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SILPHIDAE (INSECTA: COLEOPTERA) COLLECTED IN NORTH CENTRAL NORTH DAKOTA, INCLUDING NEW OCCURRENCES OF *THANATOPHILUS SAGAX* (MANNERHEIM) -- Members of the beetle family Silphidae are relatively large (10-35 mm) and often brightly colored insects. They usually are found in association with dead animal bodies (carrion), but some are phytophagous while others are predatory. Thirty endemic species are known to occur in North America north of Mexico (Ratcliffe 1996), and 17 species in North Dakota. (Hanley et al., unpublished data). To date, there has been little to no silphid collection data available from north central North Dakota counties, due mostly to the lack of entomological research in the area.

During the 2006 field season (April-September) the Biology Department of Minot State University, Minot, North Dakota, operated two drift fence arrays in order to monitor salamander migration and growth rates. Two fence systems were constructed, one on the southern edge of the city of Minot on the grounds of the North Dakota State University Experiment Station (48°10'39" N, 101°17'47" W, elevation 1772 ft above sea level), and one in McHenry County north of Velva (48°09'08" N, 100°55'01" W, elevation 1588 ft above sea level), herein referred to as the Minot site and Velva site, respectively. Both fences consisted of an aluminum sheet 61 cm tall and approximately 308 m in length, and were erected to completely surround a perennial wetland. These fences used an array of pitfall traps to collect animals both inside and outside of the fence along the entire circumference, with traps spaced approximately 6 m apart. Traps were five-gallon pails buried to ground level. Lids were used to close pails during periods of research inactivity. As these traps were not taxon specific, ground-dwelling arthropods were collected while the traps were in operation. During the 2006 season the trap arrays were operational for irregular periods of time based upon herpetological worker availability. Because of this, collection of coleopteran specimens was highly sporadic in nature, with no set visitation schedule.

Nine species of silphids were collected in a single season of drift fence operation (Table 1), representing 53% of the known North Dakota fauna and 30% of the endemic North American fauna. Most specimens were collected from larger organisms, such as mice and shrews, that had fallen into the traps, died and begun to decay. However, *Heterosilpha ramosa* regularly was found in carrion-free traps.

The most interesting record is that of *Thanatophilus sagax*, which has not been collected in North Dakota since 1967 (Hanley et al., unpublished data). Most adult specimens in other studies have been collected near water sources under carrion or debris (Anderson and Peck 1985). Three specimens were collected on August 10, 2006 at the Minot site. Little other information is available about the habits of this beetle. All specimens collected during our study were deposited in the Cyril Moore Science Center Museum, Minot State University, Minot, North Dakota.

Table 1. Silphid beetles collected at the Minot and Velva sites in north central North Dakota during 2006.

Species	Location	Date collected	Number collected
<i>Heterosilpha ramosa</i> (Say)	both sites	Apr 13 through Aug 15	61
<i>Thanatophilus lapponicus</i> (Herbst)	both sites	May 13 through Aug 29	11
<i>Thanatophilus sagax</i> (Mannerheim)	Minot site	Aug 10	3
<i>Nicrophorus hybridus</i> Hatch & Angell	both sites	May 1 through Aug 29	33
<i>Nicrophorus marginatus</i> Fabricius	both sites	Jun 20 through Aug 15	16
<i>Nicrophorus obscurus</i> Kirby	both sites	May 1 through Aug 10	6
<i>Nicrophorus orbicollis</i> Say	both sites	Jun 20 through Aug 15	38
<i>Nicrophorus tomentosus</i> Weber	both sites	Jun 20 through Aug 29	32
<i>Nicrophorus vespilloides</i> Herbst	both sites	May 10 through Aug 15	4

Because of the sporadic nature of this survey, no reliable conclusions could be made in relation to population dynamics or comparison of fauna between sites. Further field seasons with these trap arrays will involve more precise data capture.

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LITERATURE CITED

- Anderson, R. S., and S. B. Peck. 1985. The carrion beetles of Canada and Alaska (Coleoptera: Silphidae and Agyrtidae). The insects and arachnids of Canada. Part 13. Publication 1778. Research Branch Agriculture Canada. Ottawa, Ontario, Canada.
- Ratcliffe, B. C. 1996. The Carrion beetles (Coleoptera: Silphidae) of Nebraska. Bulletin of the University of Nebraska State Museum 13.

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