BURDOCKS IN SASKATCHEWAN

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Burdocks (*Arctium* spp.) are tall, coarse, biennial, exotic weeds, originally from Eurasia, that already by the mid-1600s had been unwittingly imported into North America by early English and French colonists.[1] These conspicuous plants, mostly exceeding a metre in height, tend to grow in various relatively moist, human-disturbed sites where they often form large dense patches.

Burdocks are members of the Thistle Tribe (Cynareae), of the Sunflower Family (Asteraceae), and like all composites have flowers borne in heads surrounded by bracts forming well-defined involucres. The leaves are large and more-or-less woolly underneath. As biennials, the first-season plants consist of a deep taproot bearing large, more-or-less triangular, basal leaves, mostly ¼ to ½ metre long. These leaves tend to remind one of Arrow-leaved Colt's-foot (*Petasites sagittatus* (Pursh) Gray), but they are more irregular in shape with many clustered from a taproot. The stout, tall, much-branched stems appear in the second year and bear alternately arranged leaves and numerous flower-heads. As all thistles and their relatives, but unlike many other composites such as asters, daisies and sunflowers, burdock heads lack rays. The tubular florets, with purple to pink (rarely white) corollas, are surrounded by numerous, overlapping, thickish involucral-bracts tapered upwards to sharp hooked tips (at least outer ones) that form large globe-shaped, spiny involucres around the heads (Figure 1). In late-flowering and fruit stages, the heads look like spiny burs, and are well adapted for effective seed-dispersal by attaching to animal fur and our clothes.

Four burdock species are known in North America, one of which, Lesser or Common Burdock (*Arctium minus*), is spread across the continent in temperate regions, having become most abundant in eastern North America, less frequent on the Great Plains, and relatively uncommon in drier parts of the southwestern and western United States. Historically, burdocks have not been considered particularly frequent in Saskatchewan. They do not, however, represent recent introductions into the province since a Regina collection of Lesser Burdock made by C.N. Willing dates back to 1908, a Maple Creek record to 1930, a Big River one to 1938, and six other scattered records to the 1940s and 1950s. While in the past they apparently were rather infrequent weeds in Saskatchewan, burdocks may now be increasing in frequency and numbers.

The distributional information in this article is based on numbers and locations of burdock collections deposited in the W.P. Fraser Herbarium in Saskatoon, the G.F. Ledingham Herbarium in Regina, and the Swift Current Agriculture Canada Research Centre. But how well herbarium collections reflect the actual distributions and abundance of the species is questionable. At best, they can only represent a rough sampling of the species.

Three burdock species are documented as occurring in Saskatchewan. These are: Lesser or Common Burdock

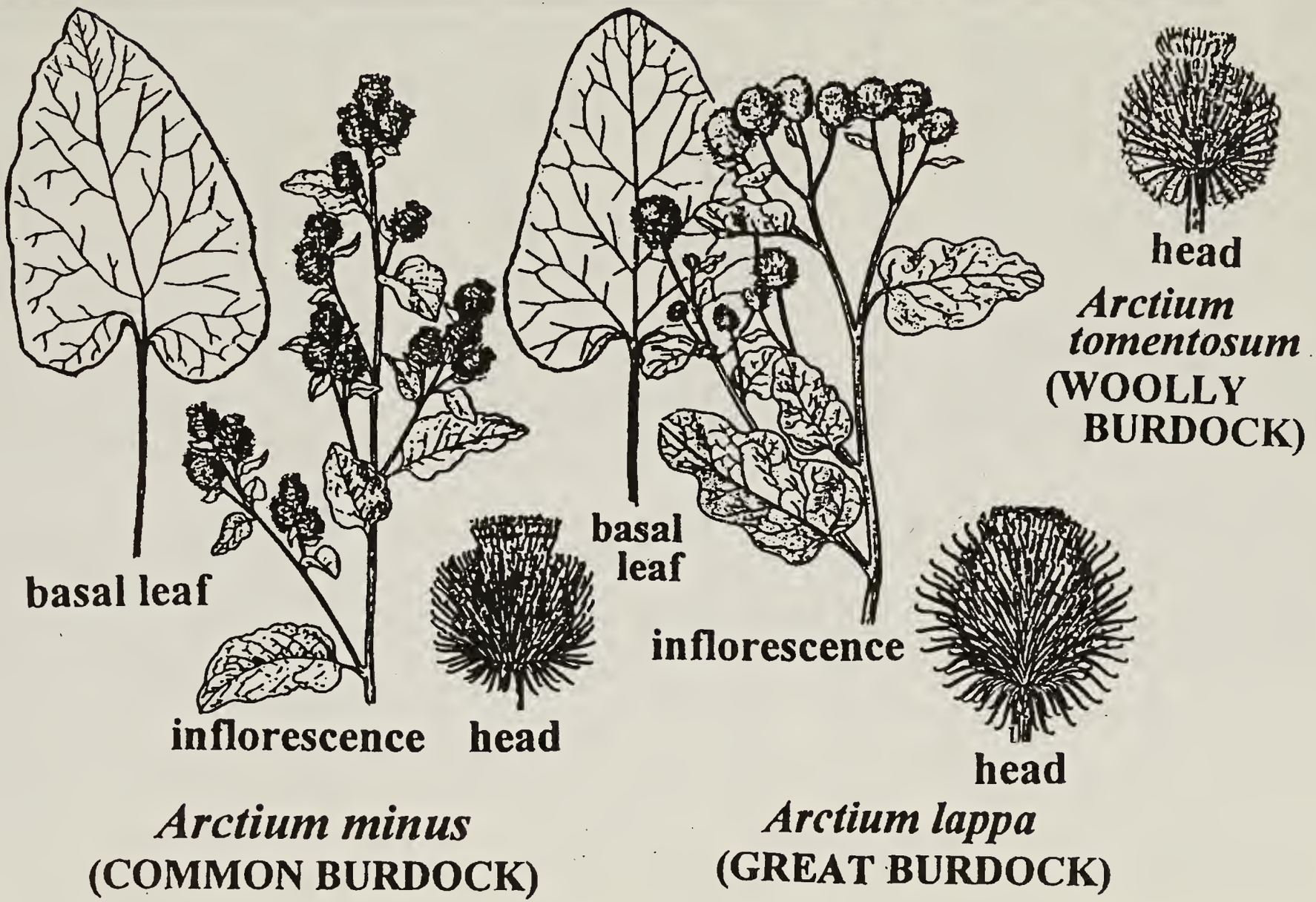


Figure 1. Morphology of Saskatchewan Burdock Species. Adapted from Moore & Frankton (1974)

(*Arctium minus* Bernh.), Woolly or Cotton Burdock (*Arctium tomentosum* P.Mill.), and Great Burdock (*Arctium lappa* L.). The fourth North American species, Woodland Burdock (*Arctium nemorosum* Lej. & Court., now referred to *A. vulgare* (Hill) Evans), has sometimes been listed for the province, but this appears erroneous, with Saskatchewan specimens once identified as this species now revised to *A. tomentosum*. All known Saskatchewan sites of burdocks are located in the agricultural region, south of latitude 53° (see Figure 2), except for a record of Lesser Burdock from Big River, and an unverified record of Great Burdock from north of Nipawin. The following key may be used to distinguish our Saskatchewan burdock species:

Identification Key to *Arctium* (Burdock) Species in Saskatchewan

1a. Heads (1.5-) 2-2.5 cm broad, racemose or racemosely clustered, with at least the middle and upper ones sessile or short-stalked; larger leaf-blades tapering at apex to usually ± broadly acute tips; leaf-stalks hollow and only slightly angled; corolla limbs not glandular; involucres strongly contracted at top, the middle and inner involucral bracts successively larger, the inner ones shorter than corollas; plants to 1.5 m tall. - - - - - - - - - - - ***A. minus.***

1b. Heads ± corymbosely arranged with at least the lower on long stalks; larger leaf-blades rounded at apex; leaf-stalks strongly angled, either solid or hollow; corolla limbs glandular or not; involucres more cup-like, less contracted at top. - **(to 2).**

2a. Involucres distinctly arachnoid-tomentose (spiderwebby to cottony); corolla limbs glandular and abruptly dilated; petioles hollow; heads 2.0-2.5 (-3) cm broad; middle and inner involucral bracts successively larger, the inner ones longer than, subequal to, or mostly shorter than the corollas; plants to 1.5 m tall. - - - - - - ***A. tomentosum.***

2b. Involucres smooth, not hairy; corolla-tips not glandular; petioles solid; heads 3.0-4.5 cm wide; middle and inner involucral bracts nearly equal and surpassing corollas; plants often larger, to 3 m tall. - - - - - - - - - - - - - - ***A. lappa.***

The Woodland Burdock would differ from the above three species in having racemosely arranged heads, and leaf-shape and leaf-stalks like *A. minus*, usually ± arachnoid involucres like *A. tomentosum*, larger heads and inner involucral bracts exceeding corollas like *A. lappa*, and non-glandular corollas unlike *A. tomentosum.*

Lesser or Common Burdock, *Arctium minus*

Based on records in provincial herbaria, Lesser Burdock is the most common burdock species in Saskatchewan, as in North America. The herbarium survey revealed a total of 39 collections of this species, from apparently 28 different sites and 24 general localities in the province. While records are scattered from the southern border, north to Big River and Armit (east of Hudson Bay near the Manitoba border), this species appears most frequently encountered in the more southern regions of the province south of latitude 51° N. (Figure 2). The earliest collections of Lesser Burdock in Saskatchewan are from Regina (1908), Maple Creek (1930, 1936), Big River (1938), Carlyle (1941), Armit (1948), Stockholm (1948), and Hidden Valley (on Qu'Appelle River north of Regina) (1949). Additional collection records are spread over the remaining decades of the 20th century (Figure 3). The most frequently listed habitats for Lesser Burdock in Saskatchewan were disturbed understories of stream-edge woods, roadside ditches, field edges and waste areas. Other habitats listed included open stream and slough edges,

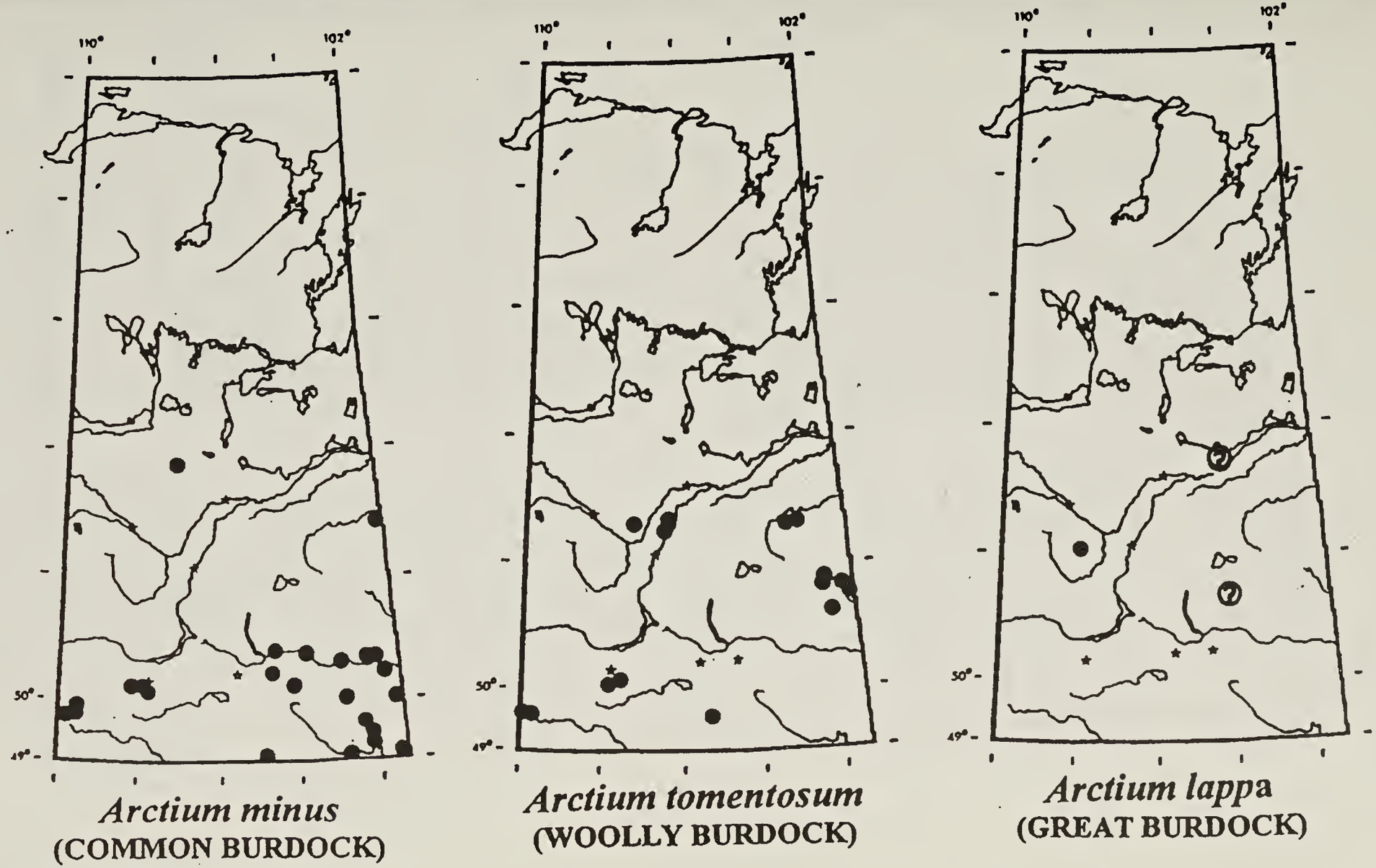


Figure 2. Saskatchewan Distribution of Burdock Species

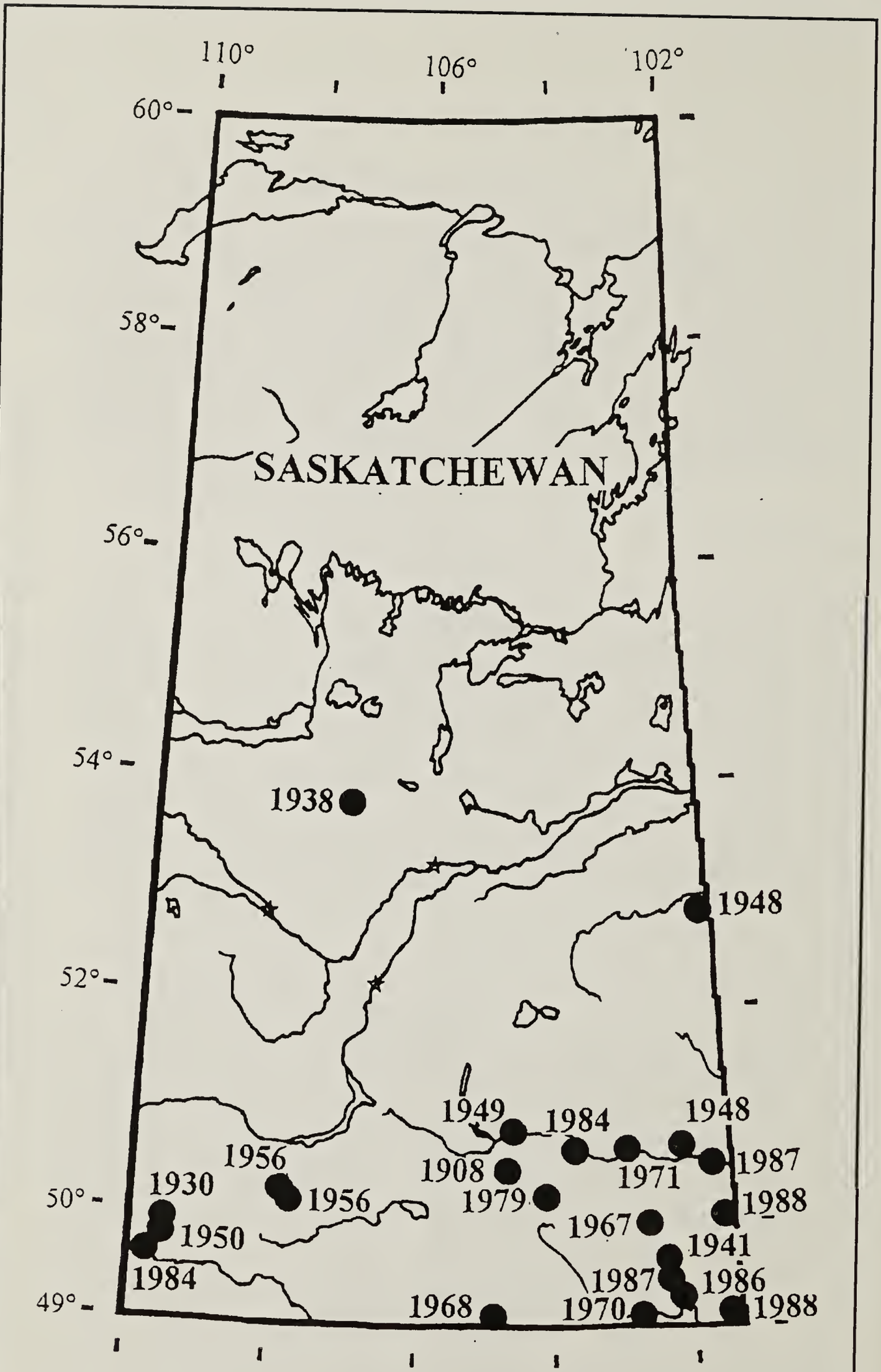


Figure 3. Historical Collections of Lesser Burdock in Saskatchewan. The earliest collection date is given for each general locality.

farmyards, corrals, and garden margins. Unfortunately most specimen labels gave no indication of local abundance, but of about a dozen that did, two-thirds stated that the plants were common or locally frequent and one-third said they were few, several or uncommon. With regard to the flowering and fruiting phenology of Lesser Burdock, early anthesis (i.e. flower bud and young flower) stages were seen on collections from late June to late July. Full anthesis (i.e. mature flowers) stages could be seen on late July to mid-October collections. Except for one mid-October collection, fruits were only seen on previous-year's dried stalks of several spring – early summer collections with current-year's leaves. Such specimens raise a question – are these burdocks strictly biennial or possibly somewhat perennial at this latitude? Actual connections of the old fruiting stalks to the roots bearing new leaves could not be ascertained from the herbarium specimens seen.

Woolly or Cotton Burdock, *A. tomentosum*

The second most frequently encountered burdock species in Saskatchewan is Woolly Burdock, with a total of 19 collections, from apparently 17 different sites and 15 general localities in the province. While records are scattered over the southern third of the province, this appears to be the most frequently encountered burdock species north of latitude 51° N. (Figure 2). The oldest records of Cotton Burdock in Saskatchewan are from Rosthern (1936), southwest of Swift Current (1956), and Kamsack (1959). All other collections are dated in the 1980's and 1990's. The most frequent habitats listed for Saskatchewan collections of Woolly Burdock were roadside ditches, disturbed wooded stream margins, field edges and waste areas. Other habitats listed included sloughs and garden edges. While nearly two-thirds of the specimen labels gave no indication of local abundance, of those that did, half stated the plants to be common or occurring in large patches, while the other half indicated the plants to be locally uncommon or only occasional. Early anthesis stages were seen on specimens collected from early July to early August, and full anthesis on those from mid-July to early October.

Great Burdock, *A. lappa*

Great Burdock is the rarest species of burdock in Saskatchewan, with only one confirmed record in the province and two unconfirmed ones. A verified 1981 collection was from a "field-edge wasteland" near Biggar. An unverified 1974 collection is reported from 5 km east of Touchwood, and an unconfirmed 1975 record exists from Garrick (about 27 km NW of Nipawin). These two are indicated by circled question marks on the right hand map in Figure 2. The single verified collection of Great Burdock in Saskatchewan was in flowering stage in mid-August.

Discussion

The quite late summer flowering periods and apparently late fruit production, occurring well after our first frosts, seem interesting phenological features of burdocks in Saskatchewan. Could autumn frosts possibly hamper fruit development and represent a limiting factor preventing burdocks from becoming more abundant here?

A review of herbarium collections gives us a glimpse of the localities and dates of burdocks in Saskatchewan, and provides some historical perspective on their occurrences. It is conjectural to what extent the numbers, dates and locations of herbarium collections can be relied upon to accurately reflect the historical invasion and spread of these exotic weeds. Herbarium specimens document that these exotic weeds have

been in this province for almost a century and suggest that their frequency has increased over time. But the historical information inferred from herbarium labels might be distorted by the uneven activity of collectors. While in the last 70+ years, numerous Saskatchewan collectors have contributed burdock specimens to the provincial herbaria, it is noteworthy that more than half of the collections were made by four individuals, namely, Archibald Budd (with associates, especially in the Swift Current area and during the 1950's), Bernard deVries (primarily in the Qu'Appelle Valley and Duck Mountain areas, during the 1970's and 1980's), Donald Hooper (in east-central Saskatchewan, during the 1980's), and the present author (mainly in southeastern Saskatchewan along the Souris and Antler Rivers, during the 1980's). The collections of a relatively few botanists, active regionally during particular time-periods, might distort inferences made from herbarium collection dates. An absence of plants cannot be assumed prior to when they are first looked for in any region, but neither can their presence be confirmed.

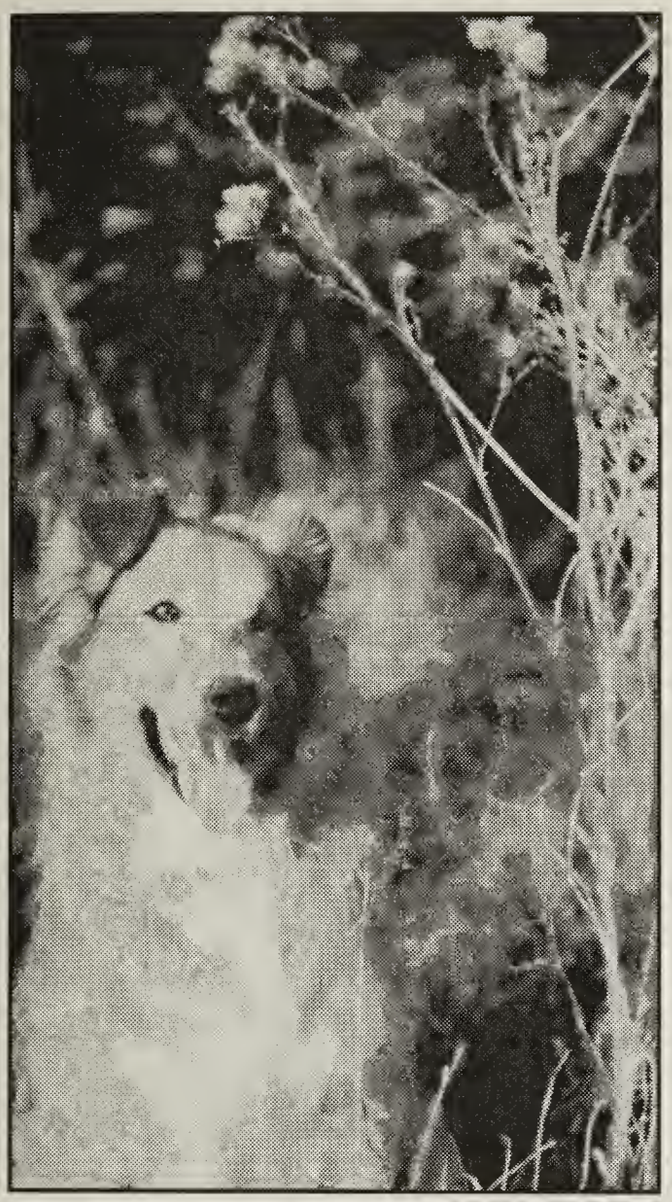
Several people that I talked to when preparing this article indicated their belief that burdocks are increasing in frequency and numbers in Saskatchewan. To quote one professional ecologist, Mike Schellenberg, at the Swift Current Agriculture Canada Research Centre, "I believe that the occurrence of this group has increased in the last few years. In my travels, I have noted it to be quite common in the Missouri Coteau region. I have also had a number of producers request research be done to find means of control, which suggests a higher incidence" (pers. comm., Feb. 2001)

An objective of this article has been to present background information about the presently known taxonomy and occurrences of burdocks in Saskatchewan, to encourage additional reports and specimens from readers so that our knowledge can be updated. Quite likely burdocks occur at considerably more sites than shown by the mapped herbarium records in Figure 2. While burdock plants appear too conspicuous to be easily overlooked, their very size, coarseness and unattractiveness may deter many naturalists and students from collecting them. Can you help fill gaps on the species' maps? Please contact me at the above address, telephone (306) 373-0097, fax (306) 966-5015, or e-mail: <vlharms@sk.sympatico.ca>. Any information on additional sites or population numbers would be greatly appreciated. Even more useful would be pressed specimens showing whole inflorescences, heads and larger leaves, with information on locality, habitat, date of collection and local population size.

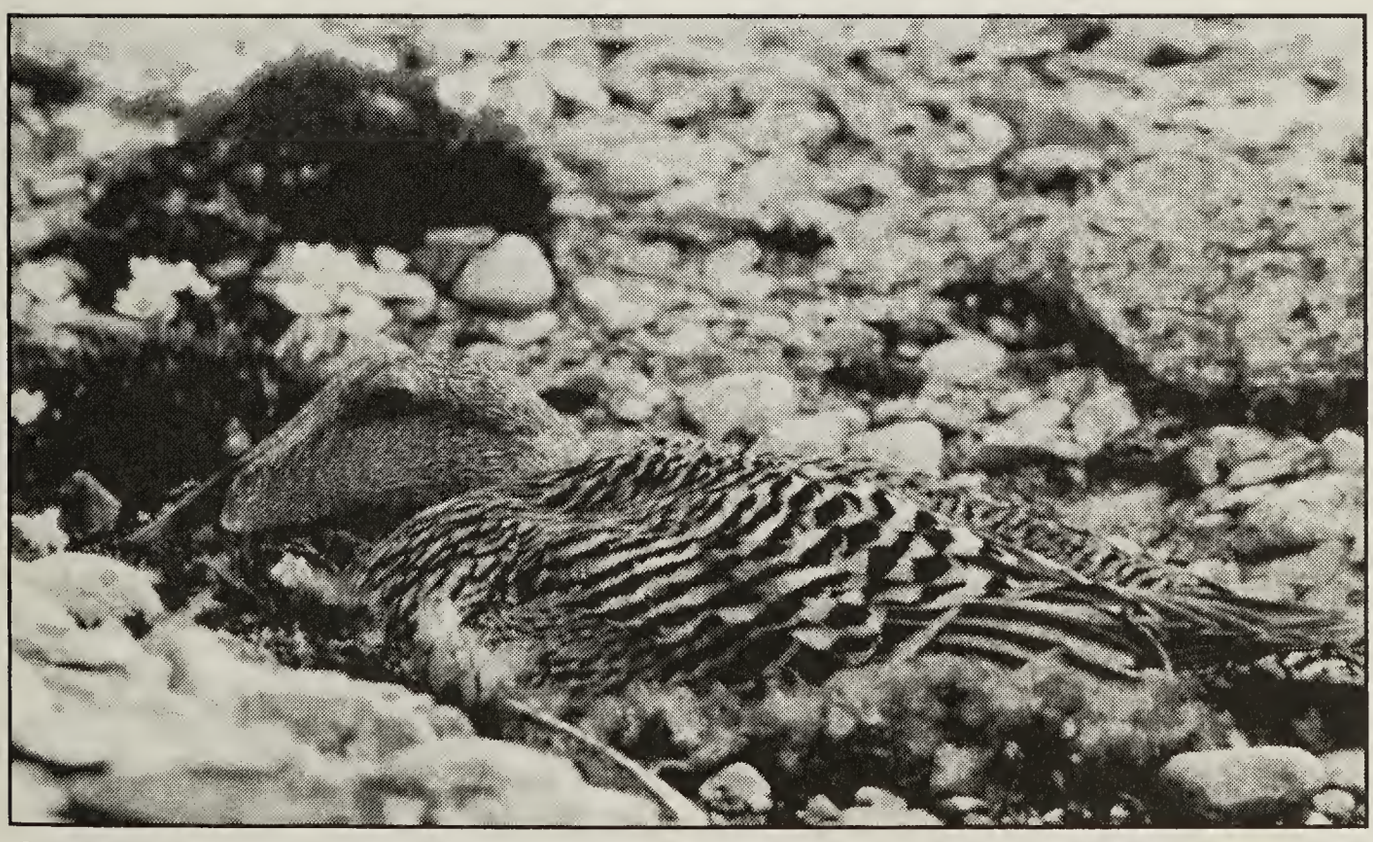
Acknowledgments

Recognition is due Anna Leighton for asking the probing questions that inspired this article. Acknowledgment is given to all collectors of *Arctium* specimens. Thanks are expressed to George Ledingham, Herbarium Curator at the University of Regina, for the opportunity to verify and study his herbarium specimens. Gratitude is also expressed to Mike Schellenberg, Plant Ecologist at the Swift Current Agriculture Canada Research Centre, for information on the burdock collections there and his valuable field observations.

1. Moore, R.J., and C. Frankton. 1974. "*Arctium* Burdock; Bardane", in The Thistles of Canada. Research Branch, Canada Department of Agriculture, Monograph # 10. Ottawa, Ontario, pp. 12-18.



Large dog sitting beneath last-year's burdock stalk near Saskatoon. The burs bother dog owners because they have to be cut out of the fur; if pulled they are liable to break apart into many pieces attached by hooks.



Common Eider on nest, Victoria Island, Canada ***Wayne Renaud***