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BIOLOGY OF COMMERCIAL PREDATORY FISH, LOWER REACHES OF THE ZARAFSHAN RIVER BASIN

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ABSTRACT

The article presents a brief physical-geographical and hydrobiological characteristics as well as the ichthyofauna of reservoirs in the lower reaches of the Zarafshan River. The regularity of the formation of predatory fish in different types of water bodies of the lower reaches of the Zarafshan River and the conditions of anthropogenic impact are revealed. The data on the commercial use of predatory fish species and their importance in the water bodies of the lower reaches of the Zarafshan are foreseen.

KEYWORDS: *iomelioratorov, anthropogenic, diet, endemic, zooplankton .*

INTRODUCTION

The commissioning of the Amu-Bukhara machine channel significantly changed the hydrographic network of the lower reaches of the river. Zarafshan. A number of new reservoirs were formed here - Tudakul (22 thousand hectares a), and lakes Dengizkul (40 thousand hectares), Tuzkan (5.7 thousand hectares). These reservoirs accumulate domestic and waste agricultural water and can be used for fishery purposes. The inflow of Amudarya water into the water bodies of the lower reaches of the Zarafshan basin radically changed not only hydrography, but also the hydrochemical and hydrobiological regime, as well as the composition of the ichthyofauna. In the pool there are new, not typical of the region's fish species, especially o-pike perch, Aral asp, asp - bald, snakehead and others; their distribution, biological features in the basin have not been studied. Meanwhile, the need to study the distribution of these fish and the features of biology is ripe, including for the development of issues of their use as biomeliorators and in the fishery. To achieve this goal, we have set the following tasks:

Study of reservoirs of the lower reaches of the R. Zarafshan as a habitat for predatory fish (features of hydrology, hydrochemistry, higher aquatic vegetation, zooplankton and zoobenthos).

In yvavlenie regularities in the formation of herds of prey fish in the waters of the lower reaches of the Zarafshan diverse in terms of human impact.

Study of the biology and ecology of predatory fish species in new conditions (morphometric characteristics, size-age structure of populations, reproduction biology and fertility, maturation, spawning, nutrition). Determination of the commercial use of the studied predatory fish species, and their importance in the reservoirs of the lower reaches of the Zarafshan .

Scientific novelty. For the first time, the study of predatory fish and their significance was carried out. Data on the structure of populations, peculiarities of biology and ecology of species in new conditions for them have been obtained, and their importance in fishing has been determined. Data on the features of changes in biologically important traits of the studied fish in new water bodies with a low degree of water pollution are generalized. For the first time, an inventory of predatory fish has been carried out for different types of water bodies in the lower reaches of the Zarafshan; their species composition has been established; the occurrence of predatory fish, their diet were determined, their harm and benefits for the population of the reservoir were assessed.



Practical significance. The data on the biology of predatory fish presented in the work allow solving the problems of managing the number of predatory fish in the region. Proposals have been developed for the use of predatory fish as ameliorators, regulating the number of weedy and low-value fish in water bodies. The results of the work are useful in the development of the fish industry in the lower reaches of the Zarafshan.

MATERIALS AND METHODS

Aral red-

breasted asp *Aspius aspius ibiloides* (Kessler), the cooper asp *Aspiolus esoctnus* (Kessler), the pike perch *Stizostedion likioperca* (L), and the Amur snakehead *Channa argus warpachowskii* (Berg). Material on the biology of these fish prey collected Tudakul during and storage in different seasons. Gathering the treated material is a part of brabatyvali conventional methods in the ichthyological studies (Shapishnikova 1950, Chugunova, 1959, PRAVDIN 1966, etc.). Collection of hydrobiological samples was also carried out by conventional methods (Kiselev, 1956, Zhadin, 1960; others). During the collection of materials, the temperature of water and air was determined. On the spawning grounds, soil and vegetation samples were taken. Total biological analysis of fish and morphometric measurements about drove on fresh caught individuals. The indices of plastic signs were calculated as a percentage of body length without the caudal fin, the mean sample and error ($M + m$), as well as the coefficient of variation C_v were determined. The reliability of the differences in the average values of the traits of fish from different water bodies (M_{diff}) was calculated by the formula:

$$M_1 - M_2$$

$$M_{diff} -$$

The difference was considered significant at a 5% significance level. Juveniles were fixed in a 2-4% formalin solution. Age and height were determined by scales collected just above the lateral line under the first ray of the dorsal fin; otoliths were used for the snakehead. The scales were studied under a binocular microscope and an apparatus for reading microfilms "Mikrofot -5 PO - 1". Growth was restored according to the formula of E. Lea (Pravdin, 1966). The ratio of weight and linear growth of the studied predatory fish was calculated according to the formula of L.S. Berdichevsky (1964): $R_v (V_2 - V_1) / \sum V_n$, wherein R_v -mass growth; V_2 and V_1 -annual gain weight; $\sum V_2$ - sum of annual increments defining fatness fishes Fulton Individual absolute fecundity (PAI, thousand eggs).. determined by the weight method, gonads were weighed whole,

fixed with 4% strength solution of formalin, the number of mature eggs was counted in the sample lifting 1 g, was converted to the entire weight of the gonad. calculated individually with respect hydrochloric fertility (DCI, eggs weight without internals). The diameter of the eggs was measured micrometer binocular MBS-1. postprocessing material fish nutrition conducted with the help of teaching materials K. Fortunatova O. and Popov (1951, 1973, 1974). Daily rations and feed ratios were determined about X. Fortunatova (1951), G. Vinberg (1955), Melnichuk (1980). The energy balance of fish was calculated using the formula: $C - P + R + F$; where C is the diet, the amount of energy entering the body with food; P is the part of the diet used for weight gain per unit of time; R - waste of energy for exchange; F is the undigested part of the diet excreted from the body. In the energy balance equation for pike perch, the values of F and R were taken equal to 0.446 and 0.83 to the data (Briger, 1956; Melnichuk, 1980). These coefficients were determined for a water temperature of 20 °C; therefore, a correction was introduced that was found from the normal Krogh curve (Vinberg, 1955) for April - 2.20 June - 4.0 July - 3.50 September - 3.30, 2.40 October is long in the feeding perch was assumed to be 210 days average daily weight gain was determined by K. Shmalgauzenu (1935), Efficiency of food on the growth of established. coefficient K_1 and K_2 (Ivlev, 1939). The energy consumption (J) of a unit and a pike perch was determined according to literary styuk, 1973, 1978). The list of fish in the Amudarya and Zarafshan basins is given according to the system of L.S. Berg (1948-1949). Statistical processing was performed on the IBM / 486 computer algorithmic language.

The reservoirs investigated by us are located in the bass. In the lower reaches of Zarafshan, this region is located in the desert zone of Uzbekistan. Administratively, the region is part of the Navoi and Bukhara regions of Uzbekistan. The main source of water for irrigation is water coming through the Amu-Bukhara machine canal from the Amu Darya.

Aral red-lipped asp -

Aspius aspius taenlatus nation iblioides (Kessler). Distribution. Aral asp occur in the Amu Darya, Syr Darya (Kamilov, 1973). In odoemy Zaravshan of Amu penetrated by follows entering into operation tion ABMK Abdullayev, 1969). According to our information currently Aral asp circulated There Kul, Kuyumazarskom and Shurkuls kom reservoirs, lakes Dengizkul. Aral asp in natural bodies of water to spread reaches sexual maturity at the age of 4-5 years (Berg 1949, Nicholas, 1940; We DATA m or asp in the new conditions of reservoirs zovya Zarafshan reaches sexual



maturity at the age of 3-4 years at a body length of 30-35 cm. Aral asp ecology spawning relates to lithophil fish, females lay their eggs on the stony or sandy bottom. In Tudakul vodohranlische spawning held at the raceway portion at the depth 1,0-4.0 m at a water temperature 8- 9 °, not Rest asp accompanied by rapid vspleskivaniem, individualistic d ualnaya absolute female fertility at 30.1-58.1 cm body length and body weight of 605-1950 g aged 4-5 years and was 23100-189900 krinok an average 98761 eggs. absolute Nye fecundity grows with age and as body size increases. There are differences in the magnitude of the absolute fecundity of females from different reservoirs of the lower reaches of Zarafshan. For example, females 42 cm long from Lake Dengizkul have a maximum lodging was 74074 eggs, in fish from the lake. Tuzkan with the same body length - 50544 eggs. We associate this with the different food supply in different water bodies. Thus, in the water bodies of the lower reaches of the Zarafshan for asp, the conditions for reproduction are quite good, as evidenced by the high absolute fertility when compared with other water bodies of the region.

Power asp in the seasonal aspect is characterized by a CTE different Peña intensity and different composition of feed consumed Ob OBJECTS. The highest intensity in asp was noted after spawning in April, and the lowest in December-January. The bea minute, the average number of the stomach with food was more than 60. 21, varying within 7 74.3-26.7 % In April codes pot filling and Use by the highest. Asp intensively uses fast food (10.6% by weight), as well as shrimp. The smaller quantity consumed I shemaya (4.9% by weight). In April, asp consumes about 2.5% of the annual ration by weight, and up to 50% of this amount is accounted for by fast food. In summer, in the food lump of asp, the frequency of occurrence is dominated by the fast-growing fish - 41.9%, by mass - the gudgeon - 27.3%. In autumn, with a decrease in water temperature, an approach to the coastal areas of carp, bream, roach is observed, as a result of which their role in the diet of asp increases, and carp appears in the diet. The index of the complements of 1.05, consumption - 1.26%. In winter the same diet Reha largest value (by weight) has shemaya (30.1%), by weight of the filling index - 0.51% and the index of consumption - 0.61%.

Carp family - Cyprinidae ; The genus of asp is Aspiolucius Berg . Species - asp-bald , bald - Aspiolucius esocinus (Kessler).

The genus Aspiolucius includes only 2 species: A. harmandi is found in the vicinity of Hanoi in Vietnam; A. esocinus - in the Aral Sea basin. Lysach is an endemic species for water bodies of Central Asia. he inhabits the river Vakhsh,

Panj, Kafirnigan , Kyzyl-Suu, Naryn . In the Amu Darya lysach meets the mouth of the river. Kafirnigan to Turtkul. In the Syr Darya it occurs from Karadarya to chinaz (Nikolsky, 1938; Berg, 1949;)

Literary data on the biology of the Amu Darya bald beetle are not numerous {Shaposhnikova, 1950; } . There sve Denia on lysacha the middle reaches of the Syr Darya - from p. Chirchik (Kamilov , 1973). As shown by our The investigations dovaniya lysach now widely spread in the lower reaches of the Zarafshan river basin reservoirs. Number lysacha higher in irrigation GOVERNMENTAL reservoirs than in lakes. The control catches carried out by us in different seasons of the years showed that the number of coopers decreases every year.

Reproduction. According V.A.Maksunov a (1988) in the plains vodoh ranilischah Syrdarya lysach reaches of lovozr elosti aged 6-7 years. M.A.Abdullaev (1989), G.K.Kamilov (1973) noted the lack of study of the biology of reproduction ly with Acha in conditions of water bodies in Uzbekistan.

In his studies to observe the peculiarities of spawning ly with a cha we have also failed. It should be noted that at the end of February and in March we met a relatively large number of sexually mature individuals with mature sex products ready for spawning in the ABMK. Ready to spawn specimens were 35-68 cm in length and body mass 500-3500 g WHO Raste 5-7 years. Females have absolute fertility 22 - 190.84 you syachi eggs. On the basis of the above-noted it is possible to assume that lysach reaches sexual maturity at the age of 5-7 years and spawn in Feb. le-March. The water temperature at this time was 7-12 °. Spawning proish Deal on a fast flow in irrigation canals. The diameter of eggs in gonads at maturity stage IV was 1.1-2.3 mm.

Food , Lysach is a predatory fish (Nikolsky, 1938; Maksunov, 1951; Abdullaev, 1989; others). According to our data immatures feed mainly on animal organisms spectrum consists of 7 food compo nents (for occurrence). Dominated by weight of shrimp (49.9%) and a strong non-target fish such as oetroluchka and Bystrianka 38.1%). Note that the proportion of carp in food can be quite SEASON ki (to 29.8%). In the first and second years of life nutrition lysacha has CME shanny character: invertebrates make up 93%, fish - by 7%.

According to the seasons, the diet of the cooper is different. It feeds intensively in spring, at this time the filling index reaches 259 ° / ooo , in summer m the index decreases to 238 ° / ooo , in autumn - 200 ° / oo o - In sexually mature



individuals, the nutritional spectrum consists of 9 components, 6 of them are fish ... It should be noted that the incidence of about myslovyh and non-target species roughly equal - 1: 1. The occurrence of food components in different water bodies is different. So lysach in Tudakul reservoir mainly consumes shrimp, mysid and ry bu in ABMK nutritional involved terrestrial insects. Adults feed intensively in summer ($198^{\circ} / 000$) and autumn ($182.5^{\circ} / 000$). Among adults, the incidence of empty stomachs reaches 18-25%. Of the fish, a large share is made up of eastern bream, carp, and rattle. Su exact pay ion is approximately 20-30% of its own weight. A characteristic feature of lysacha our data are UMP livost and rapid death in networks. Fishermen say that even prikos novena fish to fishing gear can cause death.

As our studies have shown, in recent years, the lysach asp has become very small in number. Commercial its value it is almost sweat ryal, in fact - is a candidate for a sad listed in the Red Book of Uzbekistan. In this connection it is necessary to arrange a number of activities to prevent its disappearance, especially, that lysach endemic to Central Asia. First of all - a complete ban on fishing. Currently lysach single copies still meeting etsya in the lower reaches of the Zarafshan. Decrease in its population, according to our given nym depends largely on the regulation of the flow of the rivers in the region, Uwe lichenie irrevocable extraction of water for irrigation of crops.

Family Perch - Percidae Genus Sudak -

Stizostedion Rafinesque

Species (Common) pike perch -

Stizostedion lucioperca (L.)

The Aral Sea basin walleye was distributed in waters of the Amu Darya delta, Lower and middle reaches of the Syr Darya and Aral mo re (Nico lsky, 1940; Berg, 1949; et al .).

In the lower reaches of the Zarafshan, pike perch is currently found in the Tudakul, Kuyumazar reservoirs, in the lakes Dengizkul, Shurkul, Tuzkan, Karakyr, and in irrigation canals and collectors.

In our collections perch were many tourists from flax in Tudakul vodohranili slit were individuals up to 9 years in lakes Dengizkul and Tuzkan - up to 8 years, ABMK - up to 6 years.

Reproduction. According to the literature data perch reaches polo vozrelosti in Central Asia reservoirs aged 2-3 years when the body length of 26-40 cm and a weight of 280-1220 g. Thus, in Kairakum with whom Reservoir walleye becomes sexually mature at 2-3 years at line 36-40

cm (Karimov, 1976). In Kairakum reservoir spawning place from the end of March until the beginning of April water at a temperature $8-17^{\circ}$, ikrometa weight of was at $10-13^{\circ}$ (Karimov, 1977). According to our data, in the lower reaches of the Zarafshan, spawning of zander begins in the third decade of March at a temperature of $13-15^{\circ}$, sometimes continues until May. Spawning in the Tudakul reservoir in 2016 took place on April 10-11 at a depth of 1-2 m. The eggs were deposited on the rhizomes of the reed. Laying eggs most intensely held at 17-18 hours on lan kah with sandy-silt soil. Already on April 9-10 in the north-western parts of the reservoir, we noticed a cluster of males and females perch, drink Mina marriage fattening. Intensive spawning took place until April 15.

With age and an increase in body size, the mass of ovaries increases. The maximum weight of ovaries noted by us - 355 g - was in females 56-60 cm long. In our studies, the minimum absolute fecundity - 25.66 thousand eggs - was observed in a female 35 cm long and weighing 386.3 g. The average values were - body length 47.2 cm and absolute fecundity - 193.3 thousand eggs. These absolute plodovitos ti perch reservoirs investigated changes with increasing absolute fertility perch female body size.

Among reservoirs lower reaches of the Zarafshan average fertility perch Tudakul reservoir above than on s erah Tuzkan and Dengizkul. Apparently, the conditions of the hydrological and hydrobiological regime are more acceptable in the reservoir. Tudakul reservoir is more deep-high transparency, lower mine alization water. In March, the diameter of the eggs was 0.99 mm with a fluctuation of $0.65 - 1.04$ mm. At the same time, eggs with a diameter of $0.25-0.30$ mm were also observed in the ovaries. In May, eggs with a diameter of $0.10-0.15$ mm prevailed; from March to May, the diameter of the eggs increased by $0.02-0.05$ mm.

In the studied water bodies, pike perch laid eggs at a shallow depth of $0.5-1.8$ m on underwater vegetation - reed roots, stems and roots of cattail, chara, sedges, and filamentous plants. Caviar small, Zheltov color, adhesive. After spawning, the females leave the spawning grounds, he tzu for some time remained in the spawning grounds.

The pike perch in the lower reaches of the Zarafshan spawns at a time. This Ack verzhdatsya not only observations of spawning but also uniformity in sizes of eggs gonads, before spawning diameter eggs composition lyal $1.4-1.5$ mm. In an ut it in the course and intensity of spawning in the presence of large number of reservoirs juvenile walleye, can be considered in the



downstream Zarafshan perch I found favorable propagation conditions conducive guides its reproduction.

Nutrition. Pike perch is a predatory fish. In reservoirs Khoresm mature individuals 17.5-18.3 cm long feed mainly small untargeted fish (Hakberdiyev, 1983). Thus, we see that pike perch is a predator with a wide range of prey, the composition of food depends on the composition of the inhabitants in a particular water body. Power perch in the lower reaches of the Zarafshan river basins in the literature illuminates fragmentarily. Our investigation was 180 copies born in these reservoirs. We did not find zander larvae in the open part of the water bodies we studied, which we associate with the lack of available food here. At the same time, coastal waters area abounds with small forms zooplankton. Larvae perch 0.8-1.1 cm long feed zooplankton filling index is fairly high and the average is 380 ° / 000 In late April perch fry fully transitions to exogenous nutrition. In food, Nauplii and Copepoditi dominate in number, the frequency of which is 18-26.8%. According to us dominate Ceriodaphnia quadrangula (7.6%), Diaphanosoma brachyurum (6.4%) and rotifers (27.2%). In juveniles 1.6-3.0 cm long, weighing 165 mg on average, caught in May, planktonic nutrition was preserved, the main food components were Nauplii and Copepoditi (40.5% by weight of food). Major components of Tami of occurrence was by Cyclops vicinus, Mesocyclops crassus, Acanthocyclops vernalis larvae of Chironomidae occur sporadically and in last place is probably due to the large size, so that the larvae of walleye are not yet able to use them. In feeding larvae filling an average of 289 ° / a oo In feeding larvae Dhaka in May, no significant changes occurred. Still dominated zooplankton organisms.

In the lower reaches of juvenile walleye Zarafshan 3.1-4.0 cm long weighing 220 mg (early June) together with zooplankton organisms meet Chironomus plumosus and mysids. The average index complements the intestine in June, 192 ° / a oo The basis of the food spectrum consists of 8 species of organisms leading place on species diversity of the zooplankton organisms, by weight - shrimp and opossum shrimps. Along with copepods and Cladocera crustaceans larvae Hirone mid, opossum shrimps and prawns.

Thus, in the studied water bodies, nutrition in the first year of life in spring and summer was planktonic. Plankton present as noted in the stomachs of 85-95% of individuals. Empty stomachs were noted in 2-3% of individuals. Based on our research the nature of the power and place of zooplankton and zoobenthos in the diet of young

walleye lower reaches of the Zarafshan, abundance and affordability, we see that food zooplankton and zoobenthos is natural.

In September, the degree-fed yearlings significantly reduced, reducing the number of individuals with food in the stomach, which is probably due to the unsuitability of walleye long nutrition zooplankton. The feeding spectrum of 7-10.1 cm long underyearlings weighing 7.1-9.6 g caught in October remained the same. The food was based on mysids, shrimps, chironomid larvae, and zooplankton organisms.

In November, juveniles leave the coastal part of the water bodies, individuals 11.5-15.3 cm and 12-15 g are caught in the open part of the water body. During this period, zooplankton and zoobenthos decrease in the coastal part. There is a change in the spectrum in the diet of zander. The food mainly falls in individual copies individuals of their own species, carp, roach, while there is still the organisms of zooplankton and zoobenthos. The stomachs perch contain 2-3 or more copies of young fish, fish prey length - 3.2 cm. Sydak with a body length 17.1 cm and a weight of 140 g predatory proceeds to honors. In yearlings and yearlings observed decrease power intensity in the stomachs were perch, carp, bystranka, roach and other. John DEX content was on average 117 ° / 000

Pike perch feeds on a seasonal basis. In March, in the diet of fish, they accounted for 28.8% of the mass of the food bolus, shrimp and mysids, 31.8%; in June 35.4% and 64.4% respectively. In November, fish accounted for 4.0%, mysids and shrimps - 35.0%. In spring, the occurrence of carp in the diet of pike perch increased to 3.0-3.2%, while in the rest of the seasons the indicator decreased to 0.5%. As the perch changed and the percentages of the components of the basis food were shrimp (58.5%) and mysids (21.3%), fish was 15.3% of the bolus. In mature individuals, a lump is formed by shrimp (41%) and fish (51.2%). In individuals older than 7+, the role of fish in feeding is dominant (89.5%) in terms of total occurrence. The share of mysids, shrimps and other organisms is small (10.5%). Adult perch feeds mainly on fish, showing the species of biratelnost. The main trend - the consumption of available zooplankton fish fauna, which is determined by their number and size. The more diverse the ichthyofauna of the reservoir, the more diverse the diet of pike perch.

Out of 36 fish species found in the downstream Zarafshan, found in the stomachs of perch 9 species most commonly presented with small neperomyzovye fish. The feeding spectrum of pike perch in the open part of water bodies and in the coastal part was different. In the stomachs of the



predator from the open part, the food spectrum included 5-6 components (eastern bream, carp), in the coastal part of water bodies - 9-10 components (non-commercial fish, mysids, shrimps).

An important stage of the study is to determine the power walleye efficiency fodder utilization gains ichthyomass. We analyzed the daily ration according to the formula of the balance growth rate, metabolic rate, and the amount of ration (Vinberg, 1955). On the basis of the literature data on the duration of feeding of pike perch, the composition of the diet and the caloric content of food organisms, the annual diet of one individual was obtained. Calculations have shown that in all age groups, energy expenditure (R) on metabolic processes exceeds expenditure on weight gain (P). With the growth in the exchange of energy consumption led away Chiva. So, at the age of 1+, the daily expenditure of energy is 1.26 kJ / day, at the age of 5+ - 16.18 kJ / day, at the age of 8+ - 38.66 kJ / day. Energy consumption for plastic metabolism also increases with the age of fish: 1+ - 0.84, 5+ - 4.21. But the efficiency of food use (K1-K2) for growth is reduced. If the values of K1 and K2 in yearlings are 31.7-40%, then in 6-year-olds it is 14.4 and 18.7%. About pre valirovanii plastic metabolism of energy in yearlings su Duck shows the value V, which is equal to 0.67, in 8-year bonds - 0.20. A decrease in mean daily energy consumption when growth in older age groups from 8.18 kJ (10+) to 6.79 kJ (12+) (Drozhina, 1987). In our samples, specimens older than 8 years, not encountered chalis. Studies have shown that a significant part of pike perch matures at the age of 3+. Therefore, the energy expenditure for generators nye processes expected from this age. With increasing WHO rasta fish growing spending on energy generative protses si (P g). Su Duck e aged 3+ generative exchange consumes 0.08 kJ / d ki, aged 5+ - 0.92 kJ / day; in older age groups - up to 2.35 kJ per duck. The absolute values of mean daily rations perch (C) regularly increased from 6.79 (1+) to 14.56 (8+), the relative values by reduced from 0.97 to 0.58%. Information ratio of pe cial diet and is necessary for optimal growth of fish allowed to establish their food security

A positive factor that improves the quality of fodder water ems of the lower reaches of the Zarafshan, you should consider having mysid shrimp, rich zooplankton, larvae of chironomids, which serve in size intermediate between bentoplanktonnyimi organisms fish. We have already noted that underyearlings feeding on mysids were distinguished by high fat and fatness indices.

As you know, the size of prey depends on the size of the predator. The water emah lower reaches of the Zarafshan perch length of 20-30 cm 5-10 cm consumes fish, preferring to sacrifice 5-6 cm long. Pike length of 30-40 cm eats fish 2-12 (in media therein 10) refer to the most widely Meas. Zones time mers victims have perch more than 40 cm in length - the size of the victims of 5-17 cm, od Nako average does not change much, - adult walleye prefers fish 10-12 cm.

To evaluate the fishery values of walleye, the degree of its influence ence on fishing fish fauna of the reservoir and thereby to identify the role of this kind in a single growing season, beginning th yearlings, we estimated annual requirement of food items for each of the WHO rasta. It can be seen that the main food item for pike perch in the first year of existence is zooplankton (892.2 kg / year), in the second year of life, the role of zooplankton begins to decrease to 158 kg / year, in the third year, zooplankton is only 23.41 kg / year. The role of miazids, shrimps, and fish is gradually increasing. In total, a herd of pike perch consumes 51939.9 kg of food lump during the growing season. The population of pike perch consumes 5447 kt of sagan during the growing season, which is 10% of the food consumed.

Pike perch uses 10-12% of the commercial fish fauna of reservoirs, which is associated with a relatively small number of non-commercial fish. The size of the victims increases with age. The basis of the fish ration of older predators is made up of fastworms. Sudak aged 3+ eats Bystrianka in the average length of 6.5 cm, at the age of 7+ - 9.3-9.7 cm Every action eaten Bystrianka does not exceed 10 cm carp food meeting. Etsya 3.7 mm in length - 12 cm, capoetobrama kuschakewitschi - 3.3 mm - 7 cm, Aral roach - 2.5 mm - 7 cm. Victims 20-25 cm long in the stomach of pike perch are a rare case.

Thus, the perch uses as food is mainly small fish, fry carp, bream, chub other commercial fish consumes not a large amount. Such valuable fish such as pike, carp, white, silver carp and other - in the diet perch found in trace if honors. The calculated coefficients of accessibility of prey fish for pike perch in the reservoirs of the lower reaches of the Zarafshan were no higher than 55-65%. However, on average, these coefficients are lower: for fast food - 17.7-34.2%; for roach, bream, sa s Ana - 7.9-21.2% as pike consumes bases nom small fish. The feeding rate of pike perch can be judged by the filling index, which was quite high, especially in the first two years; there is a certain tendency towards a decrease in feeding in the coastal zone of water bodies by November. So, in fish aged 2+, the filling index is 220 ° / 000, and in autumn - 194 ° / 000. In 4-year bonds the filling



index is 190-240 ° and 119-145 / o o o , respectively but.

In conclusion we can mention the following: food perch is relatively small number of invertebrate species of major to toryh and copepods are cladocera crustaceans, mysid shrimp.

Among the fish food is dominated by small-scale artisanal fish size to toryh available for walleye. Among the victims are of secondary importance to the well - busy , eastern bream, Aral asp. In different seasons of the year, the composition of n ish and may vary somewhat. To meet food with perch sponding sizes required number of small fish in vodoe max Zaravshan lower reaches of 10-12 copies / m³ or 2-4 copies / m². If the indicators are lower than this, then the pike perch satisfies the need at the expense of juvenile commercial fish.

Snakehead family -

Chanidae [Oph i oceph a li dae]

Genus Snakehead - Channa Soopoli

Amur snakehead species -

Channa argus warpachowskii Berg

Spread. The range of the Amur snakehead covers the middle and lower reaches of the Amur, the Ussuri basin, Lake Khanka , water bodies of China, Korea, India (Rozov, 1934, Taranets , 1937 Berg, 1949). Start dis rostraneniya snakehead in the Central Asian waters coincides with the time of delivery here herbivorous fish China Plain ihtiofaunisticheskogo complex - the beginning of the 80s. The reason for the appearance Nia snakehead is acclimatization. In the Amu Darya snakehead is known since 1965, and in the fishery - since 1968. At present, snakehead and the day-to-basin common locally in lower and middle reaches of the basin, including Lake and in dohranilisha, irrigation and drainage canals and collector (Gusev, Zholdasova 1986 ; Khakberdiyev , 1994).

According to our observations, the snakehead entered the lower reaches of the Zarafshan through the ABMK from the Amu Darya. Nowadays, it lives in different types of water bodies of the region everywhere, except for Lake. Dengizkul . Snakehead prefers clean fresh water. By the presence of the snakehead in the reservoir, one can judge the pollution and salinity of the reservoir. The reason for the absence of the snakehead in the lake. Dengizkul is served by high salinity of water (8000-10000mg / l), high BOD and pollution of the lake with industrial waste. Snakehead numerous in Tudakul reservoir where mine alization water 2000-2500 mg / l, is in the lake. Tuzkan where m ineralizatsiya water is 500 -6 00 mg / l, BOD₅ not exceed 15-20%. Snakehead chooses places much overgrown, shallow, well-warmed, with a low

sustained water and exchange . For winter, it migrates to deeper places and digs holes, where 8-12 fish accumulate.

Reproduction. Sex on vozrelo with five snakehead in the lower reaches of the Zarafshan dos Tiga in the third year of life, ie, at the same age as in the Amu 're Chimkurgan with whom reservoir waters of Khorezm, bass. Syr (Nikolsky, 1956 . Abdullaev, 1967; Amanov, 1974; et al.).

Nutrition . Snakehead juveniles in the river. Kashkadarya begins to feed on fish with a length of 52 mm. The size of the prey is 20-43% of the body length of the predator. Mostly in the food there are weedy fish - and the ralskaya spiny fish , Turkestan gudgeon, less often fry of the Turkestan barbel. We are in their research analyzed 110 stomachs of fish lengths from 40 mm to 74.5 cm. Specimens 40 mm in length were fed mostly copepods

(by Cyclops vlcirms , Mesocyclops crassls), vetvis Tous crustaceans

(of Daphnia longispina , Chidorus spheenus , Cerlodap hnia sp .) . e ti body is 10-12% by weight of the bolus; the rest of the lump (30-50%) consisted of mysids and chironomid larvae . The filling index was 210 ° / o oo . Juveniles with a length of 50 mm or more were consumed mainly by juvenile fish (swine , mosquito, hawk , carp, bream, roach, shemaya, etc.). The basis of snakehead food before the age of one year were 4 groups nN organisms 1 - copepods and cladocerans crustaceans; 2 - mysids ; 3 - fish; 4 - larvae of dragonflies, chironomids and shrimps. Zooplankton accounted for about 50% of the fish food volume up to a year. From the age of one , the role of fish food increases. In the following years of life, the main share in the diet goes to the fish. For a more accurate identification of the snakehead's nutrition, we divided all fish into three groups:

1) juveniles 0+, 1+ up to 30-80 mm long 2) immature and sexually mature fish up to 2+ 15-30 cm long; 3 - sexually mature adult fish 30-70 cm long.

In reservoirs audio of ovev Zaravshan spectrum power snakehead state um in total of 15 components Moreover, the younger individual, the different Shaped spectrum power, the majority of adult fish food monotony on (mainly fish) According to our calculations snakehead in the downstream Zaravshan uses approximately 20-25 kg of fish per year. Of these, 10-12 kg are carp. This snake heads harmful fisheries. Eating well in a big if honors larvae of dragonflies, amphibians and leeches benefits. Summarizing the data , we can draw the following conclusions:

At present, the lower reaches of the Zarafshan reservoirs encountered 5 species of predatory fish, of which only the catfish is an Aboriginal,



wasps tal species - asp, lysach , walleye, snakehead - entered from the pool, on the Amu Darya; asp, lysach and pike are common on the lower reaches of the Zarafshan in all investigated waters and more or less evenly, and kite egolov meeting etsya in all waters except Lake. Dengizkul.

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