

Systematic Interpretation and Morphometrical Analysis of Collembolas Occurred in the Soil Layers of Southern Uzbekistan

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Annotation. In this scientific article, 36 species of collembolas were found in the soil layers of 0-10 cm, 10-20 cm and 20-30 cm of wheat and cotton agrocenoses and natural ecosystems of southern Uzbekistan. These species, namely collembolas, belong to 3 subfamilies (Poduomorpha, Entomobryomorpha, Neelipleona), 8 families (Hypogastruridae, Onychiuridae, Neanuridae, Odontellidae, Isotomidae, Entomobryidae, Poduridae, Neelidae) and 30 Generations of (Willemia, Xenylla, Hypogastrura, Typhlogastrura, Haloxenylla, Metaphorura, Ongulonychiurus, Lophognathella, Supraphorura, Onychiurus, Axenyllodes, Xenyllodes, Adbiloba, Pseudachorutes, Archisotoma, Folsomia, Proisotoma, Vertagopus, Agrenla, Pseudofolsomia, Folsomides, Folsomina, Isotoma, Isotomodes, Isotomiella, Metisotoma, Heteromurus, Orchesellides, Tomocerus, Neelus) the Collembola family.

The territory of Southern Uzbekistan differs in the type and quantity of collembola communities in different agrocenoses and natural ecosystem soils. According to this, there are scientific data on the presence of 29 species of collembolas in the soil layers of wheat fields, 19 types of collembolas in the soil layers of cotton fields.

Keywords: collembola, agrocenosis, natural ecosystem, wheat, cotton, soil layers.

Introduction. Collembolas are one of the oldest insects in the world and despite their role in the metabolism, soil condition assessment and soil formation in nature, some species in different regions of the world cause avitilliosis in farm animals due to their intermediate hosting nature for parasites [1, 7, 8]. In many countries around the world, a number of scientific studies are being conducted to determine the role of collembolas in assessing soil condition, studying the characteristics of intermediate hosts, their

participation in the metabolism of residual substances in the soil [2, 3, 6]. Accordingly, the agrocenoses and natural ecosystems of southern Uzbekistan are of great scientific and practical importance as the leading direction of fundamental entomology in determining the fauna of collembolas in the soil layers and assessing the ecological and taxonomic composition, identification of intermediate hosts [4,5,9].

Research materials and methods. Research materials for 2017-2020 in Shurchi district of Surkhandarya region “Yuldosh khoji BIB”, “Firdavs Temurbek”, “Usarbobo”, “Sevinch Mardonova”, Termez district “Sharof Mohinur”, “Zuhriddin namuna”, “Gozobod sample ”,“ Durдона sample ”,“ Nurmuhammad sample ”farms and“ Ortik ”farm of Yakkabag district of Kashkadarya region,“ Khudoikulova Nazira Bozorovna ”farm of Shakhrisabz were collected from agrocenoses and natural ecosystem soil layers. Samples were taken from soils of agrocenoses and natural ecosystems 0-10 cm, 10-20 cm, 20-30 cm. A total of 828 samples were taken from the layers in an amount of 1 dm³.

Results obtained and their analysis. As a result of a comprehensive study of collembolas in the soils of agrocenoses and natural ecosystems of southern Uzbekistan, the total number of identified collembolas in southern Uzbekistan consists of 36 species, 30 Generations, 8 families and 3 subfamilies.

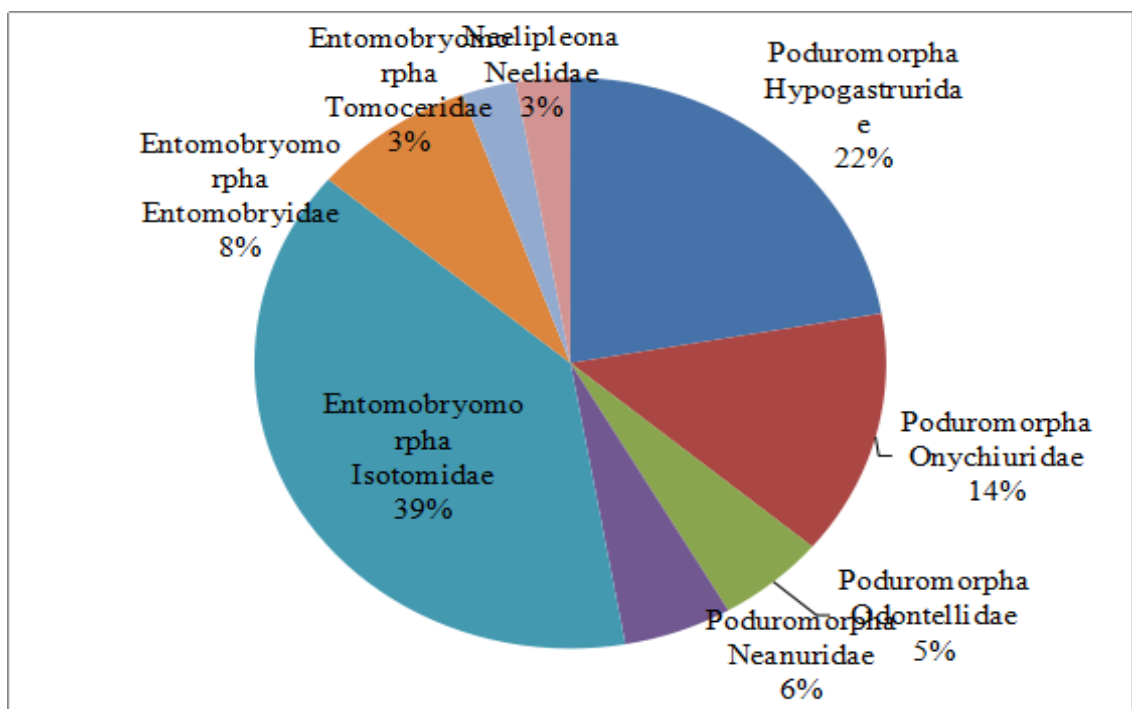


Figure 1. The taxonomic structure of the Collembola series.

According to the above-mentioned taxonomic composition of collembolas, materials representing the morphology of the species and its distribution in the soil layers are given.

Class: Insecta Linnaeus, 1758

Category: Collembola Lubbock, 1871

Junior species: Poduromorpha Börner, 1906

Family: Hypogastruridae Börner, 1906

1. Generation: Willemia Börner, 1901

Willemia denisi Mills, 1932.

41 copies were identified of 0-10 cm, 10-20 cm, 20-30 cm soil layers of wheat agrocenoses of Yakkabag, Shakhrisabz districts: 28♀, 13♂ (9.12.2017, 13.01.2018, 23.03.2018, 20.06.2018, 2.10.2018, 10.03.2019, 14.08.2019, 10.12.2019 y).

42 copies were found of 0-10 cm, 10-20 cm, 20-30 cm soil layers of cotton agrocenoses of Shurchi and Termez districts: 28♀, 14♂ (12.01.2018, 22.03.2018, 19.06.2018, 1.10.2018, 9.03.2019, 12.08.2019, 1.10.2019, 4.01.2020 y).

2. Generation: Xenylla Tulberg, 1869

Xenylla schillei Börner, 1903.

39 copies were found in 0-10 cm, 10-20 cm soil layers of wheat agrocenoses in Shurchi and Termez districts: 23♀, 16♂ (9.12.2017, 12.01.2018, 22.03.2018, 19.06.2018, 13.09.2019, 4.01.2020 y). 35 copies were identified of 0-10 cm, 10-20 cm, 20-30 cm soil layers of wheat agrocenoses in Yakkabag, Shakhrisabz districts: 21♀, 14♂ (10.12.2017, 9.03.2019, 14.08.2019, 1.10.2019, 5.01.2020 y).

3. Generation: Hypogastrura Bourlen, 1839

Hypogastrura (Hypogastrura) tullbergi Schiiffer, 1900.

39 copies were found in 0-10 cm, 10-20 cm soil layers of wheat agrocenoses located in Shurchi and Termez districts: 23♀, 17♂ (13.09.2019, 4.01.2020) and natural ecosystem 0-10 cm, 10-20 cm 42 copies were found in the soil layers: 23♀, 19♂ (12.01.2018, 22.03.2018, 19.06.2018, 13.09.2019). 35 copies were found in 0-10 cm, 10-20 cm soil layers of wheat agrocenoses in Yakkabag and Shakhrisabz districts: 21♀, 14♂ (14.08.2019, 2.10.2019, 5.01.2020) and 0-10 cm of natural ecosystem soils. In the layers of 10-20 cm, 49 copies were found: 29♀, 20♂ (9.03.2019, 14.08.2019, 2.10.2019, 5.01.2020).

4. Generation: Typhlogastrura Bonet, 1930

Hypogastrura (Typhlogastrura) mendisabali Bonet, 1930.

46 copies were found in 0-10 cm, 10-20 cm layers of soils of natural ecosystems of Shurchi and Termez districts: 27♀, 19♂ (12.01.2018, 22.03.2018, 19.06.2018, 1.10.2018, 9.03.2019). The occurrence of 42 copies: 29♀, 13♂ (10.01.2019, 10.03.2019, 14.08.2019) in the soils of natural ecosystems of Yakkabag and Shakhrisabz districts was determined in layers of 0-10 cm, 20-30 cm.

5. Generation: *Hypogastrura* Bourlet, 1839

Hypogastrura assimilis Krausbauer, 1898.

42 copies were found in 0-10 cm, 10-20 cm layers of soils of natural ecosystems of Yakkabag, Shakhrisabz districts: 25♀, 17♂ (10.01.2019, 9.03.2019, 14.08.2019, 2.10.2019) and 148 copies were found of cotton agroecosystem in 10 cm, 10-20 cm, 20-30 cm soil layers: 91♀, 57♂ (10.01.2019, 9.03.2019). 35 copies of wheat agroecosystems were found in 10-20 cm of soil layers of Shurchi and Termez districts: 21♀, 14♂ (9.01.2018, 9.03.2019, 11.08.2019, 1.10.2019) and 0-10 cm, 10-135 copies were identified in 20 cm, 20-30 cm soil layers: 71♀, 64♂ (11.08.2019) Natural ecosystem 0-10 cm, 35 copies in 10-20 cm soil layers: 25♀, 10♂ (9.01.2018 y).

6. Generation: *Haloxenylla* Gama et Deharveng, 1984

Xenylla affiniformis Schat, 1930.

45 copies of 0-10 cm, 10-20 cm layers of soils of natural ecosystems of Yakkabag, Shakhrisabz districts were identified: 29♀, 16♂ (10.01.2019, 9.03.2019, 14.08.2019) and 0-10 cm, 10 of cotton agroecosystems -20 cm, 39 copies from soil layers: 25♀, 14♂ (13.01.2018, 9.03.2019), 10-20 cm from wheat agroecosystems, 33 copies from soil layers of 20-30 cm: 20♀, 13♂ (4.10. 2019, 5.01.2020). 35 copies of 0-10 cm, 10-20 cm soil layers of cotton agroecosystems of Shurchi and Termez districts: 18♀, 17♂ (11.08.2019, 4.01.2020) were identified and 0-10 cm, 10-20 cm of soils of natural ecosystems 47 copies were found in the layers: 29♀, 18♂ (12.01.2018, 1.10.2019).

7. Generation: *Xenylla* Tullberg, 1869

Xenylla maritima Tullberg, 1869.

182 copies of 10-20 cm, 20-30 cm layers of soils of wheat agroecosystems of Shurchi and Termez districts: 95♀, 87♂ (10.01.2019, 23.03.2018, 19.06.2018) and 0-10 cm of soils of natural ecosystems, 315 copies were found in layers of 10-20

cm: 173♀, 142♂ (12.01.2018, 23.03.2018, 1.10.2018, 11.08.2019).

145 copies were found of 10-20 cm, 20-30 cm layers of soils of wheat agroecosystems of Yakkabag, Shakhrisabz districts: 85♀, 60♂ (13.01.2019, 10.03.2019), natural ecosystem 0-10 cm, 20-30 cm of soil 363 copies were identified in the strata: 183♀, 180♂ (9.03.2019, 5.01.2020).

8. Generation: Hypogastrura Bourlen, 1839

Hypogastrura (Achorutes) viaticus Tullberg, 1872.

33 copies were found in 10-20 cm, 20-30 cm soil layers of cotton agroecosystems of Shurchi and Termez districts: 18♀, 15♂ (23.03.2018, 19.06.2018, 9.03.2019), natural ecosystem 0-10 cm, 20-30 cm soil layers were identified: 19♀, 17♂ (19.06.2018, 11.08.2019). The natural ecosystem located in Yakkabag, Shakhrisabz districts 44 copies were found in 0-10 cm, 20-30 cm soil layers with: 24♀, 20♂ (10.03.2019, 14.08.2019, 2.10.2019).

Family: Onychiuridae Salmon, 1964

9. Generation: *Metaphorura* Stach, 1964

Metaphorura affinis Börner, 1902.

48 copies were found in 0-10 cm, 10-20 cm soil layers of cotton agroecosystems of Shurchi and Termez districts: 21♀, 27♂ (23.03.2018, 19.06.2018, 1.01.2019), natural ecosystem 0-10 cm, 10-20 cm soil layers were found: 25♀, 19♂ (12.01.2018, 23.03.2018, 6.10.2018, 11.08.2019). Natural ecosystem located in Yakkabag, Shakhrisabz districts 10-20 cm, 20-30 cm from soil layers 45 copies: 20♀, 35♂ (13.01.2018, 10.03.2019), 0-10 cm, 10-20 cm of wheat agroecosystem, 53 copies were found in 20-30 cm soil layers: 31♀, 22♂ (13.01.2018, 23.03.2018, 20.06.2018) and 35 copies in 0-10 cm, 10-20 cm soil layers of cotton agroecosystems: 19♀, 16♂ (23.03.2018, 20.06.2018) were identified.

10. Generation: *Ongulonychiurus* Thibaud et Massoud, 1986.

Ongulonychiurus colpus Thibaud et Massoud, 1986.

46 copies of 28-10, 18♂ (10.03.2019, 14.08.2019, 2.10.2019, 5.01.2020) were found in 0-10 cm, 10-20 cm layers of soils of natural ecosystems of Yakkabag, Shakhrisabz districts, 0 copies of cotton agroecosystems 10 cm, 10-20 cm, 35 copies from soil layers: 21♀, 14♂ (10.03.2019, 14.08.2019), 45 copies from soil layers of wheat agroecosystems 10-20 cm, 20-30 cm: 25♀, 20♂ (10.03.2019, 2.10.2019). 45 copies of 0-10 cm, 10-20 cm soil layers of cotton agroecosystem of Shurchi and Termez districts were found: 28♀, 17♂ (12.01.2018, 22.03.2018, 19.06.2018, 11.08.2019) and natural ecosystem 0- In the soil layers of 10 cm, 20-

30 cm, 354 copies were found: 23♀, 11♂ (11.08.2019, 1.10.2019).

11. Generation: Lophognathella Börner, 1908

Lophognathella choreutes Börner, 1908.

Natural ecosystem in Shurchi, Termez districts 0-10 cm, 10-20 cm 43 copies from soil layers: 22♀, 21♂ (12.01.2018, 9.03.2019, 13.08.2019), 10-20 cm, 20 of cotton agroecosystems -30 cm, 38 copies from soil layers: 21♀, 17♂ (22.03.2018, 1.10.2018, 9.03.2019), 10-20 cm from wheat agroecosystems, 40 copies from 20-30 cm soil layers: 21♀, 19♂ (1.10.2019) Found. 43 copies of 10-20 cm, 20-30 cm soil layers of cotton agroecosystems of Yakkabog, Shakhrisabz districts: 28♀, 15♂ (14.08.2019, 2.10.2019), natural ecosystem 10-20 cm, 20-30 cm from soil layers 37 copies: 29♀, 8♂ (14.08.2019, 2.10.2019), 25 copies were identified in the soil layers of wheat agroecosystems 10-20 cm, 20-30 cm: 18♀, 7♂ (10.03.2019, 2.10.2019 y).

12. Generation: Supraphorura Börner, 1901

Supraphorura furcifera Börner, 1901.

43 copies of 0-10 cm, 10-20 cm layers of soils of natural ecosystems of Shurchi and Termez districts: 25♀, 18♂ (12.01.2018, 9.03.2019, 13.08.2019), 0-10 cm, 10- of wheat agroecosystems 34 copies were found in 20 cm soil layers: 15♀, 19♂ (19.06.2018, 12.08.2019, 1.10.2019). Natural ecosystems of Yakkabog, Shakhrisabz districts 0-10 cm, 10-20 cm from soil layers 38 copies: 29♀, 9♂ (23.03.2018, 14.08.2019, 2.10.2019), wheat agroecosystems 0-10 cm, 10- 37 copies were found in 20 cm soil layers: 21♀, 16♂ (2.10.2019, 5.01.2020).

13. Generation: Onychiurus Martyanova, 1976.

Onychiurus taimyrica Martyanova, 1976.

34 copies of 0-10 cm, 10-20 cm soil layers of natural ecosystems of Yakkabog, Shakhrisabz districts: 22♀, 12♂ (12.01.2018, 9.03.2019, 14.08.2019), 0-10 cm, 10- of wheat agroecosystems 40 specimens were found in 20 cm soil layers: 21♀, 19♂ (10.03.2019, 4.10.2019). 41 copies in 0-10 cm, 10-20 cm soil layers of natural ecosystems in Shurchi and Termez districts: 29♀, 12♂ (22.03.2018, 10.03.2019, 2.10.2019)

Family: Odontellidae Massoud 1967

14. Generation: Axenyllodes Stach, 1949

Axenyllodes bayeri Kseneman, 1935.

Natural ecosystem of Shurchi, Termez districts 10-20 cm, 20-30 cm from soil layers 37 copies: 25♀, 12♂ (12.01.2018, 9.03.2019, 14.08.2019), 0-10 cm of

wheat agroecosystems, 10- 47 copies of 20 cm, 20-30 cm soil layers: 32♀, 15♂ (22.03.2018, 1.10.2019), 46 copies of 10-20 cm, 20-30cm soil layers of cotton agroecosystems: 31♀, 15♂ (19.06.2018, 12.08.2019, 1.10.2019), 38 copies of natural ecosystem 0-10 cm, 10-20 cm soil layers in Yakkabag, Shakhrisabz districts: 29♀, 9♂ (10.03.2019, 14.08.2019, 1.10.2019), 47 copies of 0-10 cm, 10-20 cm, 20-30 cm soil layers of wheat agroecosystems: 22♀, 10♂ (20.06.2018, 10.03.2019, 2.10.2019), cotton agroecosystems in the soil layers of 10 cm, 10-20 cm, 35 copies were found: 21♀, 14♂ (20.06.2018, 10.03.2019, 14.08.2019, 2.10.2019).

15. Generation: Xenyllodes Axelson, 1903

Xenyllodes armatus Axelson, 1903.

39 copies of 0-10 cm, 20-30 cm soil layers of natural ecosystems of Termez and Shurchi districts: 25♀, 14♂ (23.03.2018, 19.06.2018, 1.01.2019), 0-10cm, 10-20 of cotton agroecosystems cm, 39 copies of soil layers of 20-30cm: 31♀, 8♂ (23.03.2018, 19.06.2018, 1.01.2019) were found. The natural ecosystem in Yakkabag and Shakhrisabz districts was found to be 34 copies in 10-20 cm, 20-30 cm soil layers: 19♀, 15♂ (20.06.2018, 10.03.2019, 2.10.2019).

Family: Neanuridae Deharaverg, 1983

16. Generation: Adbiloba Stach, 1951 sensu Cassagnau, 1979

Achorutes sokolowi Philipschenko, 1926.

34 copies of 0-10 cm, 20-30 cm soil layers of natural ecosystems of Yakkabag, Shakhrisabz districts: 14♀, 10♂ (13.01.2018, 10.03.2019, 14.08.2019), 10-20 cm, 20- of wheat agroecosystems 42 copies were found in 30cm soil layers: 22♀, 20♂ (20.06.2018, 10.03.2019, 2.10.2019, y.). Natural ecosystems in Termez, Shurchi districts 10-20 cm, 20-30 cm from soil layers 38 copies: 19♀, 19♂ (1.10.2018, 9.03.2019, 12.08.2019), 10-20 cm, 20-30 cm of wheat agroecosystems 38 copies were found in the soil layers: 22♀, 16♂ (23.03.2018, 19.06.2018, 1.10.2019).

17. Generation: Pseudachorutes Tullberg, 1871

Pseudachorutes subcrassus Tullberg, 1871.

31 copies from 0-10 cm, 20-30 cm soil layers of natural ecosystems of Termez, Shurchi districts: 19♀, 12♂ (1.10.2018, 9.03.2019, 12.08.2019) 0-10 cm, 10-20 cm of wheat agroecosystems, 36 copies were found in 20-30cm soil layers: 21♀, 15♂ (22.03.2018, 19.06.2018, 1.10.2018, 9.03.2019). Natural ecosystem from Yakkabag, Shakhrisabz districts 0-10 cm, 20-30 cm in soil layers 36 copies: 21♀, 15♂ (13.01.2018, 23.03.2018, 20.06.2018, 14.08.2019), 0-10cm of wheat agroecosystems, 38 copies of 10-20 cm, 20-30 cm soil layers were found to meet: 21♀,

17♂ (23.03.2018, 10.03.2019, 2.10.2019).

Junior species: Entomobryomorpha Börner, 1913

Оила: Isotomidae Martinova, 1971

18. Generation: Archisotoma Linnaniemi, 1912

Isotoma besselsi Packard, 1877.

39 copies of 0-10 cm, 10-20 cm soil layers of natural ecosystems of Termez and Shurchi districts: 19♀, 20♂ (12.01.2018, 22.03.2018, 12.08.2019, 1.10.2019), 0-10 cm of wheat agrocenoses, 49 copies of 10-20 cm, 20-30cm soil layers were found: 21♀, 28♂ (12.01.2018, 22.03.2018, 9.03.2019, 1.10.2019). 43 copies of 0-10 cm, 20-30 cm soil layers of natural ecosystems in Yakkabag, Shakhrisabz districts: 21♀, 22♂ (23.03.2018, 20.06.2018, 2.10.2018, 10.03.2019), 10-20 cm of wheat agrocenoses, 47 copies were found in 20-30cm soil layers: 21♀, 26♂ (13.01.2018, 23.03.2018, 10.03.2019, 2.10.2019y).

19. Generation: Folsomia Willem, 1902

Folsomia nana Gisin, 1957.

41 copies: 21♀, 20♂ (19.06.2018, 22.03.2018, 1.10.2018, 1.10.2019) were found in 0-10cm, 20-30cm soil layers of cotton agrocenoses of Termez and Shurchi districts. In Yakkabag and Shakhrisabz districts, cotton agrocenoses were found in 0-10 cm, 20-30 cm soil layers in 41 copies: 21♀, 20♂ (20.06.2018, 10.03.2019, 2.10.2019).

20. Generation: Proisotoma Börner, 1901

Isotoma minuta Tullberg, 1871.

47 copies were found in 0-10cm, 20-30cm soil layers of cotton agrocenoses of Termez and Shurchi districts: 27♀, 20♂ (12.01.2018, 19.06.2018, 12.08.2019, 1.10.2019). The occurrence of cotton agrocenoses in Yakkabag and Shakhrisabz districts in 0-10 cm, 20-30 cm soil layers was 48 copies: 27♀, 21♂ (13.01.2018, 20.06.2018, 14.08.2019, 1.10.2019).

21. Generation: Proisotoma, Christiansen et Bellinger, 1980

Proisotoma vesiculata Folsom, 1937.

38 copies of 10-20cm, 20-30cm soil layers of cotton agrocenoses of Termez, Shurchi districts: 21♀, 17♂ (19.06.2018, 12.08.2019, 1.10.2019), 10-20 cm of cotton agrocenoses of Yakkabag, Shakhrisabz districts, 39 copies from 20-30cm layers: 27♀, 12♂ (20.06.2018, 14.08.2019, 1.10.2019), 42 copies in 0-10cm, 10-20 cm, 20-30cm soil layers of wheat agrocenoses: 27♀, 15♂ (23.03.2018, 10.03.2019, 1.10.2019).

22. Generation: Vertagopus Borner, 1906

Desoria cinerea Nicolet, 1842.

36 copies of 10-20 cm, 20-30 cm layers of soils of natural ecosystems of Shurchi and Termez districts: 24♀, 12♂ (5.01.2020, 9.03.2019, 14.08.2019), 0-10 cm of wheat agroecosystems, 10- 52 copies of 20 cm, 20-30 cm soil layers: 37♀, 15♂ (22.03.2018, 9.03.2019, 4.10.2019), 0-10 cm of cotton agroecosystems, 49 copies of 20-30 cm soil layers: 29♀, 20♂ (9.03.2019, 12.08.2019, 1.10.2019), 36 copies of 10-20 cm, 20-30 cm soil layers of natural ecosystems in Yakkabag, Shakhrisabz districts: 27♀, 9♂ (10.03.2019, 14.08.2019 , 1.10.2019), 41 copies of 0-10 cm, 20-30 cm soil layers of cotton agroecosystems: 21♀, 20♂ (10.03.2019, 14.08.2019, 2.10.2019), 10-20 of wheat agroecosystems cm, 20-30cm in soil layers 39 copies: 27♀, 12♂ (23.003.2018, 20.06.2018, 2.10.2019) were found.

23. Generation: Agrenla Borner, 1906

Isotoma bidenticulata Tullberg, 1876.

42 copies of 0-10 cm, 20-30 cm soil layers of natural ecosystems of Yakkabag, Shakhrisabz districts: 24♀, 18♂ (13.01.2018, 10.03.2019, 14.08.2019, 2.10.2019), 0-10 cm of wheat agroecosystems , 10-20 cm, 20-30cm from soil layers 44 copies: 24♀, 20♂ (23.03.2018, 2.10.2018, 10.03.2019), 0-10cm, 10-20cm, 20-30cm soil of cotton agroecosystems 184 copies were found from the layers: 109♀, 75♂ (10.03.2019, 14.08.2019, 2.10.2019, 5.01.2020). 40 copies of 0-10cm, 10-20 cm soil layers of natural ecosystems in Termez and Shurchi districts: 23♀, 17♂ (9.03.2019, 12.08.2019, 1.10.2019), 0-10cm, 10-20 cm of cotton agroecosystems , 174 copies were identified in soil layers of 20-30cm: 92♀, 82♂ (23.03.2018, 19.06.2018, 1.10.2019).

24. Generation: Proisotoma Palissa, 1964

Proisotoma tuberculata Schat, 1947.

288 copies were found from 0-10 cm, 10-20 cm, 20-30 cm layers of soils of natural ecosystems of Shurchi and Termez districts: 155♀, 133♂ (12.01.2018, 9.03.2019, 12.08.2019), 0-10 of wheat agroecosystems cm, 10-20 cm, 20-30cm 62 copies from soil layers: 37♀, 25♂ (19.06.2018, 9.03.2019, 1.10.2019, 4.01.2020), natural ecosystem of Yakkabag, Shakhrisabz districts 0-10cm, 266 copies from 20-30 cm soil layers: 185♀, 81♂ (23.03.2018, 2.10.2018, 9.03.2019, 2.10.2019), in wheat soil agroecosystems 0-10cm, 10-20 cm, 20-30cm soil layers 45 copies were found: 27♀, 18♂ (23.03.2018, 20.06.2018, 2.10.2018, 2.10.2019).

25. Generation: Pseudofolsomia Martyonova, 1967.

Pseudofolsomia acanthella Martyonova, 1967.

34 copies of 10-20 cm, 20-30 cm layers of soils of natural ecosystems of Shurchi and Termez districts: 24♀, 10♂ (12.01.2018, 9.03.2019, 12.08.2019), 0-10 cm, 10- of cotton agroecosystems 31 copies of 20 cm soil layers: 20♀, 11♂ (19.06.2018, 12.08.2019, 1.10.2019), natural ecosystems in Yakkabag, Shakhrisabz districts 40 copies of 0-10cm, 10-20cm, 20-30cm soil layers: 27♀, 13♂ (23.03.2018, 20.06.2018, 14.08.2019, 2.10.2019), 51 copies in wheat soil agroecosystems 0-10cm, 10-20 cm, 20-30cm soil layers: 27♀, 25♂ (23.03.2018, 20.06.2018, 10.03.2019, 2.10.2019, 5.01.2020 y.) 38 copies were identified of 0-10 cm, 10-20 cm soil layers of cotton agroecosystems: 20♀, 18♂ (23.03.2018, 20.06.2018, 14.08.2019, 2.10.2019).

26. Generation: *Folsomides* Stach, 1922

Folsomides parvulus Stach, 1922.

43 copies of 0-10 cm, 10-20 cm soil layers of natural ecosystems of Shurchi and Termez districts: 24♀, 19♂ (12.01.2018, 22.03.2018, 1.10.2018, 9.03.2019, 12.08.2019), wheat agroecosystems 49 copies of 0-10 cm, 10-20 cm, 20-30 cm soil layers: 37♀, 12♂ (22.03.2018, 19.06.2018, 9.03.2019, 1.10.2019), 0-10 cm of cotton agroecosystems, 36 specimens were found in 20-30 cm soil layers: 19♀, 17♂ (19.06.2018, 12.08.2019, 1.10.2019). 45 copies of 0-10 cm, 10-20 cm layers of soils of natural ecosystems in Yakkabag, Shakhrisabz districts: 27♀, 18♂ (23.03.2018, 14.08.2019, 2.10.2019), 0-10 cm, 10-20 of cotton agroecosystems cm 45 copies from soil layers: 24♀, 21♂ (23.03.2018, 20.06.2018, 14.08.2019, 2.10.2019), 48 copies were found in 0-10cm, 10-20 cm, 20-30cm soil layers of wheat agroecosystems: 29♀, 19♂ (13.01.2018, 23.03.2018, 10.03.2019, 2.10.2019).

27. Generation: *Folsomina* Denis, 1931.

Folsomina candida Willem, 1902.

33 copies from 0-10 cm, 10-20 cm layers of soils of natural ecosystems of Shurchi and Termez districts: 19♀, 14♂ (10.01.2019, 9.03.2019, 14.08.2019), 0-10 cm, 10-20 of wheat agroecosystems cm 36 copies were found in the soil layers: 19♀, 17♂ (4.10.2019). 48 copies of 0-10 cm, 20-30 cm soil layers of natural ecosystems in Yakkabag, Shakhrisabz districts: 29♀, 19♂ (1.10.2019), 32 copies in 10-20 cm, 20-30 cm soil layers of wheat agroecosystems: 23♀, 9♂ (4.10.2019) was identified.

28. Generation: *Isotoma* Tullberg, 1876.

Isotoma sensibilis Tullberg, 1876.

56 species were found in 0-10 cm, 20-30 cm soil layers of natural

ecosystems of Shurchi and Termez districts: 24♀, 22♂ (10.01.2019, 9.03.2019, 14.08.2019). Natural ecosystems in Yakkabag and Shakhrisabz districts were found to contain 49 copies of 0-10 cm, 10-20 cm soil layers: 29♀, 20♂ (1.10.2019), (4.10.2019).

29. Generation: *Isotomodes* Linnaniemi, 1907.

Isotoma producta Axelson, 1906.

36 copies of 10-20 cm, 20-30 cm soil layers of natural ecosystems of Termez and Shurchi districts: 19♀, 17♂ (1.10.2019), 35 copies of 0-10 cm, 10-20 cm soil layers of cotton agroecosystems: 23♀, 12♂ (1.10.2019). 26 copies of 0-10 cm, 10-20 cm soil layers of natural ecosystems in Yakkabag, Shakhrisabz districts: 19♀, 7♂ (10.01.2019), 42 copies in 10-20 cm, 20-30 cm soil layers of cotton agroecosystems: 23♀, 19♂ (1.10.2019) was identified.

30. Generation: *Isotomiella* Bagnal, 1939.

Isotomiella (Isotoma) minor Schaffer, 1896.

27 copies of 10-20 cm, 20-30 cm soil layers of soils of natural ecosystems of Termez and Shurchi districts: 16♀, 11♂ (1.10.2019), 213 copies of 10-20 cm, 20-30 cm of soil layers of wheat agroecosystems: 118 ♀, 95♂ (1.10.2019). 30 copies in natural soil ecosystems 0-10cm, 10-20 cm soil layers of Yakkabag, Shakhrisabz districts: 19♀, 11♂ (10.01.2019), 195 copies of 10-20 cm, 20-30cm soil layers of wheat agroecosystems: 103♀, 92♂ (2.10.2019) was identified.

31. Generation: *Metisotoma* Maynard, 1951

Metisotoma spiniseta Maynard, 1951.

38 copies of 0-10 cm, 10-20 cm soil layers of natural ecosystems of Yakkabag, Shakhrisabz districts: 24♀, 14♂ (10.01.2019, 9.03.2019, 14.08.2019), 0-10cm, 20-30cm of wheat agroecosystems 47 copies from soil layers: 23♀, 24♂ (14.08.2019), 10-20 cm from cotton agroecosystems, 44 copies from 20-30cm soil layers: 25♀, 19♂ (14.08.2019), in Termez, Shurchi districts natural ecosystem 0-10cm, 20-30 cm from soil layers 37 copies: 20♀, 17♂ (1.10.2019), wheat agroecosystems 0-10cm, 20-30cm from soil layers 43 copies: 23♀, 20♂ (14.08.2019), 39 copies of cotton agroecosystems in soil layers of 10-20 cm, 20-30 cm: 27♀, 12♂ (23.03.2018, 19.06.2018, 4.10.2019).

32. Generation: *Heteromurus* Wankel, 1860

Heteromurus margaritarius Wankel, 1860.

350 copies of 10-20 cm, 20-30 cm soil layers of the natural ecosystem of

Termez and Shurchi districts: 194♀, 156♂ (1.10.2019), 60 from soil layers of wheat agroecosystems 0-10cm, 10-20 cm, 20-30cm copy: 31♀, 29♂ (1.10.2019) found. The natural ecosystem in Yakkabag and Shakhrisabz districts was found to contain 287 copies of 0-10 cm, 20-30 cm soil layers: 156♀, 131♂ (10.01.2019).

Family: Entomobryidae Börner, 1913.

33. Generation: *Heteromurus* Wankel, 1860

Heteromurus nitidus Templeton, 1835.

35 copies of 0-10cm, 10-20 cm layers of soils of natural ecosystems of Termez and Shurchi districts: 21♀, 14♂ (1.10.2019), 36 copies of 10-20cm, 20-30 cm of soil layers of wheat agroecosystems: 19♀, 17♂ (1.10.2019), 47 copies were found in 0-10cm, 10-20 cm soil layers of cotton agroecosystems: 27♀, 20♂ (1.10.2019). Yakkabog, Shakhrisabz districts 40 copies of 0-10 cm, 10-20 cm soil layers of cotton agroecosystems: 21♀, 19♂ (1.10.2019), 42 copies of 10-20 cm, 20-30 cm soil layers of wheat agroecosystems: 24♀, 18♂ (1.10.2019) were identified.

34. Generation: *Orchesellides* Bonet, 1930

Orchesellides baraoi Bonet, 1930.

34 copies of 0-10 cm, 20-30 cm layers of soils of natural ecosystems of Termez and Shurchi districts: 20♀, 14♂ (1.10.2019), 43 copies of 0-10 cm, 10-20 cm soil layers of wheat agroecosystems: 26♀, 17♂ (1.10.2019) were identified.

Family: Tomoceridae Szeptycki, 1979

35. Generation: *Tomocerus* Nicolet, 1842.

Tomocerus sibiricus Reuter, 1891.

0-10cm, 10-20 cm, 41 copies of soil layers of natural ecosystems of Termez, Shurchi districts: 20♀, 21♂ (1.10.2019), 41 copies of 0-10cm, 10-20cm soil layers of wheat agroecosystems: 25♀, 16♂ (1.10.2019) was found. Natural specimens of natural ecosystems in Yakkabag and Shakhrisabz districts were found in 0-10 cm, 10-20 cm soil layers in 36 copies: 27♀, 9♂ (1.10.2019).

Junior species: *Neelipleona* Massoud, 1971

Family: Neelidae Willem, 1900

36. Generation: *Neelus* Folsom, 1896

Neelus murinus Folsom, 1896.

0-10cm, 10-20 cm, 41 copies of soil layers of natural ecosystems of Termez,

Shurchi districts: 20♀, 21♂ (1.10.2019), 41 copies of 0-10cm, 10-20cm soil layers of wheat agrocenoses: 25♀, 16♂ (1.10.2019) was found. Natural specimens of natural ecosystems in Yakkabag and Shakhrisabz districts were found in 0-10 cm, 10-20 cm soil layers in 36 copies: 27♀, 9♂ (1.10.2019).

Conclusion. From the above data, it can be seen that in the cotton, wheat agrocenoses and natural ecosystems of southern Uzbekistan in the soil layers of 0-30 cm were found 36 species of collembolas. Identified species, Collembolas, belong to 3 subfamilies (Poduromorpha, Entomobryomorpha, Neelipleona), 8 families (Hypogastruridae, Onychiuridae, Odontellidae, Neanuridae, Isotomidae, Entomobryidae, Tomoceridae, Neelidae) and 30 generations (*Willemia*, *Xenylla*, *Hypogastrura*, *Typhlogastrura*, *Haloxenylla*, *Metaphorura*, *Ongulonychiurus*, *Lophognathella*, *Supraphorura*, *Onychiurus*, *Axenyllodes*, *Xenyllodes*, *Adbiloba*, *Pseudachorutes*, *Archisotoma*, *Folsomia*, *Proisotoma*, *Vertagopus*, *Agrenla*, *Pseudofolsomia*, *Folsomides*, *Folsomina*, *Isotoma*, *Isotomodes*, *Isotomiella*, *Metisotoma*, *Heteromurus*, *Orchesellides*, *Tomocerus*, *Neelus*) [5; 214 p].

The Poduromorpha subfamily of the Collembola family belongs to the Hypogastruridae family (8 species), the Onychiuridae family - (5 species), the Odontellidae family - (2 species), the Neanuridae family - (2 species), the Entomobryomorpha family (14 species), Entomobryidae family - (3 species), Tomoceridae family - (1 species), Neelipleona subspecies Neelidae family - (1 species). Studies have shown that Entomobryomorpha and Poduromorpha subfamilies are rich in species. The diversity of collembola species was found to be 18 in these subcategories.

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