Volume 3, Issue 3, March – 2025 **ISSN (E):** 2938-379X

STUDY OF THE DISTRIBUTION OF THE THIN-TOED CRAYFISH (PONTASTACUS LEPTODACTYLUS ESCHSCHOLTZ, 1823) IN THE RESERVOIRS OF UZBEKISTAN

Sadulaeva Dilrabo Mardonovna
Asian International University
sadullayeva_dilrabo@mail.ru

Abstract
The article describes the diversity of river crayfish, thin-toed river crayfish. Examples of studies of small-toed cancer in the Bukhara region are given. Research in the USA and Turkey.

Keywords: River crayfishr, thin-fingered, long-fingered, color scheme, mutation, population.

Introduction

Crayfish are considered one of the largest invertebrates in Central Asia, and in recent years Uzbekistan has seen an increase in interest in crayfish from entrepreneurs and researchers. There are 2 species of crayfish in Uzbekistan, of which the thin-toed crayfish (pontastacus leptodactylus eschscholtz, 1823) lives on the Zarafshan River, Todakul reservoir of Bukhara region, lakes Ayakagitma, Kattakurgan and Shurkul reservoirs of Navoi and Samarkand regions, is widespread in reservoirs and streams of Kashkadarya, Khorezm regions, Karakalpakstan [3] .

This species was introduced from Russia in 1970. Its main natural habitat is the Black Sea - Caspian waters.Thin-fingered hands, which appeared as a result of accidental skidding into Lake Zarafshan, have now found favorable living conditions in this reservoir, occupying almost the entire water area of the lake.

Studies show that since 2014, there has been a tendency to reduce its population as a result of improper organization of fishing and changes in living conditions. Crayfish are practically not found at great depths due to the low oxygen content and the wrong type of bottom sediments. They are found in strictly limited numbers in sandy coastal areas. This is due to the lack of food and shelter. The most preferred substrate for small-toed crayfish is sandy loam clay [1]. One of the main limiting factors of the spread of river crayfish in nature is the increased anthropogenic impact, in particular, the use of improper fishing equipment is the main reason for the decline in stocks, especially the thin-toed crayfish, in recent years. A study of the dynamics of thin-toed crayfish populations has shown that as long-toed crayfish that accidentally appeared in Lake Zarafshan found favorable living conditions here, they developed intensively and, as a result, became an object of fishing for the population. Nevertheless, the population of the thin-toed crayfish of the lake is under strong anthropogenic influence, which leads to significant changes in it [2].

Thin-toed crayfish can survive in a wide variety of environmental conditions. In particular, temperature is the main factor determining the process of cancer reproduction. Scientific studies conducted by researchers show that when studying the influence of environmental conditions on the biological parameters of the commercial part of the population of thin-toed crayfish, their size was determined, age (based on growth rates), size and sexual structure, as well as indicators of commercial productivity of the population were taken into account.

According to a 2018 study, crayfish spawning in Zarafshan Lake began in March, when the water temperature was 4-6. 5°C. In 2017, females with fertilized eggs were discovered in April due to the constant freezing of the lake. The natural temperature of 2017-2018 affects the cancer development cycle, accelerating their growth due to changes in physiological processes.After that, fertility rates were assessed annually in June and July. In August, these figures were not taken into account, as some individuals had already managed to have their first larvae. The total number of eggs attached to the pleopod of the captured females was calculated and divided by the number of females. The average weight of one egg was calculated by measuring and dividing by the number of eggs taken from different shrimps in June and July.

Studies and evaluation of the commercial part of the crayfish population have shown that they were caught without bait using standard traps (Budnikov, 1932). Samples were taken from a depth of 2-25 m using crab traps and fishing nets. The biotopes in which the largest number of shrimps live and the boundaries of these biotopes in the lake were determined, and their area was calculated, the use of fishing gear when working with shrimps, their size (length 9 cm), the activity of animals of different ages, as well as the harm caused to the population, were separately taken into account.

The study used from 50 to 100 crabs at a time and were placed mainly on the underside of the field. The data obtained were determined by methodological methods and used to assess cancer reserves, as well as their localization. Fishing affects the shrimp population by changing their size and age characteristics. A comparison of size and age indicators was carried out [4].

Many scientists have provided data on some color anomalies in the natural populations of some crustaceans, including crayfish species. Crustaceans collected in a stream in Iowa, USA, showed a bilateral color anomaly. In a study by Kelly et al. (2020), it was found that shrimps found in the Atihisor reservoir in Canakkale, Turkey (P. leptodactylus) reported the presence of albinism. Although several color anomalies have been reported in the literature, the most common color anomaly in cancers is the blue color anomaly. Such color abnormalities in cancers can be the result of several factors, such as genetics, environmental conditions, food and nutrition, stage of development and maturation, or any combination of factors. It is known that the body coloration of these invertebrates and other crustaceans mainly comes from carotenoid pigments (such as astaxanthin and canthaxanthin), which are responsible for a wide range of colors from colorless to dark red. A blue color anomaly was observed in shrimps in Oklahoma, USA. Scientists who studied crabs and shrimps reported the presence of a blue color anomaly in shrimps (astacus leptodactylus) collected from Lake Gildir in Ardahan, Turkey. Two species of Pontastacus Leptodactylus (Eschscholtz, 1823) were collected from the Atihisor reservoir in Canakkale, Turkey. Locals caught crayfish using nets.

Fixing nets measuring 17 mm were placed at the bottom of the reservoir at a depth of 5 m, the nets were collected on July 18, 2020 after 3 days of soaking in the reservoir. Sampling was carried out during the daytime. The sediment at the sampling site had a clay substrate. Two crayfish were caught, both blue crayfish (pontastacus leptodactylus) were females. The anomaly of blue color was observed in all parts of the body of both species. The blue crayfish were caught in muddy sediments at a depth of 5 m. Blue mutant cancer and common cancer were compared to better understand the color between the two phenotypes, and the difference was studied. Research scientists have found that several factors can influence the differences in color of these invertebrates, such as environmental conditions, food and nutrition, as well as physiological processes such as the stage of maturation and age.

One of the first studies on the color of crayfish was published by Kent. The author claims that the main factors of crab coloration are the environment and the sun[5]. The researchers concluded that this pattern represents a state of mosaicism transmitted through somatic segregation, for which one of a number of chromosomal or gene abnormalities may be responsible.

REFERENCES

1. Э.Х. Гукасян, Г.Ф. Мелконян, Л.Г. Степанян, Н.С. Бадалян. Особенности развития популяции длиннопалого рака (Pontastacus leptodactylus Eschscholtz, 1823) в озере Севан в период 1996–2018 гг. Трансформация экосистем Ecosystem Transformation www.ecosysttrans.com. 86-89.

2. Zofia Nuc , Gloria Brusotti….. boshqalar. Pontastacus leptodactylus (Eschscholtz, 1823) and Faxonius limosus (Rafinesque, 1817) as New, Alternative Sources of Chitin and Chitosan. Water 2023, 15, 3024. https://doi.org/10.3390/w15173024 https://www.mdpi.com/journal/water 5-9

3. Д. Б Усмонова. Н.А Шамсиев . Э. Б. Жалолов А. У. Амонов. Морфометрические Показатели Длиннопалого Рака (Pontastacus Leptodactylus (Eschscholtz, 1823)) Volume: 02 Issue: 07 | Jan-Feb 2022 ISSN: 2660-4159 http://cajmns.centralasianstudies.org 208-210

4. Jing Li1 · Hongying Du1,2,3 · Fangjun Peng1 · Anne Manyande4 · Shanbai Xiong1,3 Evaluation of the Effect of Different Cooking Methods on the Heavy Metal Levels in Crayfish Muscle. Biological Trace Element Research (2023) 201:4103–4113 https://doi.org/10.1007/s12011-022-03476-0

5. А. В. Алехнович. Влияние промыслового лова на размерную и возрастную структуру популяций длиннопалого рака Pontastacus leptodactylus. Научно-практический центр Национальной академии наук (НАН) Беларуси по биоресурсам, г. Минск, Республика Беларусь; e-mail: alekhnovichav@gmail.com 93-94