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Steppe Bats of Mongolia

A 'Grassroots' study of diversity in arid plains

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Mongolia is changing. Traditional land uses and the lifestyles of nomadic herders are being pushed by political, economic and climatic changes into a still-uncertain future. Poorly planned and unmanaged rural development increasingly threatens our country's ecosystems and biodiversity. The government is taking steps toward protecting wildlife, but conservation is hampered by a severe lack of data about the status of most species.

The scientific study of Mongolia's mammals began nearly a century ago, largely by Russian naturalists. A total of 132 mammal species have been documented, but information is often limited to only "presence or absence." Many groups of mammals – including virtually all 14 known bat species – have never been examined in any detail and their geographic range, habitat needs and population status are unknown.

The nonprofit Wildlife Science and Conservation Center runs a field station that monitors biodiversity and ecosystem changes on the arid steppes of central Mongolia. Nomads for uncounted centuries herded horses, sheep, goats, yaks and camels across these parched plains, helping to mold this unique landscape and the plant and animal communities that populate it. But recent increases in livestock numbers already are having ecological consequences, with overgrazing and habitat fragmentation.

With the center as a base and armed with a grant from BCI's Global Grassroots Conservation Fund, our team of Mongolian biologists recently completed a field study focused on bats of the steppes – a pilot project to evaluate the possibility of a long-term monitoring program.

The immediate goals of our project were to collect preliminary information on the diversity, population sizes and habitat preferences of resident bat species and to identify conservation threats to these bats.

We captured bats in mist nets at four diverse sites in the Erdenesant region of central Mongolia. The area is characterized by a chain of narrow mountain ranges surrounded by arid plains. A small lake dries up in drought years. The area has no forests, but elm trees sometimes grow along dry riverbeds.

All four netting sites – Genengiin Am, Khunkhee, Baruunbayan and Ovor Us – were along identified flight paths and near existing water sources. These sites were selected based on information from our previous observations and on reports of bat activity from local herders. Narrow gorges limited us to only two mist nets per site.

Bats were collected, identified by species, age and gender, measured, weighed and released. In addition, most were tagged with wing bands for future tracking. We also noted the number of bats observed flying within about 15 feet (five meters) of each mist net.

We captured a total of 108 bats at all four locations during two weeks in the summer. These

included five species representing four genera, none of them listed as endangered or threatened on the IUCN Red List. The most common species, with 41 captures (38 percent of the total), was the brown big-eared bat (*Plecotus auritus*). The other species included: the particolored bat (*Vespertilio murinus*) with 23 individuals; Eurasian whiskered myotis (*Myotis mystacinus*) with 22; Gobi big brown bat (*Eptesicus gobiensis*) with 13; and the Asian particolored bat (*Vespertilio superans*) with 9. Our observation represents the westernmost report of Asian particolored bats in the scientific literature.

We tagged a total of 57 bats with bands provided by Paul Racey of Aberdeen University and the Zoological Society of London. As some of these same bats are recaptured and released in coming years, these metal bands, stamped with identifiable numbers, will eventually help us understand such things as bats' lifespans, local movement and habitat use. Bat bands have been used only once before in Mongolia, by German scientists who banded Eurasian whiskered myotis in the 1980s.

The most productive site by far was Genengiin Am, a small narrow gorge confined between rocky slopes. Large boulders and a line of elm trees provide suitable bat habitat at this location, which includes a manmade well with relatively stable water near the surface. At Genengiin Am, we netted 84 bats of all five species, with an average of two captures per hour of netting.

We found the least bat activity at Khunkhee, a much more open gorge, where we set our nets near a settlement where nomads maintain their livestock herd during the spring. The site has no well or spring, but we saw bats using small water sources that are used in corrals for livestock. We netted only six bats of two species there, with less than one per hour.

We saw no obvious threats to bats, except for unreliable water supplies. Wells, small water containers for livestock and the small, salty lake were the only sources for bats and other wildlife.

The good news is that local herders consistently told us that they had no problem with bats, so human disturbance is probably minimal in Erdenesant.

We have very limited information on bats' habitat use across Mongolia, but nearly half of known bat species in the country have been recorded in arid areas such as the steppes. These populations are especially threatened by unreliable water sources. All species we trapped in Erdenesant were using hand-dug wells for water, but well water was low, dry or nonexistent in three of our four survey sites. Only the well at Genengiin Am had water near the surface.

Our initial fieldwork convinced us that the bats of the steppes habitat require particular attention in Mongolia because increasingly frequent droughts and the looming specter of global warming could have a devastating impact. Bat conservation is at a very early stage here due to a lack of basic ecological knowledge and a still-limited awareness of bats.

No continuing bat research and conservation projects have been undertaken, but our study demonstrates the importance of Erdenesant for the conservation and understanding of bat species in the steppes. We hope to establish a long-term monitoring program for at least two of our pilot sites to track the health of these fragile populations “ with the ultimate goal of conserving Mongolia's bats. Tracking the bats of the steppes may, in turn, alert us to new threats to this harsh but historic ecosystem.

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