

JANUBIY OROLBO'YIDA QAZUVCHI ARILARNING (HYMENOPTERA: SPHECIDAE, CRABRONIDAE) BIOTOPLARDA TARQALISHI

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Annotatsiya. Ushbu maqolada Janubiy Orolbo'yi hududida tarqalgan qazuvchi arilarning (Sphecidae, Crabronidae) biotoplarda tarqalishi keltirilgan. 2021-2023-yillar Janubiy Orol bo'yining Qoraqalpog'iston Respublikasi: Orol dengizi atrofi, Quyi Amudaryo biosfera rezervati, Nukus shahri, Nukus tumani, Taxtako'pir, Chimboy, Mo'ynoq, Shumanay, Qanliko'l, Amudaryo, Beruniy, To'rtko'l tumani va Xorazm viloyati: Urganch Xiva, Yangiariq, tumanlarida tadqiqotlar olib borganimizda o'rganilayotgan hududda turlarning cho'l, to'qay, ko'l atrofi va agrotsenoz, aholi yashash punkti landshaftlarda tarqalishi kuzatildi.

Kalit so'zlar: Qazuvchi ari, Sphecidae, Crabronidae, Janbiy Orol bo'yi, biotop.

Аннотация. В статье представлено распределение роющих ос (Sphecidae, Crabronidae) в биотопах Южного Приаралья. В 2021-2023 годах исследование проводилось Приаралье Республике Каракалпакстан: около Аральского моря, Нижне Амударьинский биосферный резерват, город Нукус, Нукусский район, Тахтакопыр, Чимбай, Муйнак, Шуманай, Канлыкуль, Амударья, Беруни, Турткуль. В ходе исследования, проведенного в районах Ургенч, Хива, Янгари́к и Хорезм, мы наблюдали распространение видов в пустынях, лесах, водоемах, агроценозах и населенных пунктов ландшафтах исследуемой территории.

Ключевые слова: Роющие осы, Sphecidae, Crabronidae, Южного Приаралья, биотоп.

Abstract. *The article presents the distribution of digger wasps (Sphecidae, Crabronidae) in the biotopes of the Southern Arals. In 2021-2023, the study was carried out in the Aral Sea region of the Republic of Karakalpakstan: near the Aral Sea, Lower Amudarya Biosphere Reserve, Nukus city, Nukus district, Takhtakopyr, Chimbay, Muynak, Shumanay, Kanlykul, Amudarya, Beruni, Turtkul. During the study, conducted in the regions of Urgench, Khiva, Yangarik and Khorezm, we observed the distribution of species in deserts, forests, reservoirs, agroecosystems and populated areas in the landscapes of the study area.*

Key words: *Digger wasp, Sphecidae, Crabronidae, South Aral Region, biotope.*

Kirish

Janubiy Orolbo'yi hududiga O'zbekiston respublikasining Xorazm viloyati, Qizilqum cho'lining shimoliy-g'arbiy qismi, Qoraqalpog'iston Respublikasi kiradi. Bu hudud Turon agroiklim provinsiyasining Quyi Amudaryo agroiklim tumaniga mansub va Tuyamo'yindan to Orol ko'lining o'zanigacha bo'lgan tekislikni qamrab oladi. Qoraqalpog'iston respublikasi O'zbekiston respublikasining tarkibiga kirib, uning shimoliy-g'arbida, Amudaryoning quyi oqimida joylashgan. Uning hududi Qizilqum cho'lining sharqiy qismi va Orol dengizi janubiy qismi, Amudaryo deltasida joylashgan. U janubiy-sharq tomondan O'zbekiston respublikasining Xorazm viloyati, janubdan esa Turkmaniston davlati bilan chegaradosh. Maydoni 167,5 ming kv.km bo'lib, uning 85 % Qizilqum cho'li egallagan, faqat 14 % dehqonchilikka yaroqli bo'lgan daryo vodiylaridan iborat. Qoraqalpog'iston hududidan Markaziy Osiyoning eng yirik daryolaridan biri Amudaryo oqib o'tadi. Tabiiy sharoitiga binoan, uni uchta – janubiy, shimoliy va dengiz bo'yi zonalariga ajratish mumkin.

Uzoq vaqt davomida qazuvchi arilar Sfesid – Sphecidae bitta oila (yoki bosh oila Sphecoidea) deb o'rganilib kelingan. Hozirgi kunda bular 4 ta (Ampulicidae, Heterogynaidae, Crabronidae va Sphecidae) oilalarga ajratilgan [6]. Qazuvchi arilar pardaqaotli hasharotlar ichida eng ko'p tarqalgan oilalaradan hisoblanib, dunyo bo'yicha 9936 (Sphecidae oilasining 807 tur, Crabronidae oilasining 9129

tur) turi ma'lum [11]. Bizning adabiyotlar tahlilimizga va olib borilgan tadqiqotlar natijasiga ko'ra, Janubiy Orolbo'yida 102 ta tur va kenja tur bo'lib, shundan Sphecidae oilasiga mansub 25 ta, Crabronidae oilasiga mansub 77 ta tur va kenja tur tarqalgan. Ushbu hududida tarqalgan turlarning ekologik xususiyatlari to'liqligicha o'rganilmagan.

Bu maqoladagi maqsadimiz Sphecidae, Crabronidae oilalarining Janubiy Orolbo'yi hududida ekologik guruhlarini batafsil o'rganish hisoblanadi.

Material va metodika

Dala tajiriba ishlari asosan 2021-2023 yillar Qoraqalpog'iston Respublikasi Janubiy Orol bo'yining Orol dengizi atrofi, Quyi Amudaryo biosfera rezervati, Nukus shahri, Nukus tumani, Taxtako'pir, Chimboy, Mo'ynoq, Shumanay, Qanliko'l, Amudaryo, Beruniy, To'rtko'l tumani va Xorazm viloyati Urganch, Xiva, Yangiariq tumanlarining cho'l, yarimcho'l, to'qay, past tepaliklar, agrosenoz, aholi yashash punkti va ko'l atroflaridan bahor, yoz va kuz fasllarida biomateriallar yig'ildi.

Materiallarni yig'ishda Golub [2], Merik sariq plastik idishi [7] va ana'naviy uslub entomologik tutqich (Sachok), pinset, fotoapparat va boshqalardan foydalanildi. Yig'ilgan materiallar 96 % spitrda 15 mm plastmassa idishlarda saqlandi. Kazenas [3-5], Nemkov [8-10] va boshqalar maqolalaridan foydalangan holda turlar aniqlandi. Bitoplarida tarqalgan qazuvchi arilar (Sphecidae, Crabronidae) faunasining o'xshashlik darajalari bilan taqqoslash uchun P. Jaccard koefitsientidan foydalanildi [1].

Olingan natijalar

Janubiy Orolbo'yida 2021-2023-yillar davomida olib borilgan dala tadqiqot natijalarimizga ko'ra, qazuvchi arilarning (Sphecidae, Crabronidae) 61 tur aniqlanib, ushbu turlarning biotoplarda tarqalishi o'rganildi. Hudud uchun qazuvchi arilari imagosining biotoplarda tarqalishi ularning ozuqa ixtisosligi, hayot tarzi, geografik va ekologik muhitga moslashishiga bog'liq bo'ladi. O'rganilayotgan hududni shartli ravishda cho'l, to'qay, ko'l atrofi va agrosenoz, aholi yashash punkti landshaftlarga ajratildi (1-jadval).

**Janubiy Orolbo‘yi qazuvchi arilarning (Sphecidae, Crabronidae)
biotoplarda taqsimlanishi**

№	Oila va tur nomi	Qazuvchi arilarning (Sphecidae, Crabronidae) biotoplarda taqsimlanishi			
		1 – CH	2 – T	3 – A	4 – K
	Sphecidae	18	6	6	9
1	<i>Chalybion turanicum</i> (Gussakovskij, 1935)	+	-	+	+
2	<i>Sceliphron destillatorium</i> Illiger, 1807	-	-	-	+
3	<i>Sceliphron madraspatanum</i> (Fabricius, 1781)	+	-	+	+
4	<i>Palmodes melanarius</i> (Mocsáry, 1883)	+	-	-	-
5	<i>Palmodes orientalis</i> (Mocsáry, 1883)	+	-	-	-
6	<i>Prionyx niveatus</i> (Dufour, 1854)	-	+	-	-
7	<i>Prionyx nudatus</i> (Kohl, 1885)	+	-	-	-
8	<i>Prionyx radoszkowskyi</i> (Kohl, 1888)	+	-	-	-
9	<i>Prionyx viduatus</i> (Christ, 1791)	+	+	-	+
10	<i>Sphex funerarius</i> Gussakovskij, 1934	+	-	-	+
11	<i>Ammophila campestris</i> Latreille, 1809	+	+	+	+
12	<i>Ammophila elongata</i> Fischer de	+	-	-	-

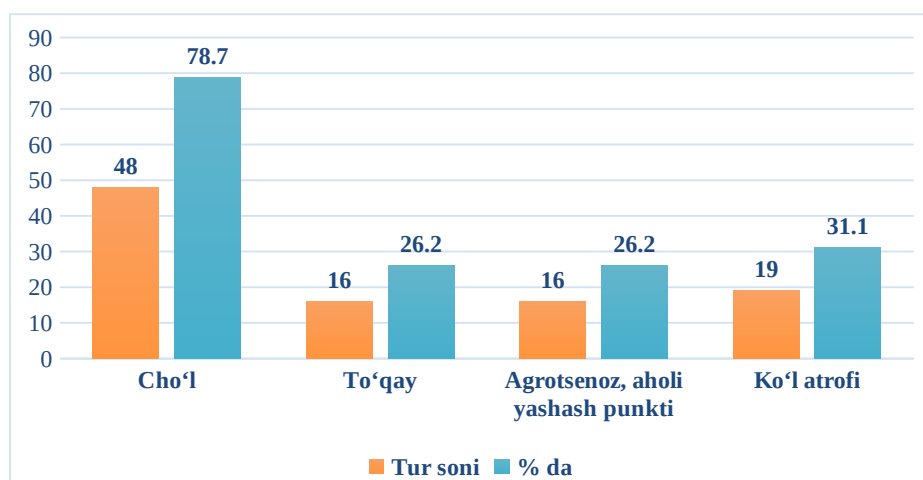
	Waldheim, 1843				
13	<i>Ammophila gracillima</i> Taschenberg, 1896	+	-	+	+
14	<i>Ammophila heydeni</i> Dahlbom, 1845	+	+	+	+
15	<i>Ammophila sabulosa</i> (Linnaeus, 1758)	+	+	-	-
16	<i>Ammophila terminata</i> F.Smith 1856	+	-	-	-
17	<i>Eremochares dives</i> (Brullé, 1833)	+	-	-	+
18	<i>Podalonia affinis</i> (W.Kirby, 1798)	+	+	-	-
19	<i>Podalonia ebenina</i> (Spinola), 1839	+	-	-	-
20	<i>Podalonia hirsuta</i> (Scopoli), 1763	-	-	+	-
21	<i>Podalonia tydei</i> (Le Guillou, 1841)	+	-	-	-
	Crabronidae	30	10	10	10
22	<i>Psenulus laevis</i> Gussakovskij, 1928	-	+	-	-
23	<i>Pemphredon lethifer</i> (Shuckard, 1837)	+	-	+	-
24	<i>Pemphredon tridentata</i> Gussakovskij, 1952	-	+	+	-
25	<i>Astata boops</i> (Schrank), 1781	-	+	-	-
26	<i>Astata kashmirensis</i> Nurse, 1909	-	+	-	-
27	<i>Astata minor</i> Kohl, 1885	+	-	-	-
28	<i>Larra anathema</i> (Rossi), 1790	+	-	-	-
29	<i>Liris niger</i> (Fabricius), 1775	+	+	-	-
30	<i>Tachysphex consocius</i> Kohl, 1892	-	+	+	-
31	<i>Tachysphex costae</i> (De Stefani), 1881	+	-	-	-
32	<i>Tachysphex desertorum</i> F.Morawitz, 1894	+	-	-	-
33	<i>Tachysphex erythropus</i> (Spinola),	+	-	+	+

	1838				
34	<i>Tachysphex fulvitaris</i> (Costa), 1867	+	-	-	-
35	<i>Tachysphex julliani</i> Kohl, 1883	-	-	-	+
36	<i>Tachysphex panzeri</i> (van der Linden), 1829	+	+	-	-
37	<i>Tachysphex persa</i> Gussakovskij, 1933	+	-	-	-
38	<i>Palarus variegatus</i> (Fabricius), 1781	+	-	+	+
39	<i>Palarus</i> sp	+	-	-	-
40	<i>Trypoxylon scutatum</i> Chevrier, 1867	+	-	-	+
41	<i>Oxybelus lamellatus</i> Olivier, 1811	+	-	-	-
42	<i>Bembix oculata</i> Panzer, 1801	+	-	-	-
43	<i>Bembix planifrons</i> F. Morawitz, 1891	+	-	-	-
44	<i>Bembix portschinskii</i> Radoszkowski, 1884	+	-	-	-
45	<i>Bembix rostrata</i> (Linnaeus), 1758	+	-	-	-
46	<i>Bembix transcaspica</i> Radoszkowski, 1893	+	-	-	-
47	<i>Stizus annulatus</i> (Klug), 1845	+	-	-	-
48	<i>Stizus handlirschi</i> Radoszkowski, 1893	+	-	+	-
49	<i>Stizus fasciatus</i> (Fabricius), 1781	-	-	+	-
50	<i>Stizus koenigi</i> F.Morawitz, 1888	+	-	-	-
51	<i>Stizus ruficornis</i> (J.Forster), 1771	+	-	+	+
52	<i>Stizus rufiventris</i> Radoszkowski,	+	-	+	+

	1877				
53	<i>Stizoides tridentatus</i> (Fabricius), 1775	+	-	-	-
54	<i>Philanthus triangulum</i> (Fabricius), 1775	-	+	+	+
55	<i>Philanthus venustus</i> Rossi, 1790	+	-	-	-
56	<i>Philanthus variegatus</i> Spinola, 1838	+	-	-	+
57	<i>Cerceris arenaria</i> (Linnaeus), 1758	-	+	-	-
58	<i>Cerceris argentosa</i> Shestakov, 1912	+	-	-	-
59	<i>Cerceris bupresticida</i> Dufour, 1841	-	+	-	-
60	<i>Cerceris deserticola</i> F.Morawitz, 1890	+	-	-	+
61	<i>Cerceris straminea</i> Dufour, 1853	+	-	-	+
	Jami:	48	16	16	19

Izoh: 1 – CH - (Cho'l), 2 – T – (To'qay), 3 – A – (Agrosenoz, aholi yashash punkti), 4 – K – (Ko'l atrofi).

Keltirilgan jadvaldan ko'rinib turganidek, 2021-2023 yillar mobaynida (aprel-sentyabr) tadqiqotimiz davomida aniqlangan qazuvchi arilarning (Sphecidae, Crabronidae) asosiy guruhini cho'l biotopida uchraydigan turlari (78.7 %) tashkil etildi (1-rasm).



1-rasm. Qazuvchi arilarning (Sphecidae, Crabronidae) biotoplarda taqsimlanishi

Janubiy Orolbo'yining turli xil biotoplari va landshaftlarining tur tarkibi haqidagi ma'lumotlar asosida ularning faunistik majmualarini taqqosladik. O'xshashlik darajasi bilan taqqoslash uchun P. Jaccard koeffitsenti ishlatildi [1].

$$K_j = \frac{c}{a+b-c}$$

Bunda K_j – Jaccardning o'xshashlik koeffitsienti, c – o'zaro o'xshash turlar soni, a va b – solishtirilayotgan biotoplardagi umumiy turlar soni. Janubiy Orolbo'yi bitoplarida tarqalgan qazuvchi arilar (Sphecidae, Crabronidae) faunasining o'xshashlik darajalari o'rganilganda va taqqoslanganida quyidagi natijalarni oldik (2-jadval).

2- Jadval

Janubiy Orolbo'yi hududlarida tarqalgan qazuvchi arilar (Sphecidae, Crabronidae) turlarning o'xshashligi
(P. Jaccard koeffitsenti bo'yicha)

Biotop	Cho'l	To'qay	Agrosenoz, aholi yashash punkti	Ko'l atrofi
Cho'l	X	-	-	-
To'qay	0,12	X	-	-

Agrosenoz, aholi yashash punkti	0,13	0,18	X	-
Ko'l atrofi	0,08	0,12	0,40	X

Bu jadvalda turlarning tarqalishi bo'yicha Agrosenoz, aholi yashash punkti va ko'l atrofi biotoplarida o'xshashlik yaqin ekanligi kuzatildi.

Xulosa

Janubiy Orolbo'yida olib borilgan dala tadqiqot natijalariga ko'ra, qazuvchi arilarning 61 turi aniqlandi. Aniqlangan turlar cho'l, to'qay, agrosenoz va aholi yashash punktlari hamda ko'l atroflari kabi biotoplarda tarqalgan. Biotoplarda qazuvchi arilar turlari xilma-xilligi va miqdori bilan farq qiladi. Qazuvchi arilarning 48 ta tur (78.8 %) cho'l, 19 ta (31.1 %) ko'l atroflari teng miqdorda, 16 ta tur (26.2 %) to'qay, agrosenoz hamda aholi yashash punktlari biotopida tarqalgan. Mazkur hududda *Ammophila campestris*, *Ammophila heydeni* kabi turlari barcha biotoplarida dominant tur sifatida qayd etildi. Biotoplardagi turlarning o'xshashlik koeffitsenti bo'yicha agrosenoz, aholi yashash punkti va ko'l atrofi biotoplarida 40 % eng yaqin, aksincha eng uzoq 8 % cho'l va ko'l atrofi biotoplari hisoblanadi.

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