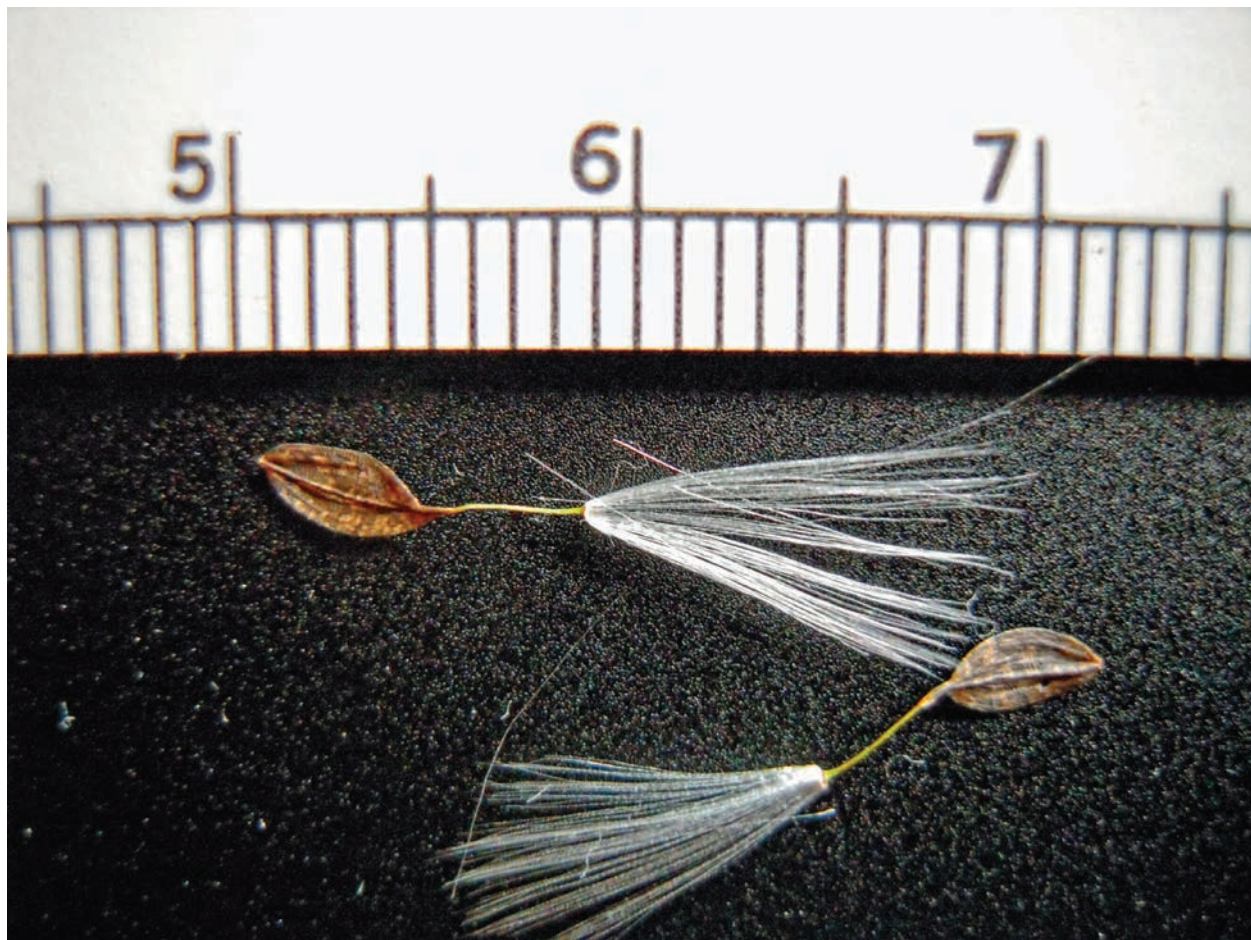


Fig. 2 *Lactuca hirsuta*, achene and pappus. Photograph by the author

unbranched, although sometimes ascending lateral branches develop along the upper one-third of a large plant. The central stem (and any lateral stems) is rather stout, terete, and light green to pale purple; it is usually hairy along the lower half of its length, becoming hairless and slightly glaucous along the upper half. The alternate leaves are up to 6" long and 2" across, becoming gradually smaller as they ascend the stem; they are pinnatifid with pointed irregular lobes and dentate along their margins. The upper surfaces of these leaves are medium green and often sparsely hairy; their lower surfaces are pale green and hairy, particularly along the midribs. The basal leaves are similar to the alternate leaves, except they tend to be larger in size and more wide [wider] toward their tips (narrowly obovate to obovate). Young developing basal leaves are usually very hairy on both their upper and lower surfaces. The central stem (and any lateral stems) terminates in an elongated panicle of flowerheads about 6 – 12" long and 2 – 4" across. The branches of the panicle are light green to reddish purple, terete, and usually hairless. Each flowerhead is about 1/3" across (8 – 10 mm.) when fully open, consisting of 12 – 25 ray florets, no disk florets, and light green to purple floral bracts that are arranged in about 3 series around its base (involucre); this base is about 2/3 – 3/4" (15 – 20 mm) long. The rays of the flowerhead

are colored salmon to brick-red and their tips are truncate and finely toothed. The outer floral bracts are shorter than the inner floral bracts. The blooming period occurs from mid-summer to early fall and usually lasts about 3 weeks. Individual flowerheads last only a single day, blooming for only a few hours on sunny days. After only a short period of time, individual flowerheads are replaced by small black achenes with tufts of white hair. Each achene is 4 – 5 mm long, ellipsoid-oblongoid in shape, and flattened; the tuft of white hairs is attached to the achene by a slender white beak about 2.5 – 3.5 mm. long. These achenes are distributed by the wind. The root system consists of a taproot. This wildflower reproduces by reseeding itself.

#### Plant Assemblage

The first-known Iowa record for *L. hirsuta*, #3019, was collected from the Swaledale railroad prairie on 23 July 1983 (Figure 3). A description of the collection site and associates are included in this entry from the author's collection book:

3007-3020 Sandy knoll, opening SW corner of cottonwood grove 1 1/2 mi. N Swaledale off Co. Tk. B-60, via RR tracks. 23 July 1983 T. Eddy



Fig. 3 Swaledale railroad prairie ROW. Note woody succession in abandoned borrow pit on east (R) side of ROW, the original collection site of *L. hirsuta*. Photograph by the author, 23 May 2012

The frequency of occurrence for *L. hirsuta* was not quantified at this specific collection site, but it should be noted that duplicate vouchers for certain other associates were observed or collected at various locations within the study area, unlike that for *L. hirsuta*. A conservative qualitative assessment for the localized occurrence of *L. hirsuta* on the Swaledale railroad prairie, in my judgment, is infrequent to rare.

Plant associates of *L. hirsuta* collected on this date and location (in addition to adjacent swales) were *Psoralea argophylla*, *Ribes missouriense*, *Dalea candida*, *D. purpurea*, *Potentilla arguta*, *Verbena stricta*, *Carex projecta*, *Asclepias incarnate*, *Salix interior*, *Eleocharis smallii*, *Pycnanthemum tenuifolium*, and *Carex bebbii*.

Additional dry to dry-mesic associates of *L. hirsuta* collected at or near the site include *Sisyrinchium campestre*, *Aster azureus*, *Coreopsis palmata*, *Rudbeckia hirta*, *Liatris aspera*, *Solidago nemoralis* and *S. rigida*, *Lithospermum canescens*, *Amorpha canescens*, *Lespedeza capitata*, *Anemone cylindrical*, *Rosa carolina*, *Physalis longifolia* and *P. pubescens*, and *Viola pedata*. Grasses include *Andropogon gerardii*, *Panicum lanuginosum*, *P. oligosanthos*, and *P. leibergii*, *Schizachyrium scoparium*, *Sorghastrum nutans*, and *Stipa spartea*.

#### Location

The Swaledale railroad prairie is a tallgrass remnant in the southwestern quarter of Cerro Gordo County, Iowa, in Pleasant

Valley and Mt. Vernon townships. The location is approximately 16 km south of Mason City, Iowa, between section 3, T94N, R21W and section 34, T95N, R21W. The railroad prairie can be entered from the north off 170<sup>th</sup> Street, a county gravel road in section 34, or from section 3 off County Trunk B-60 where the road and railroad intersect at the small city of Swaledale, the author's hometown (Eddy 1997). Latitude/longitude coordinates for Swaledale are 42° 58' 41" N, 93° 18' 56" W.

The area is situated on the northeastern fringe of the Des Moines Lobe, a landform region corresponding to the extension of Late Wisconsinan ice into central and north central Iowa (Prior 1976). The north boundary of the Swaledale railroad prairie is on an alluvial bench, while the south boundary marks an upland outwash plain. In between is floodplain that is part of an ancient drainage way, characterized by prairie swales and marshy surfaces. Gradient changes in habitat and floristic composition are noticeable where floodplain, stream bench, and uplands intergrade.

The soils of the Saude-Marshan-Lawler association in section 34 were formed on loamy and sandy alluvium (Soil Conservation Service 1981). *L. hirsuta* was collected on a partially excavated sandy knoll within a borrow pit in the southeastern one-quarter of section 34. Before the railroad began operation in 1887, most of the fill material (Flagler sandy loam) was used to build the original railroad embankment (Eddy 1988). Most of the land surrounding the railroad prairie has been under cultivation since the late 1800s.

## Postscript

The Swaledale railroad right-of-way (ROW) was discontinued by the Union Pacific Railroad and ultimately acquired by Cerro Gordo County through a quitclaim deed in 2009. Rail service on the line ended in the late 1990s, with rails and ties salvaged from 2006 to 2009. To date, the railroad ROW is held in trust by Cerro Gordo County as part of a 20-yr “interim trail use” agreement (Fred Heinz, Cerro Gordo County Conservation Board; pers. comm. 29 August 2012).

On 10 and 11 August 2012, the author searched unsuccessfully for *L. hirsuta* on the Swaledale railroad prairie. Both the rail ballast and ROW ditches were examined along a 4.8 km segment in section 34, T95N R21W and sections 3 and 10, T94N R21W. Apart from the plant’s geographic rarity throughout regions of the upper Midwest, three contributing factors may account for the scarcity of *L. hirsuta* along the Swaledale railroad ROW: first, ongoing woody succession and lack of periodic disturbance (e.g. fire, cutting, herbicide application). According to Riley (2010), the existence of *L. hirsuta* is dependent upon disturbance, characteristic for a species adapted to open habitats. Prior to rail service being discontinued, cutting and herbicide treatment of woody vegetation and occasional fires along the ROW provided the necessary conditions that favor grassland species. Moreover, *L. hirsuta* responds well to prescribed burns, as stated in a 2010 USDA Forest Service report.

Secondly, severe drought conditions prevailed during the 2012 growing season, stressing even dry to dry-mesic prairie remnants. Finally, if *L. hirsuta* had become established on the abandoned railbed, the rail ballast vegetation cover was cut in late July – August when *L. hirsuta* is in flower.

## Acknowledgements

I wish to thank the following persons for sharing their time and expertise: Neil A. Harriman (OSH), Steven Garske, and Thomas Lammers (OSH). I also wish to acknowledge curators Deborah Q. Lewis (IAS) and Anita F. Cholewa (MIN) for verifying the status of *L. hirsuta* in their respective collections. Thanks are also extended to Fred Heinz, Chairman of the Cerro Gordo County Conservation Board, for his personal communication that provided event dates and ownership status of the Swaledale railroad ROW.

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