

Supplementary Data. SD1. List of sequences used in this study.

| Species | Locality code or country* Locality | Specimen No. | mtDNA lineage | Accession No.** |
|---------------------|---------------------------------------|--------------|------------------|-----------------|
| Hokkaido, Japan | | | | |
| <i>M. rex</i> | | | | |
| 2 | Rishiri I. | HS229 | I Ib | AB565454 |
| 2 | Rishiri I. | MAI-25 | I Ib | AB565455 |
| 2 | Rishiri I. | MAI-28 | I Ib | AB565456 |
| 3 | Sarufutsu (Nobusha) | TS01495 | I Ia | LC458484 |
| 3 | Sarufutsu (Nobusha) | TS01502 | I Ia | LC458485 |
| 5 | Hamatonbetsu | TS00972 | I Ia | LC458471 |
| 6 | Teshio | HEG74 | I Ia | AB565457 |
| 6 | Teshio | HEG79 | I Ia | AB565458 |
| 6 | Teshio | HEG80 | I Ia | AB565459 |
| 6 | Teshio | TS00675 | I Ia | LC458472 |
| 6 | Teshio | TS00680 | I Ia | LC458473 |
| 7 | Nakagawa (Saku) | TS00730 | I Ia | LC458474 |
| 7 | Nakagawa (Saku) | TS00737 | I Ia | LC458475 |
| 7 | Nakagawa (Saku) | TS00742 | I Ia | LC458476 |
| 9 | Haboro | TS00995 | I Ia | LC458481 |
| 11 | Takinoue | HEG96 | I Ia | AB031582 |
| 15 | Takinoshita | TS00857 | I Ia | LC458477 |
| 15 | Takinoshita | TS00862 | I Ia | LC458478 |
| 15 | Takinoshita | TS00867 | I Ia | LC458479 |
| 15 | Takinoshita | TS00872 | I Ia | LC458480 |
| 17 | Biei | HEG174 | I Ia | AB565460 |
| 22 | Bibai | TS01676 | I Ia | LC458482 |
| 22 | Bibai | HEG307 | I Ia | AB565461 |
| 34 | Kuromatsunai | KN98103 | I Ia | AB565462 |
| 34 | Kuromatsunai | KN98104 | I Ia | AB565463 |
| 38 | Chayagawa | TS01618 | I Ia | LC458483 |
| <i>M. rufocanus</i> | | | | |
| 1 | Rebun I. | HEGRB-2 | Ic-2 | AB031554 |
| 2 | Rishiri I. | HS227 | Ic-2 | AB031553 |
| 6 | Teshio | HS273 | Ic-1 | LC416877 |
| 6 | Teshio | HS274 | Ic-1 | LC416878 |
| 6 | Teshio | HS275 | Ic-1 | LC416879 |
| 8 | Enbetsu | TS00043 | Ic-1 | LC416880 |
| 8 | Enbetsu | TS00048 | Ic-1 | LC416881 |
| 9 | Haboro | TS01249 | Ic-1 | LC416882 |
| 10 | Shibetsu | TS01670 | Ic-1 | LC416883 |
| 11 | Takinoue | HEG117 | Ic-1 | AB031561 |
| 11 | Takinoue | HEG118 | Ic-1 | AB031562 |
| 11 | Takinoue | HEG121 | Ic-1 | AB031563 |
| 12 | Kitami | HTS244 | Ic-1 | LC416892 |
| 12 | Kitami | HTS319 | Ic-1 | LC416893 |
| 12 | Kitami | HTS320 | Ic-1 | LC416894 |
| 13 | Koshimizu | HS5721 | Ic-1 | LC416884 |
| 13 | Koshimizu | HS5722 | Ic-1 | LC416885 |
| 13 | Koshimizu | HS5723 | Ic-1 | LC416886 |
| 13 | Koshimizu | HS5724 | Ic-1 | LC416887 |
| 13 | Koshimizu | HS5725 | Ic-1 | LC416888 |
| 13 | Koshimizu | HS5726 | Ic-1 | LC416889 |
| 14 | Shari | KTF387 | Ic-1 | LC416890 |
| 14 | Shari | KTF389 | Ic-1 | LC416891 |
| 19 | Akan | HS619 | Ic-1 | LC416895 |
| 19 | Akan | HS620 | Ic-1 | LC416896 |
| 19 | Akan | HS621 | Ic-1 | LC416897 |
| 21 | Furano | TS01712 | Ic-1 | LC416903 |
| 22 | Bibai | TS01688 | Ic-1 | LC416898 |
| 22 | Bibai | TS01692 | Ic-1 | LC416899 |
| 22 | Bibai | TS01693 | Ic-1 | LC416900 |

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|-------------------|-------------------------|---------------|------|-----------------|
| 22 | Bibai | TS01697 | Ic-1 | LC416901 |
| 28 | Kiritappu | | Ic-1 | AB675434 |
| 29 | Nemuro | HEG141 | Ic-1 | AB031555 |
| 29 | Nemuro | HEG149 | Ic-1 | AB031556 |
| 29 | Nemuro | TS01861 | Ic-1 | LC416902 |
| 30 | Tobetsu | MRK101 | Ic-1 | AB712373 |
| 30 | Tobetsu | | Ic-1 | AB675439 |
| 30 | Tobetsu | | Ic-1 | AB675440 |
| 30 | Tobetsu | | Ic-1 | AB675441 |
| 31 | Ishikari | KTF219 | Ic-1 | LC416904 |
| 31 | Ishikari | HTS350 | Ic-1 | LC416905 |
| 31 | Ishikari | HTS380 | Ic-1 | LC416906 |
| 31 | Ishikari | IF5700 | Ic-1 | AY309416 |
| 32 | Sapporo (Jozankei) | TS00076 | Ic-1 | LC416907 |
| 32 | Sapporo (Jozankei) | TS00128 | Ic-1 | LC416908 |
| 33 | Naganuma | HS231 | Ic-1 | AB031559 |
| 33 | Naganuma | HS233 | Ic-1 | LC416909 |
| 33 | Naganuma | HS234 | Ic-1 | LC416910 |
| 33 | Naganuma | HS235 | Ic-1 | LC416911 |
| 33 | Naganuma | HS236 | Ic-1 | LC416912 |
| 34 | Kuromatsunai | KN98107 | Ic-1 | AB031557 |
| 34 | Kuromatsunai | KN98108 | Ic-1 | AB031558 |
| 34 | Kuromatsunai | HEG1 | Ic-1 | AB031560 |
| 35 | Tarumae | TS00691 | Ic-1 | LC416915 |
| 36 | Date | TS00964.1 | Ic-1 | LC416916 |
| 37 | Urakawa | TS01654 | Ic-1 | LC416913 |
| 37 | Urakawa | TS01656 | Ic-1 | LC416914 |
| 39 | Yakumo | TS00779 | Ic-1 | LC416917 |
| 39 | Yakumo | TS00783 | Ic-1 | LC416918 |
| 39 | Yakumo | TS00785 | Ic-1 | LC416919 |
| 39 | Yakumo | TS00789 | Ic-1 | LC416920 |
| <i>M. rutilus</i> | | | | |
| 4 | Sarufutsu (Onishibetsu) | TS01046 | Vc | LC458486 |
| 5 | Teshio | | Vc | KJ789512 |
| 5 | Teshio | | Vc | KJ789513 |
| 5 | Teshio | | Vc | KJ789514 |
| 12 | Koshimizu | HS5743 | Vc | LC416921 |
| 12 | Koshimizu | HS5744 | Vc | LC416922 |
| 12 | Koshimizu | HS5745 | Vc | LC416923 |
| 12 | Koshimizu | HS5746 | Vc | LC416924 |
| 12 | Koshimizu | HS5747/HTS418 | Vc | LC416925 |
| 12 | Koshimizu | HS5748/HTS419 | Vc | LC416926 |
| 12 | Koshimizu | KTF14 | Vc | LC458487 |
| 12 | Koshimizu | KTF15 | Vc | LC458488 |
| 16 | Asahikawa | KT4176 | Vc | LC458489 |
| 16 | Asahikawa | KT4178 | Vc | LC458490 |
| 17 | Biei | | Vc | AB07220 |
| 18 | Oketo | TS00627 | Vc | LC416927 |
| 20 | Kawakita | TS00850 | Vc | LC458491 |
| 23 | Mt. Upepesanke | KTF431 | Vc | LC458492 |
| 24 | Kamishihoro | TS00910 | Vc | LC416928 |
| 25 | Ashoro | | Vc | AB072208 |
| 26 | Kushiro | | Vc | AB072210 |
| 27 | Akkeshi | TS00822 | Vc | LC416929 |
| 27 | Akkeshi | TS00823 | Vc | LC416930 |
| 27 | Akkeshi | TS00826 | Vc | LC416931 |
| 27 | Akkeshi | TS00829 | Vc | LC416932 |
| 27 | Akkeshi | TS00834 | Vc | LC416933 |
| 27 | Akkeshi | TS01380 | Vc | LC458494 |
| 27 | Akkeshi | TS01405 | Vc | LC458493 |
| 27 | Akkeshi | TS00835 | Vc | LC458495 |
| 28 | Kiritappu | | Vc | AB072210 |

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|---------------------|--|---------------|---------|-----------------|
| 28 | Kiritappu | | Vc | AB072211 |
| 29 | Nemuro | | Vc | AB072213 |
| 29 | Nemuro | | Vc | AB031581 |
| 31 | Ishikari | TS01884 | Vc | LC458496 |
| 31 | Ishikari | TS01894 | Vc | LC458497 |
| Honshu, Japan | | | | |
| <i>M. andersoni</i> | | | | |
| 40 | Hirosaki, Aomori Pref. | YO96Caa-3 | IIIb | AB037281 |
| 41 | Zao, Yamagata Pref. | NK6404 | IIIb | KJ556705 |
| 41 | Zao, Yamagata Pref. | NK6405 | IIIb | KJ556706 |
| 41 | Zao, Yamagata Pref. | NK6454 | IIIb | KJ556708 |
| 42 | Urabandai, Fukushima Pref. | KT2704 | IIIb | AB037282 |
| 44 | Namie, Fukushima Pref. | KT2694 | IIIb | AB037283 |
| 46 | Myoko (Akakura), Niigata Pref. | KT4100 | IIIa | LC416934 |
| 45 | Niigata Pref. | MH5037 | IIIa | LC416935 |
| 48 | Oze, Fukushima Pref. | HEG97-98 | IIIb | AB037284 |
| 48 | Oze, Fukushima Pref. | KT2734 | IIIb | AB037285 |
| 48 | Oze, Fukushima Pref. | KT2737 | IIIb | AB037286 |
| 49 | Nikko, Tochigi Pref. | KT2690 | IIIb | AB037287 |
| 49 | Nikko, Tochigi Pref. | KT2703 | IIIb | AB037288 |
| 50 | Nagano, Nagano Pref. | KT3143 | IIIa | AB104503 |
| 50 | Nagano, Nagano Pref. | KT3144 | IIIa | AB104504 |
| 50 | Nagano, Nagano Pref. | HEG167-98 | IIIId-1 | AB104505 |
| 54 | Chino (Shimokitayama), Nagano Pref. | MH5037 | IIIa | AB037289 |
| 54 | Chino (Shimokitayama), Nagano Pref. | HEG221-98 | IIIa | AB037290 |
| 54 | Chino (Shimokitayama), Nagano Pref. | HEG222-98 | IIIa | AB037291 |
| 54 | Chino (Shimokitayama), Nagano Pref. | HEG223-98 | IIIa | AB037292 |
| 51 | Nagano Pref. | MH7114/HS5675 | IIIa | LC416936 |
| 51 | Nagano Pref. | MH7117/HS5676 | IIIa | LC416937 |
| 51 | Nagano Pref. | MH7118/HS5677 | IIIa | LC416938 |
| 51 | Nagano Pref. | MH7438/HS5678 | IIIa | LC416939 |
| 51 | Nagano Pref. | MH7439/HS5679 | IIIa | LC416940 |
| 57 | Odarumi, Yamanashi Pref. | KT3730/HS5649 | IIIa | LC416941 |
| 57 | Odarumi, Yamanashi Pref. | KT3834/HS5650 | IIIa | LC416942 |
| 57 | Odarumi, Yamanashi Pref. | KT3835/HS5651 | IIIa | LC416943 |
| 57 | Odarumi, Yamanashi Pref. | KT3837/HS5652 | IIIa | LC416944 |
| 59 | Minami-Alps (Sensui), Yamanashi Pref. | KT3701/HS5647 | IIIa | LC416945 |
| 59 | Minami-Alps (Sensui), Yamanashi Pref. | KT3710/HS5648 | IIIa | LC416946 |
| 60 | Minami-Alps (Ryomata), Yamanashi Pref. | KT3628 | IIIa | LC416947 |
| 77 | Nara Pref. | MH4834 | IIIc | LC416948 |
| 79 | Owase, Mie Pref. | MH4835 | IIIc | AB037299 |
| 79 | Owase, Mie Pref. | YO95Ei-2 | IIIa | AB037301 |
| 80 | Shimokitayama, Nara Pref. | MH4834 | IIIc | AB037298 |
| 81 | Kiwa, Mie Pref. | ZS2541 | IIIc | AB037302 |
| 81 | Kiwa, Mie Pref. | ZS2542 | IIIa | AB037303 |
| 82 | Kozagawa, Wakayama Pref. | HEG96Ei-2 | IIIa | AB037293 |
| 82 | Kozagawa, Wakayama Pref. | HEG96Ei-3 | IIIc | AB037294 |
| 82 | Kozagawa, Wakayama Pref. | HEG96Ei-5 | IIIa | AB037295 |
| 82 | Kozagawa, Wakayama Pref. | HEG169-98 | IIIc | AB037296 |
| 82 | Kozagawa, Wakayama Pref. | HEG176-98 | IIIc | AB037297 |
| <i>M. smithii</i> | | | | |
| 43 | Otama, Fukushima Pref. | HS942 | IIIId-1 | AB037304 |
| 46 | Myoko (Tsubame), Niigata Pref. | MH7485 | IIIId-1 | LC416949 |
| 46 | Myoko (Tsubame), Niigata Pref. | MH7486 | IIIId-1 | LC416950 |
| 49 | Oze, Fukushima Pref. | HES193-98 | IIIId-1 | AB037305 |
| 47 | Shigakougen, Nagano Pref. | HEG225-98 | IIIId-1 | AB037307 |
| 56 | Matsumoto, Nagano Pref. | MH7456 | IIIId-1 | LC416951 |
| 56 | Matsumoto, Nagano Pref. | MH7471 | IIIId-1 | LC416952 |
| 52 | Tomioka, Gunma Pref. | HEG224-98 | IIIId-1 | AB037306 |
| 53 | Ogano, Saitama Pref. | HS5634 | IIIId-1 | LC416953 |
| 53 | Ogano, Saitama Pref. | HS5635 | IIIId-1 | LC416954 |

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|-------------------|-------------------------------------|--------------------------|----------|-----------------|
| 55 | Hokuto (Kawamata), Yamanashi Pref. | KT3866/HS5645 | IIIId-1 | LC416955 |
| 55 | Hokuto, Yamanashi Pref. | HS5671/KY34 | IIIId-1 | LC416956 |
| 55 | Hokuto (Mizukai), Yamanashi Pref. | HS5674 | IIIId-1 | LC416957 |
| 55 | Hokuto (Masutomi), Yamanashi Pref. | HS5670/KY27 | IIIId-1 | LC416958 |
| 58 | Hinohara, Tokyo Pref. | HS5673 | IIIId-1 | LC416959 |
| 61 | Mt. Kenashi, Yamanashi Pref. | KT3709/HS5640 | IIIId-1 | LC416960 |
| 61 | Mt. Kenashi, Yamanashi Pref. | KT3732/HS5641 | IIIId-1 | LC416961 |
| 61 | Mt. Kenashi, Yamanashi Pref. | KT3822/HS5643 | IIIId-1 | LC416962 |
| 62 | Minobu, Yamanashi Pref. | KT3823/HS5644 | IIIId-1 | LC416963 |
| 63 | Kamikushiki, Yamanashi Pref. | KT3708/HS5639 | IIIId-1 | LC416964 |
| 64 | Fujinomiya, Shizuoka Pref. | KT3745/HS5642 | IIIId-1 | LC416965 |
| 64 | Fujinomiya, Shizuoka Pref. | HS5686 | IIIId-1 | LC416966 |
| 65 | Gotemba, Shizuoka Pref. | KT3965/HS5672 | IIIId-1 | LC416967 |
| 66 | Mt. Daiyu, Kanagawa Pref. | KT3699/HS5636 | IIIId-1 | LC416968 |
| 66 | Mt. Daiyu, Kanagawa Pref. | KT3707/HS5638 | IIIId-1 | LC416969 |
| 66 | Mt. Daiyu, Kanagawa Pref. | KT3705/HS5637 | IIIId-1 | LC416970 |
| 67 | Shiojiri (Sakurazawa), Nagano Pref. | MH7864 | IIIId-2 | LC416971 |
| 67 | Shiojiri (Narai), Nagano Pref. | MH7862 | IIIId-1 | LC416972 |
| 68 | Kiso, Nagano Pref. | MH7894 | IIIId-1 | LC416973 |
| 69 | Oyama, Toyama Pref. | MAI-260 | IIIId-2 | AB104506 |
| 69 | Oyama, Toyama Pref. | MAI-261 | IIIId-2 | AB104507 |
| 70 | Matsuoka, Fukui Pref. | YO94Ess-1 | IIIId-1 | AB037308 |
| 71 | Ashiu, Kyoto Pref. | HS258 | IIIId-2 | AB037310 |
| 72 | Toyooka, Hyogo Pref. | MH8143 | IIIId-2 | LC416974 |
| 73 | Mt. Daisen, Tottori Pref. | MH7514 | IIIId-2 | LC416975 |
| 73 | Mt. Daisen, Tottori Pref. | MH7515 | IIIId-2 | LC416976 |
| 73 | Mt. Daisen, Tottori Pref. | MH7550 | IIIId-2 | LC416977 |
| 73 | Mt. Daisen, Tottori Pref. | MH7551 | IIIId-2 | LC416978 |
| 73 | Mt. Daisen, Tottori Pref. | MH7552 | IIIId-2 | LC416979 |
| 73 | Mt. Daisen, Tottori Pref. | MH7576 | IIIId-2 | LC416980 |
| 73 | Mt. Daisen, Tottori Pref. | MH7578 | IIIId-2 | LC416981 |
| 74 | Simonoseki, Yamaguchi Pref. | MH7999 | IIIId-2 | LC416982 |
| 75 | Shitara, Aichi Pref. | HEG111-98 | IIIId-1 | AB037309 |
| 76 | Miyagawa, Mie Pref. | HEG96Ess-1 | IIIId-1 | AB104508 |
| 78 | Kitayamamura, Wakayama Pref. | MH10259 | IIIId-1 | LC416983 |
| Shikoku, Japan | | | | |
| <i>M. smithii</i> | | | | |
| 84 | Mt. Tsurugi, Tokushima Pref. | HEG93-97 | IV | AB037311 |
| 84 | Mt. Tsurugi, Tokushima Pref. | HEG94-97 | IV | AB037312 |
| 84 | Mt. Tsurugi, Tokushima Pref. | HEG101-98 | IV | AB037313 |
| 84 | Mt. Tsurugi, Tokushima Pref. | HEG102-98 | IV | AB037314 |
| 84 | Mt. Tsurugi, Tokushima Pref. | HS1032 | IV | AB037315 |
| Kyushu, Japan | | | | |
| <i>M. smithii</i> | | | | |
| 85 | Fukuoka, Fukuoka Pref. | HS340 | IIIId-3 | AB037316 |
| China | | | | |
| | <i>M. shanseius</i> | Ningwu County, Shanxi | SX10N049 | KY968283 |
| Korea | | | | |
| | <i>M. regulus</i> | | Ia | JN629046 |
| Russia | | | | |
| | <i>M. rufocanus</i> | Russian continental part | Ib | AB676836 |
| | | Sakhalin | Ib | AB031576 |
| | <i>M. rutilus</i> | Russian continental part | Va | AB072219 |
| | | Sakhalin | Vb | AB072223 |
| China | | | | |
| | <i>Eothenomys eva</i> | | | KX354157 |
| | <i>Eothenomys chinensis</i> | | | HM165437 |

*The numbers indicate collection sites of Japan, as are shown in Fig. 1.

**Accession numbers in bold represent sequences newly determined in this study.