INVASIONS OF CAVE CAMEL CRICKETS OF THE GENUS *TACHYCINES* ADELUNG, 1902 (ORTHOPTERA: RHAPHIDOPHORIDAE) INTO RUSSIA: A HISTORICAL ASPECT

© 2025 Lapteva S.V.[1,a], Sergeev M.G.[2,b, c*], Molodtsov V.V.[3,b], Storozhenko S.Yu.[4,a]

[a]Federal Scientific Center of the East Asia Terrestrial Biodiversity, Far Eastern Branch of the Russian Academy of Sciences, Vladivostok, 690022 Russia
[b]Novosibirsk State University, Novosibirsk, 630090 Russia
[c]Institute of Systematics and Ecology of Animals, Siberian Branch, Russian Academy of Sciences, Novosibirsk, 630091 Russia
e-mail:[1]lapteva.sv24@gmail.com, [2]mgs@fen.nsu.ru; [3]vv@fen.nsu.ru, [4]storozhenko@biosoil.ru

Received July 2, 2025 ; revised October 1, 2025; accepted November 17, 2025

The invasion of the species of the genus *Tachycines* into Russia occurred at the end of the 19th century, when *T. asynamorus* was discovered in St. Petersburg. Almost 100 years later, another species of this genus, *T. coreanus*, was found in the Russian Far East. Data on the history of the distribution of these two synanthropic species are presented, as well as information about their behavior, biology and ecology.

Key words: Rhaphidophoridae, Aemodogryllinae, *Tachycines asynamorus*, *Tachycines coreanus*, biological invasion, Primorsky Territory, European part of Russia
DOI: 10.35885/1996-1499-18-4-168-170

Full text of the paper is published in Russian Journal of Biological Invasions. DOI: 10.31857/S207511172104XXXYYY

REFERENCES

Adelung, N. Beitrag zur Kenntnis der paläarctischen Stenopelmatiden (Orthoptera, Locustodea). Annuaire du Musée Zoology de L′Académie Impériale des Sciences de St.-Pétersburg, 1902, Bd. 7, No. 1–2, S. 55–75.

Albrecht, A. Utbredningen av rätvingar, kackerlackor och tverstjärtar i Östra Fennoskandien (Orthoptera, Blattodea, Dermaptera). Notulae entomologicae, 1979, vol. 59, pp. 53–64.

Beloselskaya, Z.G., and Silvestrov, A.D. Pests and diseases of flower and greenhouse plants, Moscow and Leningrad: Selkhozgiz, 1953. 208 p. (in Russian)

Boas, J.E.V. Skadelige insekter i vore haver, København: Chr. J. Catos Bog &Stentrykkeri, 1906. 74 p.

Boldyrev, V.F. *Tachycines asynamorus* Adel. (Orthoptera, Stenopelmatidae) and *Periplaneta australasiae* Fabr. (Orth., Periplanetidae) in greenhouses of Moscow. Revue Russe d'Entomologie, 1911, vol. 11, no. 4, pp. 437–443. (in Russian)

Boldyrev, V.F. The method of fertilization and spermatophore of *Tachycines asynamorus* Adel. (Orthoptera, Stenopelmatidae). Revue Russe d'Entomologie, 1912, vol. 12, no. 3, pp. 552–570. (in Russian)

Chopard, L. Note sur l'introduction en France de *Diestrammena unicolor* Br., nec *D. marmorata* (Haan), (Orth. Phasgonuridae). Bulletin du Muséum National D'Histoire Naturelle, 1913, t. 19, pp. 433–436.

Chopard, L. Sur l'origine de *Tachycines asynamorus* Adelung, Orthoptera Phasgonuridae. Bulletin du Muséum National D'Histoire Naturelle, 1914, t. 20, pp. 234–235.

Cigliano, M.M., Braun, H., Eades, D.C., and Otte, D. Orthoptera Species File. Taxonomic database of the world's grasshoppers, locusts, katydids, crickets, and related insects. 2025. Available at: https://orthoptera.speciesfile.org/ (accessed April 3, 2025).

Epps, M.J., Menninger, H.L., LaSala, N., and Dunn, R.R. Too big to be noticed: cryptic invasion of Asian camel crickets in North American houses. PeerJ, 2014, vol. 2, e523. https://doi.org/10.7717/peerj.523

Feigl, R. Eine Heuschreckenart als Schädling in unseren Warmhauskulturen. Österreichische Garten-Zeitung, 1909, bd. 4, s. 457.

Gailis, J., Kalniņš, M., and Telnov, D. New records on synanthropic Blattoptera and Orthoptera in Latvia. Latvijas Entomologs, 2003, vol. 40, pp. 34–36.

GBIF. *Tachycines asynamorus* Adelung, 1902. 2025a. GBIF Occurrence Download (accessed July 23, 2025). https://doi.org/10.15468/dl.wjyhdu

GBIF. *Tachycines coreanus* Yamasaki, 1969. 2025b. GBIF Occurrence Download (accessed July 23, 2025). https://doi.org/10.15468/dl.cqysfa

Ichikawa, A., Kano, Y., Kawai, M., Tominago, O., and Murai, T. Orthoptera of the Japanese Archipelago in color. Hokkaido: Hokkaido University Press, 2006. 687 p. (in Japanese)

Ingrisch, S., and Köhler, G. Die Heuschrecken Mitteleuropas. Madgeburg: Westarp Wissenschaften, 1998. 460 S.

Karmazina, I.O., Usmanov, N.V., and Shulaev, N.B. Data on the first finds of the greenhouse camel cricket *Tachycines* (*Diestrammena*) *asynamorus* Adelung, 1902 (Orthoptera,

Rhaphidophoridae) in the Republic of Tatarstan. Transactions of the Kazan Branch of the Russian Entomological Society, 2020, issue 6, pp. 9–13. (in Russian)

Khlyap, L.A., and Warshavsky, A.A. Synanthropic and agrophilic rodents as invasive alien mammals. Russian Journal of Biological Invasions, 2010, vol. 1, no. 4, pp. 301–312. https://doi.org/10.1134/S2075111710040089

Kim, D.-Y., Kim S., Song, H., and Shin, S. Phylogeny and biogeography of the wingless orthopteran family Rhaphidophoridae. Communication Biology, 2024, vol. 7, no. 2, pp. 1–11. https://doi.org/10.1038/s42003-024-06068-x

Kim, J.-I., and Kim, T.-W. Taxonomic study of Korean Stenopelmatoidea (Orthoptera: Ensifera). Korean Journal of Entomology, 2002, vol. 32, no. 3, pp. 141–151.

Kim, T.-W. A taxonomic review of the Korean Orthoptera. Theses of the PhD dissertation, Seoul: Sungshin Women's University, 2007, 370 p.

Kopysov, V.A. On the fauna of Orthoptera of the Kirov region. Scientific notes. Faculty of Natural Geography, Department of Zoology, 1970, issue 31, pp. 28–45. (in Russian)

Kryshtal, A.F. Order Orthoptera, in Pests of agricultural crops and forest plantations: Vol. 1. Harmful nematodes, mollusks, arthropods. Dolin, V.G., Ed., Kiev: Urozhai, 1987, pp. 133–440. (in Russian)

Kudryashov, D.V., and Polumordvinov, O.A. Greenhouse camel cricket *Diestrammena* (*Tachycines*) *asynamorus* Ad. — a new synanthropic species of the Middle Volga region. Entomological and parasitological studies in the Volga region: collection of scientific papers. Saratov: Publishing House of Saratov University, 2006, no. 5, pp. 123–124. (in Russian)

Kulessa, A.K., Balzani, P., Soto, I., Kouba, A., Renault, D., Tarkan, A.S., and Haubrock, P.J. The neglect of nonnative orthopterans as potential invaders: A call for awareness. Insect Science, 2024, vol. 31, pp. 994–1000. https://doi.org/10.1111/1744-7917.13277

Lapteva, S.V. Orthoptera of the Muravyov-Amursky Peninsula and adjacent islands of the Peter the Great Gulf, Primorsky Territory. A.I. Kurentsov's Annual Memorial Meetings. 2024, issue 35, pp. 87–103. (in Russian) https://doi.org/10.25221/kurentzov.35.6

Lapteva, S.V., and Storozhenko, S.Yu. To the knowledge of the genus *Tachycines* (Orthoptera: Rhaphidophoridae: Aemodogryllinae). Caucasian Entomological Bulletin, 2024, vol. 20, no. 2, pp. 229–232. https://doi.org/10.5281/zenodo.14197613

Lee, D.-Y., Jeong, I., Kim, S., Choi, J.W., Won, M.H., Kim, D., Kim, D., Kim Y.-K., Jeon, J., Ryu, J., Bang, W., Chang, J.H., and Choi, K.S. Checklist for the insect fauna of two East Sea Islands (Ulleungdo Is. and Dokdo Is.) in the Republic of Korea. Biodiversity Data Journal, 2024, vol. 12, e129360. https://doi.org/10.3897/BDJ.12.e129360

Marshall, J.A. The British Orthoptera since 1800, in The changing flora and fauna of Britain. Hawksworth, D.L., Ed., London and New York: Academic Press, 1974, pp. 307–322.

Massa, B., Fontana, P., Buzzetti, F.M., Kleukers, R., and Odé, B. Fauna d'Italia. Vol. XLVIII. Orthoptera. Milano, Calderini, 2012, 563 p.

Mistshenko, L.L. Orthoptera (Saltatoria), in Insects and Mites – Pests of Agriculture Crops, Kryzhanovsky, O.L., and Danzig, E.M., Eds., Leningrad: Nauka Publ., 1972, vol. 1, pp. 16–115. (in Russian)

Petrosyan, V., Osipov, F., Feniova, I., Dergunova, N., Warshavsky, A., Khlyap, L., and Dzialowski, A. The TOP-100 most dangerous invasive alien species in Northern Eurasia: invasion trends and species distribution modelling. NeoBiota, 2023, vol. 82, pp. 23–56. https://doi.org/10.3897/neobiota.82.96282

Rehn, J.A.G. The rhaphidophorid *Tachycines asynamora* Adelung. Entomological News, 1944, vol. 55, no. 2, pp. 36–39.

Shea, K., and Chesson, P. Community ecology theory as a framework for biological invasions. Trends in Ecology & Evolution, 2002, vol. 17, no. 4, pp. 170–176. https://doi.org/10.1016/S0169-5347(02)02495-3

Simberloff, D., Martin, J.-L., Genovesi, P., Maris, V., Wardle, D.A., Aronson, J., Courchamp, F., Galil, B., García-Berthou, E., Pascal, M., Pyšek, P., Sousa, R., Tabacchi, E., and Vilà, M. Impacts of biological invasions: what's what and the way forward. Trends in Ecology and Evolution, 2013, vol. 28, no. 1, p. 58–66. https://doi.org/10.1016/j.tree.2012.07.013

Skejo, J., Rebrina, F., Szövényi, G., Puskás, G., and Tvrtković, N. The first annotated checklist of Croatian crickets and grasshoppers (Orthoptera: Ensifera, Caelifera). Zootaxa, 2018, vol. 4533, no. 1, pp. 1–95. https://doi.org/10.11646/zootaxa.4533.1.1

Smith, D., Hill, G., Kenward, H., and Allison, E. Development of synanthropic beetle faunas over the last 9000 years in the British Isles. Journal of Archaeological Science, 2020, vol. 115, 105075. https://doi.org/10.1016/j.jas.2020.105075

Storozhenko, S.Yu. Long-horned Orthoptera (Orthoptera: Ensifera) of the Asian part of Ru*ssia*. Vladivostok: Dalnauka, 2004, 280 p. (in Russian)

Storozhenko, S.Yu. *Diestrammena coreana* (Yamasaki, 1969) is newly recorded cave-cricket species (Orthoptera, Rhaphidophoridae) from Russia. Far Eastern Entomologist, 2008, no. 188, p. 8.

Storozhenko, S.Yu., Kim, T.W., and Jeon, M.J. Monograph of Korean Orthoptera. Korea: Doohyuh Publishing Co., 2015, 377 p.

Sutton, P.G., Beckmann, B.C., and Nelson, B. The current status of orthopteroid insects in Britain and Ireland. Atropos, 2017, vol. 59, pp. 28–29.

Vickery, V.R., and Kevan D.K.McE. A monograph of the orthopteroid insects of Canada and adjacent regions. Memoirs of the Lyman Entomological Museum and Research Laboratory, 1983, vol. 13, no. 1, pp. 1–679.

Won, M.H., Choi, J.W., Bang, W., Lee, D., Moon, M.K., Kim, Y.-K., Kim, D., Kim, D., Suh, S.J., and Choi, K.S. Insect fauna including unrecorded species in Ulleungdo, South Korea. Biodiversity Data Journal, 2023, vol. 11, e100783. https://doi.org/10.3897/BDJ.11.e100783

Yamamoto, A., and Ito, G. An alien cave cricket, *Diestrammena (Tachycines) coreana* (Orthoptera: Rhaphidophoridae) introduced to Otaru City, Hokkaido, Japan. Japanese Journal of Entomology (New Series), 2020, vol. 23, no. 4, pp. 139–142. (in Japanese)

Yamasaki, T. Results of the speleological survey in South Korea 1966. XVII. Cave-dwelling camel crickets from South Korea. Bulletin of the National Science Museum, 1969, vol. 12, pp. 615–621.

Żurawlew, P., Rozwałka, R., and Brodacki, M. Occurrence of the greenhouse camel cricket *Tachycines asynamorus* Adelung, 1902 (Orthoptera: Rhaphidophoridae) in Poland. Fragmenta Faunistica, 2022, vol. 65, no. 1, pp. 95–102. https://doi.org/10.3161/00159301FF2022.65.1.095