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# A Review of Characters Used in the Identification of North Central States' *Sitona* Germar (Coleoptera, Curculionidae).

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ABSTRACT—Lack of good literature concerning taxonomy of the genus *Sitona* has prompted this study. Specific characters, such as, color, prothorax shape, frontal groove, punctures, genitalia, setae, eyes, length, elytral shape, and scales are discussed. A key for the five species of the North Central States is presented, including notes on each species.

The genus *Sitona* has long been neglected by taxonomists. Most of the literature pertaining to its identification is 50 or more years old. The British papers of Jackson (1920), and Kevan (1959) more recently, concern *Sitona* taxonomy, but they are helpful only with a few species that have been introduced into this country. The validity of the available American sources is now at least partially questioned. Allard (1864) and others have referred to Say's (1831) *S. indifferens* as a variety of *S. lineelus* Bonstd. Say names only one other new species, *S. scissifrons*. Casey (1888) lists 17 new species, but only 4 are now considered to be valid.

The United States and Canadian literature stresses the economic importance of the weevils, i.e., life cycles, plant hosts, crop damage, etc. *Sitona* are fast becoming real pests to leguminous crops. Nevertheless, there has not been enough concern over the confusing synonymy of European and American species and over the lack of knowledge of exactly what species are present in the United States and Canada. This paper is intended as a beginning toward the correction of these problems.

Several taxonomic keys are available for the identification of *Sitona* specimens, but none is complete for North America or even for the few species found in the North Central States. The European keys include only a few species that have been introduced into this country reported here. Jackson (1920) lists 13, 5 of which have mixed with a host of others unknown to the Americas. Allard (1864) lists 56 species, 9 of which have been reported here, but only 1 not already mentioned by Allard. Kevan (1959) has 17 species in his key, but only 7 have been reported here. American keys and descriptions are astonishingly short and incomplete. Blatchley and Leng (1916), for example, include only four species of *Sitona* in their entire volume on Rhynchophora. A conservative guess by this writer is that North America has at least 12 species of *Sitona*, both native and intro-

duced. Five of these are definitely found in the North Central States. The characteristics of these five are discussed here.

The superficial characters of the genus *Sitona* do not lend themselves easily to specific description. Color, for instance, is often similar among species. Yet the color range in any one species is sometimes so wide that two individuals at first glance seem to belong to two different groups. *S. cylindricollis* has several shades and patterns of brown and some gray, in addition to a shade of copper and metallic blue or green. Specimens sometimes are denuded of the majority of the scales that give the weevil its color, so that even if this character were a more reliable indicator of species, the total hue is not recognizable. Unfortunately, a few keys have been based largely on color.

The prothorax is often used in several ways to differentiate species. Some use the constrictions at front and rear along with degrees of dilation at the center of the prothorax for comparison. Some take a lateral view and note whether or not the prothorax is arched or flat. In the species of North Central States' *Sitona*, these characteristics are ambiguous and too often raise doubts in the mind of the determiner. The frontal groove characteristic on the rostrum and head raises similar doubts. Punctures on the head, prothorax, and elytra are of help with denuded specimens. But for the most part, this characteristic is not as obvious on many specimens as other equally reliable characters.

The above four commonly used superficial characters are rejected in this paper as means of identifying *Sitona* of the North Central States.

When a group is difficult to separate superficially, taxonomists turn to the place of most obvious difference between species, namely, the genitalia. After considering the research on aedeagi and spermathecae by Kevan (1959), the difficulty of the dissection, and the slight differences demonstrated, sexual characteristics are also passed by. The goal of this paper is to present a key that is useful whether or not the specimen is denuded of the majority of its scales and yet simple enough to avoid dissection.

The characteristics found to be most useful are the following:

1. Presence or absence of raised setae. All the five species found in the North Central States have setae but they are raised and visible only on a few.

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2. Prominence of the eyes. There are varying degrees of prominence but only the species with much produced or very flattened eyes is separated by this characteristic.
3. Length of specimen. This characteristic is used to separate quickly the largest from the smallest species. The range of lengths does overlap in some species because of sexual dimorphism.
4. Elytral shape. This is a fairly obvious characteristic for the distinction between *S. cylindricollis* and *S. scissifrons*.
5. Prothorax wider than long. Because of *S. hispidula*'s thick-set and compact shape, its prothorax is obviously wider than it is long. The species to which it is com-

pared has prothoraces that are normally about as long as they are wide.

6. Shape of elytral scales. Even denuded specimens have a few scales left somewhere on the elytra. There are recognizable differences in scale shape and size among several of the species (see Fig. 1). Because of the lack of reliable characters for differentiating between *S. flavescens* and *S. cylindricollis*, scales are especially employed with them. With a high-powered binocular microscope, the shape of the scales usually can be seen. Otherwise, a simple technique can make them apparent. A scraping of elytral scales taken with an insect pin and placed on a glass slide provides an excellent view of shape, size, and color under a monocular microscope. Permanent slides are

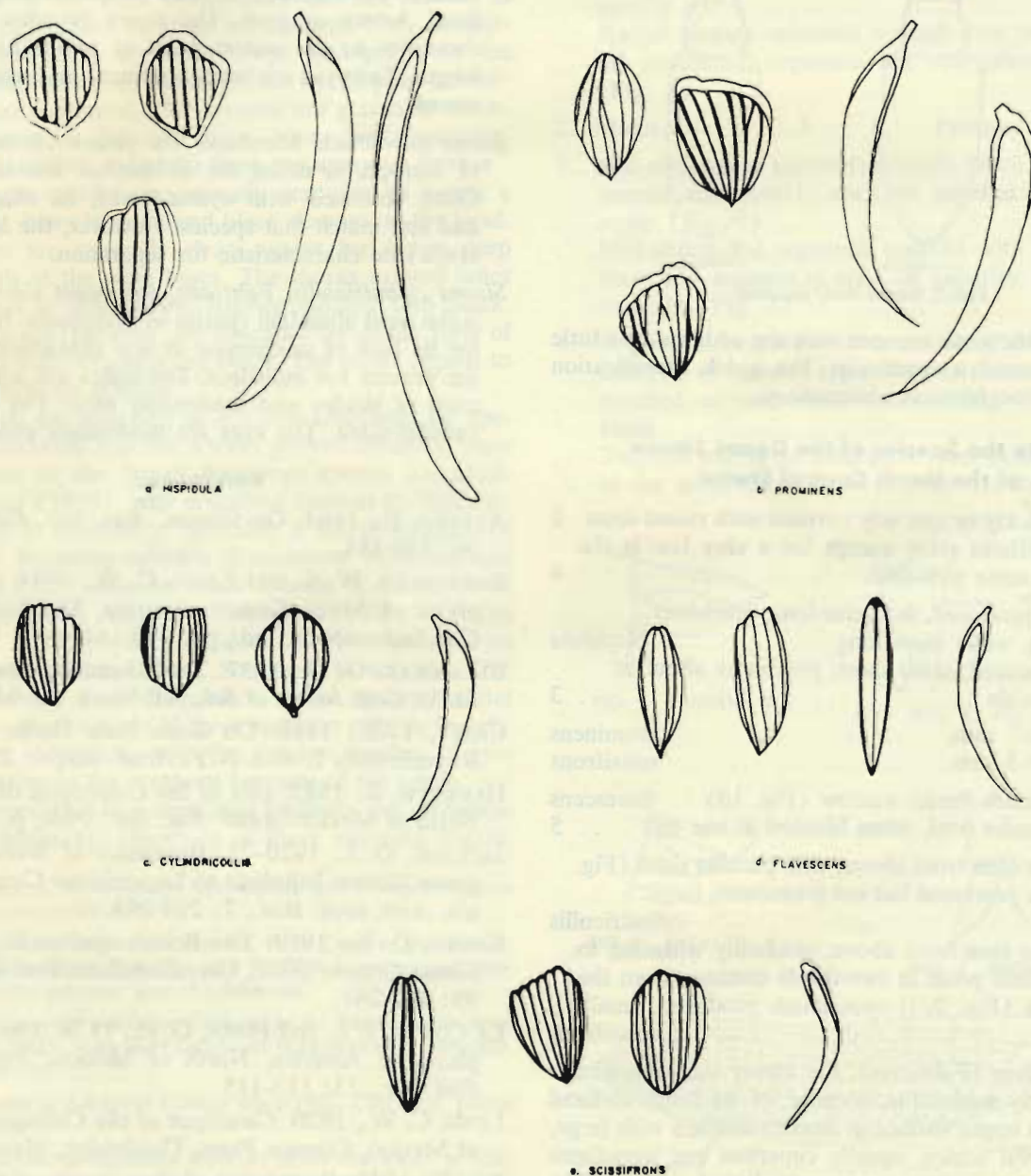


FIG. 1. *Sitona* scales and setae.



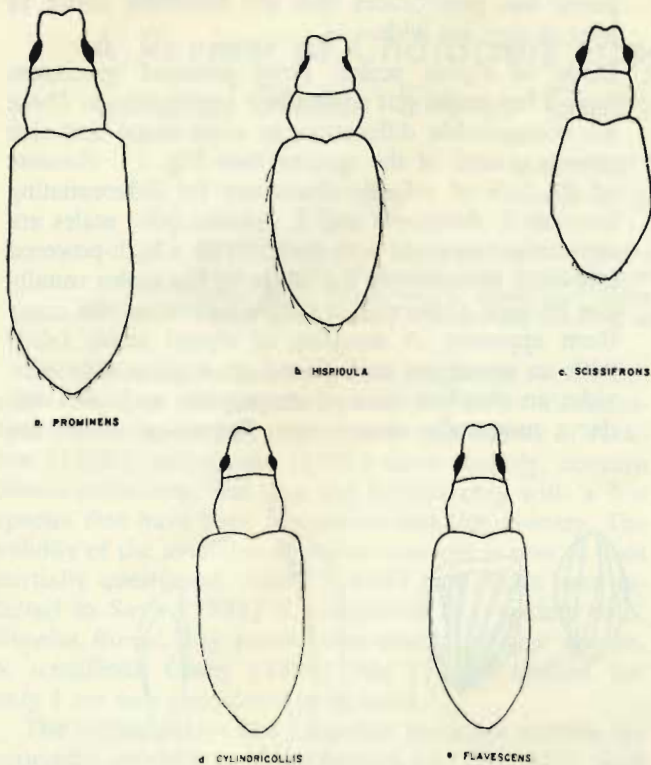


FIG. 2. *Sitona* body outlines.

made in the same manner with the addition of a little piccolyte and a cover slip. For quick identification such thoroughness is unnecessary.

**Key to the Species of the Genus *Sitona*  
of the North Central States**

- 1. Elytra thickly or sparsely covered with raised setae 2  
Elytra without setae except for a very few at the  
apex or setae indistinct ..... 4
- 2. Eyes not produced, flat; setae long; prothorax  
obviously wider than long ..... hispidula  
Eyes produced; setae short; prothorax about as  
long as wide ..... 3
- 3. Length 6-7 mm. .... prominens  
Length 3-5 mm. .... scissifrons
- 4. Elytral scales linear, narrow (Fig. 1d) .. flavescens  
Elytral scales oval, often blunted at one end .... 5
- 5. Elytra, as seen from above, with parallel sides (Fig.  
2d); eyes produced but not prominent, large,  
oval ..... cylindricollis  
Elytra, as seen from above, gradually widening to  
the broadest point at two-thirds distance from the  
shoulders (Fig. 2c); eyes much produced, small,  
rounded ..... scissifrons

*Sitona hispidula* (Fabricius), the clover root curculio, is immediately noticeable because of its long, inclined setae. The upper surface is densely clothed with large, broadly oval scales, usually cuperous but sometimes other shades. It has a compact, broad outline. The eyes are not produced but flat.

*Sitona prominens*, Casey, is included in this list for the North Central States because of three specimens in this collection taken in Iowa. It is native to North America and is the largest species in this range. Even though its raised setae make it similar to *hispidula*, the setae are not so long and the shape of the two species is quite different. *Sitona prominens* is elongate, the elytra at least twice as long as wide, while *hispidula* has a shorter, thicker form, the elytra only one-and-a-half times as long as wide.

*Sitona scissifrons*, Say, is one of two native species found in the North Central States. It is a small species but sexual dimorphism spreads the range of sizes. In this key *scissifrons* is listed twice because specimens sometimes have short raised setae, poor specimens may seem to have none. The scale pattern is usually tessellated, brown or gray. The elytra broaden from the shoulders to the widest point at two-thirds of their length. The eyes are very prominent and usually quite round.

*Sitona flavescens*, Marsham, the yellow clover curculio of Europe, is noted for its narrow hair-like scales. Often confused with *cylindricollis*, its shape, color, and size match that species. However, the long scales are a sure characteristic for separation.

*Sitona cylindricollis*, Fahraeus, the sweet clover weevil, is the most abundant species in Minnesota. It is known for its lack of uniqueness in any characteristic. Setae are present but indistinct. The scales are a wide spectrum of shades and moderately oval. The elytra are parallel-sided. The eyes are moderately produced.

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