Northwest Science Notes

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Range Extension for the Northern Sagebrush Lizard in Southwest Montana

Introduction

The Northern Sagebrush Lizard (*Sceloporus graciosus graciosus*), is most commonly found in sagebrush-dominated habitat (Koch and Peterson 1995). The species may also occupy dry woodland and forested areas, as well as dry brushland communities (Nature Serve Explorer 2004). The conservation status of the species in Montana (MT) is S3, indicating that sagebrush lizards are potentially at risk in the state due to limited or declining numbers, range, or habitat (Montana National Heritage Program 2004).

Sagebrush lizards have been documented in 14 MT counties (Maxell et. al 2003) including the open prairies and valleys in the southeastern, southcentral, and central parts of the state. The maximum elevation record was 1646 m (Werner et. al. 2004). Although the species generally does not persist at elevations higher than 1830 m within the Rocky Mountains, it has been recorded at elevations of up to 2530 m in both Yellowstone (YNP) and Grand Teton National Parks (GTNP) (Koch and Peterson 1995). Of the high-elevation populations of sagebrush lizards in YNP and GTNP, all but one was located in areas of geothermal activity (Koch and Peterson 1995). The exception was a single population in GTNP inhabiting a gravelly, south-facing slope above 2130 m (Koch and Peterson 1995). Almost all records from Idaho were within typical sagebrush habitat in the southern portion of the state in the Snake River Plain and as far northeast as the Ashton vicinity (Idaho State University 2004).

Observations

We observed four sagebrush lizards on 8 June 2004 while approaching a nearby pond to observe waterfowl. None could be captured, but one was photographed (Figure 1). On 5 August 2004 an additional four sagebrush lizards were observed during a visit to the observation site to gather data on site characteristics. Again, none could be captured and measured.

The sightings occurred in the Hebgen Lake Basin of Gallatin County, MT, approximately four miles north of West Yellowstone (Figure 2).

Figure 1. Photograph taken of sagebrush lizard in Gallatin County, Montana, on 8 June 2004.

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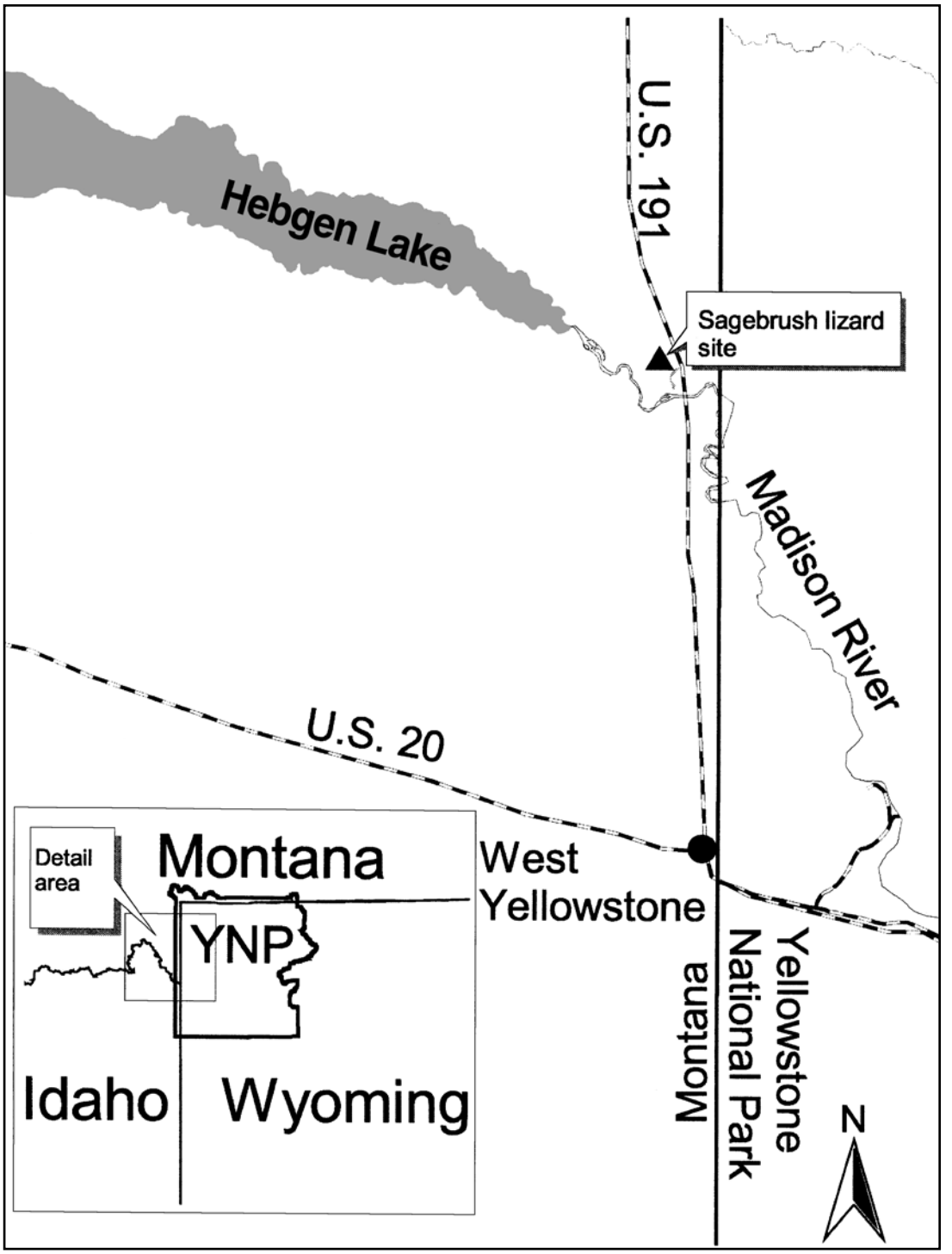

Figure 2. Observation site of sagebrush lizards in Gallatin County, Montana, on 8 June and 5 August 2004.

The observations were made on National Forest land administered by the Gallatin National Forest. The Hebgen Lake Basin is a high-elevation region surrounded by mountain ranges and plateaus. The climate is characterized by long cold winters and short cool summers. The average maximum temperature at West Yellowstone is 10°C; average minimum temperature was 7°C; average total precipitation is 55 cm; and average total snowfall is 407 cm (Western Regional Climate Center 2002). Dominant vegetation at the site is a lodgepole pine/bitterbrush (*Pinus contorta/Purshia tridentata*) habitat type, which is endemic to the Hebgen Lake Basin (Pfister et. al. 1977). This habitat type occurs in obsidian-sand soils at approximately 2,200 m in elevation where it is too cold or dry for other trees to grow. This habitat type is also characterized by limited understory growth and marginal forest canopy cover (Pfister et. al. 1977).

The observations occurred on a steep slope bordered by U.S. Highway 191 to the east, lodgepole pine forest to the west and north, and a pond/riparian area associated with the Madison River to the south. The site was located on a south-facing (165°) slope at 2187 m in elevation, and was approximately 100 m wide. The upper portion of the slope was dry and sandy, with approximately 80% bare ground and scattered rubber rabbitbrush (*Chrysothamnus nauseosus*), Indian ricegrass (*Oryzopsis hymenoides*), and various forbs. Sagebrush lizards were observed on bare ground in close proximity to shrubs and bunchgrasses. At the toe of the slope, there was a narrow band of vegetation approximately 5 m wide with mixed riparian and upland species including *Salix spp*., *Carex spp*., *Ribes spp*., *Poa spp*., and various forbs. Sagebrush lizards were also observed here in areas of sparse vegetation near clumps of tall willow (*Salix spp*.). A narrow area of riparian vegetation approximately 1 m wide dominated by *Salix spp*., *Carex spp*., *Equisetum spp*., and several species of forbs were located below the toe of the slope and bordered a slough associated with the Madison River.

Discussion

Our observation of sagebrush lizards was significant for several reasons. The status and known distribution of this species is vague within MT (Maxell et. al. 2003) as well as adjacent areas within YNP and GTNP (Koch and Peterson 1995), most likely due to limited survey effort and documentation for the species. Our observation increases the known distribution of the species within MT and the Greater Yellowstone Ecosystem, and would be the first documented sighting of the species in Gallatin County in southwest MT (Figure 3).

In addition, our observation occurred outside the typical environment of the species. The elevation of the site (2187m) far exceeds the maximum reported elevation for MT (1646m) (Maxell et. al. 2003). Sagebrush lizards have been observed at this elevation in the GYE outside of MT, but they were typically associated with geothermal areas. Koch and Peterson (1995) speculated that sagebrush lizards found at high elevations in YNP and GTNP were relict populations from periods of warmer climate that persisted in areas of geothermal influence. Our observation occurred in an area with no geothermal influence. The site was located on a dry, south-facing aspect, similar to Koch and Peterson's (1995) report of sagebrush lizards at a high elevation location in GTNP. These are the only records of the species occurring in high-elevation habitats with no geothermal influence that we are aware of, but it offers additional evidence that populations of the species may persist in isolated high-elevation sites with warmer and drier microclimates than those found in the surrounding landscape.

The sagebrush lizard population we detected may once have been contiguous with those in the geothermal basins of YNP approximately 30-40 km to the east. The Madison River system would have been a likely habitat corridor connecting the two areas, although the extent of suitable habitat along the river corridor is currently unknown. Construction of U.S. Highway 191 early in the 20th century likely resulted in the isolation of this population from those to the east in YNP. Sagebrush lizards are poor dispersers and highways present a significant barrier to their travel (Nature Serve Explorer 2004). Additional survey effort is warranted to determine the extent of sagebrush lizard distribution along the Madison River corridor within the Hebgen Lake Basin and further east in YNP.

Acknowledgements

We thank Eric Atkinson for encouraging us to write this paper, and Charles Peterson for providing much useful information on sagebrush lizard ecology and distribution. The USDA Forest Service, Gallatin National Forest, provided funding.

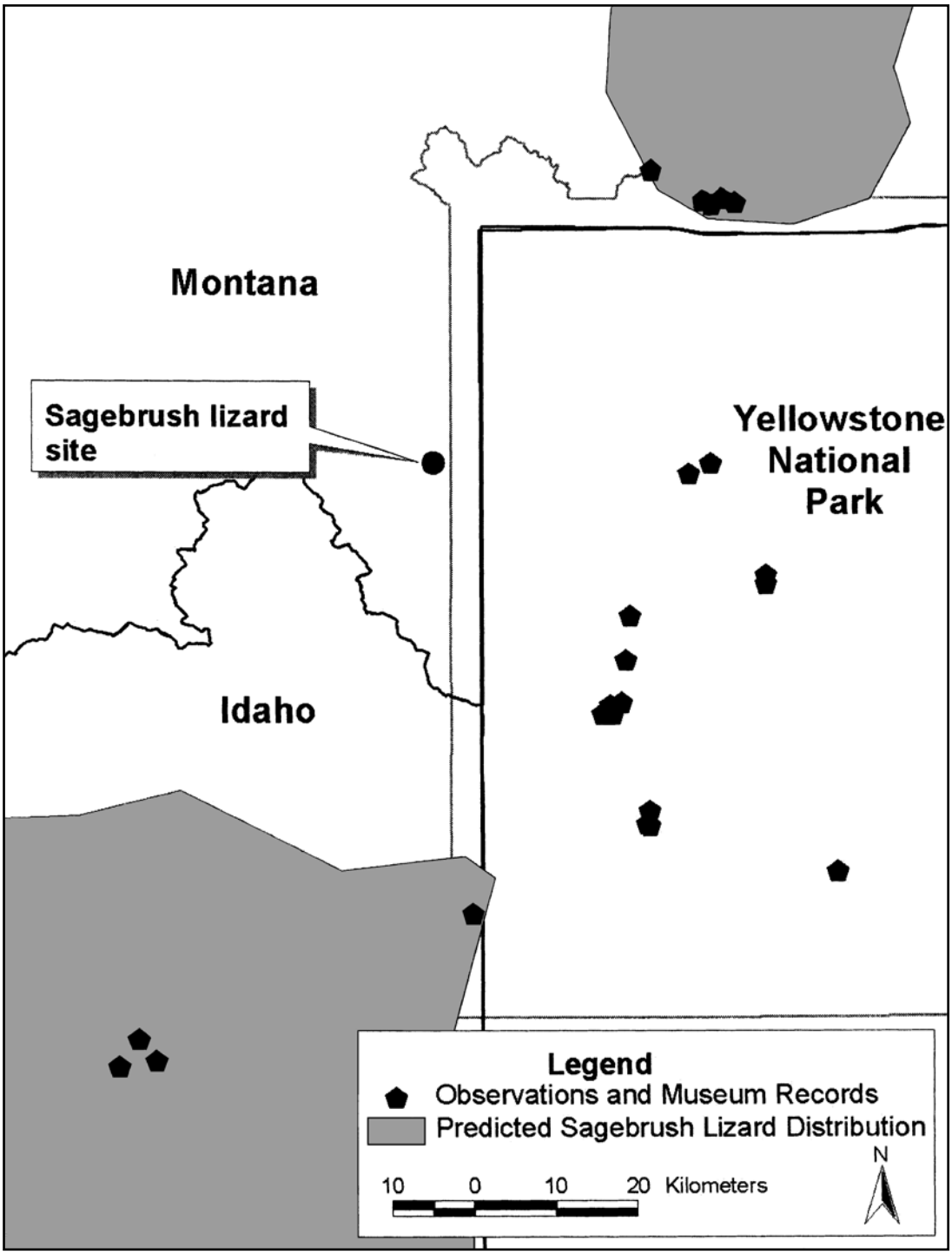

Figure 3. Observations, museum records, and predicted distribution of sagebrush lizards in southwest Montana, southeast Idaho, and Yellowstone National Park (Idaho State University 2004, Koch and Peterson 1995, Werner et al. 2004) relative to the 8 June and 5 August 2004 sagebrush lizard observations in Gallatin County, Montana.

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