



Joseph Cook
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26 April 2024

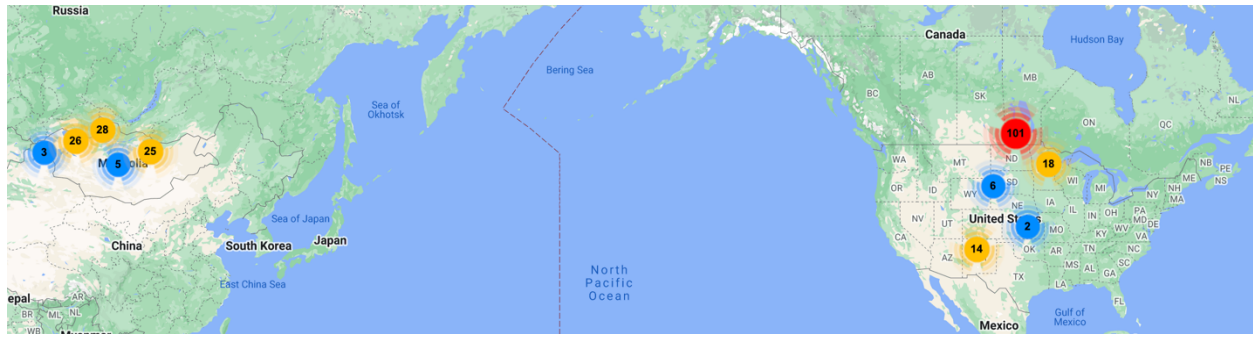
Dr. Cook,

For my Master's project, I am studying the systematics and phylogeography of fleas in the subfamily Doratopsyllinae (Siphonaptera: Hystrichopsyllidae), parasites of the family Soricidae and incidentally on other small mammals. This group of fleas is widely distributed as parasites of the genera *Sorex*, *Blarina*, and *Cryptotis* throughout northern hemisphere temperate zones. Two genera occur in North America, the Holarctic genus *Doratopsylla*, which includes one species found on shrews in central and eastern US and Canada, as well as additional species in Eurasia, and the primarily Nearctic genus *Corrodopsylla*, which consists of 3 described species (plus 2 additional subspecies = likely species) extending across the continent into the western US, Canada, the Central American Highlands, as well as one species in northern and western Eurasia (Mongolia, Russia, Scandinavia). The goal of my research is to generate a barcode phylogeny (COI) of the genus *Corrodopsylla* using a mitochondrial marker to elucidate the phylogeography and systematics of this group and provide a comparison with similar studies of host phylogeography. This research will contribute to ongoing efforts in the Cook Lab to understand the complexity of faunal diversification events in western North America and the effects of climatic cycling on mammalian host/parasite dynamics and phylogeography across Beringia.

For this project, I am requesting fluid-preserved ectoparasite samples that I will identify as Doratopsylline fleas from the MSB Mammal Collection. This request includes representatives of all recognized species of the genus *Corrodopsylla*: the single Eurasian species, *Corrodopsylla birulai*, and all New World species of the genus *Corrodopsylla* currently recognized by Morrone and Acosta 2006, excepting only *Corrodopsylla barreri* Traub & Evans, 1967 and *Corrodopsylla lira* (Traub, 1950) from Central America. We hope to request samples of these species from Mexican collaborators.

I plan to confirm morphological identifications of these individuals, capture preliminary digital images, extract DNA for Sanger and potentially genomic sequencing, and prepare the exoskeletons as permanent slide-mounted voucher specimens. Depending on the identifications, I plan to sample about 5 representatives per species per general locality if possible. I have experience with relevant lab procedures, and have successfully extracted DNA for Sanger sequencing. Lab work will be performed by myself in the Cook Lab in the University of New Mexico, and sequences will be generated by the Psomagen lab. MSB will be acknowledged for loans and sequences will be accessioned into GenBank.

I have an estimate count of 400 fleas. Map of specimens and requested loan items are as follows:



| guid | NK | scientific_name | country |
|-----------------|--------|-------------------------|----------|
| MSB:Mamm:288572 | 288572 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288578 | 288578 | <i>Neomys fodiens</i> | Mongolia |
| MSB:Mamm:288605 | 288605 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288615 | 288615 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288641 | 288641 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288643 | 288643 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288647 | 288647 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288648 | 288648 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288649 | 288649 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288650 | 288650 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288655 | 288655 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288656 | 288656 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288657 | 288657 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288658 | 288658 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288664 | 288664 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288665 | 288665 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288666 | 288666 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288674 | 288674 | <i>Sorex roboratus</i> | Mongolia |
| MSB:Mamm:288686 | 288686 | <i>Sorex tundrensis</i> | Mongolia |
| MSB:Mamm:288696 | 288696 | <i>Sorex caecutiens</i> | Mongolia |
| MSB:Mamm:331409 | 331409 | <i>Sorex arcticus</i> | Canada |
| MSB:Mamm:331417 | 331417 | <i>Sorex arcticus</i> | Canada |
| MSB:Mamm:331895 | 331895 | <i>Sorex cinereus</i> | Canada |
| MSB:Mamm:331896 | 331896 | <i>Sorex hoyi</i> | Canada |
| MSB:Mamm:331898 | 331898 | <i>Sorex cinereus</i> | Canada |

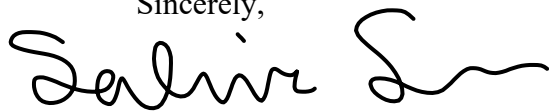
| | | | |
|-----------------|--------|----------------------|--------|
| MSB:Mamm:331953 | 331953 | Sorex palustris | Canada |
| MSB:Mamm:331955 | 331955 | Blarina brevicauda | Canada |
| MSB:Mamm:332000 | 332000 | Sorex arcticus | Canada |
| MSB:Mamm:332034 | 332034 | Blarina brevicauda | Canada |
| MSB:Mamm:332035 | 332035 | Blarina brevicauda | Canada |
| MSB:Mamm:332068 | 332068 | Sorex cinereus | Canada |
| MSB:Mamm:332071 | 332071 | Sorex cinereus | Canada |
| MSB:Mamm:332124 | 332124 | Sorex cinereus | Canada |
| MSB:Mamm:332129 | 332129 | Sorex cinereus | Canada |
| MSB:Mamm:332133 | 332133 | Sorex cinereus | Canada |
| MSB:Mamm:332136 | 332136 | Sorex cinereus | Canada |
| MSB:Mamm:332192 | 332192 | Sorex haydeni cf. | Canada |
| MSB:Mamm:332193 | 332193 | Sorex cinereus | Canada |
| MSB:Mamm:332229 | 332229 | Sorex arcticus | Canada |
| MSB:Mamm:332293 | 332293 | Sorex arcticus | Canada |
| MSB:Mamm:332296 | 332296 | Sorex arcticus | Canada |
| MSB:Mamm:332334 | 332334 | Sorex cinereus | Canada |
| MSB:Mamm:332337 | 332337 | Sorex cinereus | Canada |
| MSB:Mamm:332339 | 332339 | Blarina brevicauda | Canada |
| MSB:Mamm:332361 | 332361 | Sorex cinereus | Canada |
| MSB:Mamm:332387 | 332387 | Sorex arcticus | Canada |
| MSB:Mamm:332397 | 332397 | Sorex cinereus | Canada |
| MSB:Mamm:332402 | 332402 | Sorex cinereus | Canada |
| MSB:Mamm:332471 | 332471 | Blarina brevicauda | Canada |
| MSB:Mamm:332532 | 332532 | Sorex cinereus | Canada |
| MSB:Mamm:332570 | 332570 | Sorex monticolus | Canada |
| MSB:Mamm:332571 | 332571 | Sorex cinereus | Canada |
| MSB:Mamm:332572 | 332572 | Sorex cinereus | Canada |
| MSB:Mamm:332573 | 332573 | Sorex cinereus | Canada |
| MSB:Mamm:332574 | 332574 | Sorex cinereus | Canada |
| MSB:Mamm:332598 | 332598 | Sorex cinereus | Canada |
| MSB:Mamm:332605 | 332605 | Sorex monticolus cf. | Canada |
| MSB:Mamm:332606 | 332606 | Sorex monticolus cf. | Canada |
| MSB:Mamm:332608 | 332608 | Sorex monticolus cf. | Canada |
| MSB:Mamm:332657 | 332657 | Blarina brevicauda | Canada |
| MSB:Mamm:332666 | 332666 | Sorex palustris | Canada |
| MSB:Mamm:332668 | 332668 | Blarina brevicauda | Canada |
| MSB:Mamm:332670 | 332670 | Sorex cinereus | Canada |
| MSB:Mamm:332672 | 332672 | Sorex arcticus | Canada |

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|-----------------|--------|--------------------------------|---------------|
| MSB:Mamm:340779 | 340779 | <i>Sorex monticola</i> | United States |
| MSB:Mamm:342718 | 342718 | <i>Sorex caecutiens</i> | Mongolia |
| MSB:Mamm:342720 | 342720 | <i>Sorex caecutiens</i> | Mongolia |
| MSB:Mamm:342880 | 342880 | <i>Sorex caecutiens</i> | Mongolia |
| MSB:Mamm:342881 | 342881 | <i>Sorex caecutiens</i> | Mongolia |
| MSB:Mamm:342882 | 342882 | <i>Sorex caecutiens</i> | Mongolia |
| MSB:Mamm:342884 | 342884 | <i>Sorex caecutiens</i> | Mongolia |
| MSB:Mamm:342920 | 342920 | <i>Sorex isodon</i> | Mongolia |
| MSB:Mamm:343737 | 343737 | <i>Sorex caecutiens</i> | Mongolia |
| MSB:Mamm:344932 | 344932 | <i>Crocidura shantungensis</i> | Mongolia |
| MSB:Mamm:345027 | 345027 | <i>Sorex roboratus</i> | Mongolia |
| MSB:Mamm:345094 | 345094 | <i>Sorex roboratus</i> | Mongolia |
| MSB:Mamm:346033 | 346033 | <i>Cryptotis parva</i> | United States |
| MSB:Mamm:346439 | 346439 | <i>Blarina hylophaga</i> | United States |
| MSB:Mamm:347728 | 347728 | <i>Sorex cinereus</i> | United States |
| MSB:Mamm:347729 | 347729 | <i>Sorex cinereus</i> | United States |
| MSB:Mamm:347824 | 347824 | <i>Sorex cinereus</i> | United States |
| MSB:Mamm:347878 | 347878 | <i>Sorex cinereus</i> | United States |
| MSB:Mamm:348250 | 348250 | <i>Sorex cinereus</i> | United States |
| MSB:Mamm:348281 | 348281 | <i>Sorex cinereus</i> | United States |
| MSB:Mamm:348351 | 348351 | <i>Sorex palustris</i> | United States |
| MSB:Mamm:348386 | 348386 | <i>Sorex cinereus</i> | United States |
| MSB:Mamm:348403 | 348403 | <i>Sorex haydeni</i> | United States |
| MSB:Mamm:348417 | 348417 | <i>Blarina brevicauda</i> | United States |
| MSB:Mamm:348420 | 348420 | <i>Sorex arcticus</i> | United States |
| MSB:Mamm:348454 | 348454 | <i>Blarina brevicauda</i> | United States |
| MSB:Mamm:348461 | 348461 | <i>Sorex cinereus</i> | United States |

| | | | |
|-----------------|--------|--------------------|---------------|
| MSB:Mamm:348472 | 348472 | Sorex cinereus | United States |
| MSB:Mamm:348527 | 348527 | Blarina brevicauda | United States |
| MSB:Mamm:348596 | 348596 | Sorex cinereus | United States |
| MSB:Mamm:348597 | 348597 | Sorex cinereus | United States |
| MSB:Mamm:348998 | 348998 | Sorex arcticus | United States |
| MSB:Mamm:349000 | 349000 | Sorex arcticus | United States |
| MSB:Mamm:349020 | 349020 | Sorex arcticus | United States |
| MSB:Mamm:349030 | 349030 | Blarina brevicauda | United States |
| MSB:Mamm:349039 | 349039 | Sorex cinereus | United States |
| MSB:Mamm:349048 | 349048 | Sorex cinereus | United States |
| MSB:Mamm:349320 | 349320 | Sorex cinereus | United States |
| MSB:Mamm:349397 | 349397 | Sorex monticola | United States |
| MSB:Mamm:349691 | 349691 | Sorex cinereus | United States |
| MSB:Mamm:350329 | 350329 | Sorex navigator | United States |
| MSB:Mamm:350418 | 350418 | Sorex cinereus | United States |
| MSB:Mamm:351843 | 351843 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351844 | 351844 | Sorex roboratus | Mongolia |
| MSB:Mamm:351845 | 351845 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351846 | 351846 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351848 | 351848 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351850 | 351850 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351851 | 351851 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351852 | 351852 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351853 | 351853 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351888 | 351888 | Sorex roboratus | Mongolia |
| MSB:Mamm:351901 | 351901 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351907 | 351907 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351908 | 351908 | Sorex caecutiens | Mongolia |

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|-----------------|--------|------------------|----------|
| MSB:Mamm:351909 | 351909 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351910 | 351910 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351911 | 351911 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351912 | 351912 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351914 | 351914 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351916 | 351916 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351920 | 351920 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351934 | 351934 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351949 | 351949 | Sorex | Mongolia |
| MSB:Mamm:351951 | 351951 | Sorex | Mongolia |
| MSB:Mamm:351953 | 351953 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351954 | 351954 | Sorex caecutiens | Mongolia |
| MSB:Mamm:351955 | 351955 | Sorex isodon | Mongolia |
| MSB:Mamm:351956 | 351956 | Sorex isodon | Mongolia |
| MSB:Mamm:352032 | 352032 | Sorex tundrensis | Mongolia |
| MSB:Mamm:352033 | 352033 | Sorex tundrensis | Mongolia |
| MSB:Mamm:352035 | 352035 | Sorex tundrensis | Mongolia |
| MSB:Mamm:352036 | 352036 | Sorex tundrensis | Mongolia |
| MSB:Mamm:352037 | 352037 | Sorex isodon | Mongolia |
| MSB:Mamm:352047 | 352047 | Sorex | Mongolia |
| MSB:Mamm:352051 | 352051 | Sorex | Mongolia |
| MSB:Mamm:352053 | 352053 | Sorex tundrensis | Mongolia |
| MSB:Mamm:352054 | 352054 | Sorex | Mongolia |
| MSB:Mamm:352056 | 352056 | Sorex tundrensis | Mongolia |

Sincerely,



Sabrina Sibrava
MS Student, Cook Lab

References:

Morrone, Juan J. & Acosta, Roxana, 2006, A synopsis of the fleas (Insecta: Siphonaptera) parasitizing New World species of Soricidae (Mammalia: Insectivora), pp. 1-30 in Zootaxa 1354 on page 11, DOI: [10.5281/zenodo.273605](https://doi.org/10.5281/zenodo.273605)

