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The effect of stocking density on growth performance, survival and hematological parameters in giraffe cichlid (*Nimbochromis venustus*)

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Abstract

In this study, the effect of stocking density (20, 25, 35 and 50 piece of fish /m^3) was studied on growth performance, survival rate and blood parameters in giraffe cichlid (0.5± 0.01 g). Based on the results, the percentage of weight gain decreased by increasing the density from 793.98 ± 8.86 at 20 piece of fish to 89.97 ± 7.35 at 50 piece of fish. In addition, the specific growth rate and condition factor decreased significantly from 2.38 ± 0.03 percent and 1.61 ± 0.01 percent in day at 20 piece of fish to 1.25 ± 0.01 percent and 1.41 ± 0.07 percent in day at 50 piece of fish (P<0.05). Food conversion ratio increased significantly by increasing the density from 1.03 at 20 piece of fish to 4.26 at 50 piece of fish. During the study, there was no mortality among treatments. Analysis of blood parameters indicated the existence of significant differences among treatments and the number of red and white blood cells increased significantly as well as hematocrit and hemoglobin amounts by increasing the density (P<0.05). The maximum numbers of red blood cells (1816700 ± 30550) and white blood cells (21100 ± 212), with the significant differences with other treatments, were accounted at 50 piece of fish. Further, the maximum amounts of hemoglobin and hematocrit were measured in the same treatment. The results showed that, although an increase in stocking density in these levels caused no mortality in giraffe cichlid, had significant effect on growing and fish health regarding stress.

Keywords: Density, Hematological parameters, Giraffe cichlid

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Determination of exploitation model for *Rutilus caspicus* in south east of Caspian Sea (Golestan Province)

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Abstract

Rutilus caspius is one of the most important and commericial species in southeast of Caspian Sea that its catch had high fluctuation in the decads due to overfishing. In this study, data obtained from 246 specimens caught from coastal sein cooperative companies (they are located in the southeast coast of the Caspian Sea) during the fishing season 2014-2015 were analyzed. Results showed individuals ranging from 14.5 to 31.2 cm total length. Growth model were isometric and negative alometric in male and female, respectively. The growth parameters of $L\infty$, K, Z, M, F and E and were computed 41.8 cm, 0.12 $year^{-1}$, 1.239, 0.324, 0.916 $year^{-1}$ and 0.74, respectively. Fish biomass, maximum sustainable yield (MSY) were equal to 417 Kg and 215 Kg, while the ratio of catch was 28 Kg. It seems, the rest of it was in forbidden catch. Totally, catch situation of Caspian roach is not suitable.

Keywords: *Rutilus caspius*, Caspian Sea coastal sein cooperative companies, Population dynamics

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Effectof increasing weight on chemical composition, color change and fillet yield in rainbow trout (*Oncorhynchusmykiss*)

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Abstract

The rainbow trout is very important for most consumers in terms of nutritional quality and economic viewpoint. In order to be aware of quality and chemical changes of fillet, fatty acid profile and filet yield, cultured rainbow trout (75 total fish) in weights of 300, 500 and 700 gr were examined and compared after initial preparation. According to the results, treatments did not differ significantly in terms of moisture and protein content (P<0/05) whereas the amount of fat and ash, as well as the analysis of color (*a and *b) and light (*L) indices had a significant difference. (P<0/05) in some of the treatments. Also fillet yield were significantly different in all treatments and increased with increasing fish weight. Therefore, with trout weight gain from 300 gr into higher weights and particular up to 500 gr, the meat of this fish is in better condition in terms of nutritional value and fillet yield.

Keyword: Rainbow trout, Chemical composition, Color change, Fillet yield

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Histopathological survey of liver and kidney in Oscar (*Astronotus ocellatus*) and Discus (*Sumphysodon discus*)

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Abstract

Histopathology is one of the diagnostic methods in diseases of aquatic animals. This survey was conducted to investigate histopathological lesions of kidney and liver of Discus (*Symphysodon discus*) and Oscar (*Ocellatus astronotus*). The fish transferred to the fisheries laboratory under low-stress condition. Fish were euthanized and tissue samples were collected and fixed in 10% buffered formalin. Then tissue sections were prepared by using routine histological methods and stained with Haematoxyline-Eosin (H&E) and PAS if needed. Several histopathological lesions were observed in kidney such as glomerulonephritis, acute tubular necrosis, cell swelling and hyaline cast. Liver showed cellular degeneration, hepatocytes necrosis and pancreatic cell atrophy. It was concluded that glomerulonephritis and cell swelling of renal tubules and hepatocytes degeneration were the most common lesions suggesting poor health conditions.

Keyword: Histopathology, Ornamental fish, Disease, Oscar, Discus

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The assessment of bilayer agar- sodium caseinat film properties containing ZnO nanoparticles

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Abstract

This study was aimed to investigated the effect of ZnO nanoparticle on physical, mechanical and optical properties of sodium caseinate/ agar bilayer film. The ZnO nanoparticles were added to the polymer matrix sodium caseinate in various concentrations (0.5, 1 and 2 wt.%) in a bilayer film. Mechanical properties, moisture and solubility, water vapor permeability (WVP), water absorption, color properties and transparency of films were studied. According to the results, addition of 2% ZnO to the bilayer film showed a 32% reduction of WVP in treatments than control. The water absorption rate and solubility were reduced in high percentage of ZnO. The tensile strength of a bilayer film also increased from 26.05 MPa to 41.48 MPa by increasing ZnO concentration up to 2%; but increasing the elongation showed significant increasing up to 1% nanoparticles. High amount of nanoparticles were reduced the permeability of light, and increased the opacity of the films.

Keywords: Bilayer film, Agar, Sodium caseinate, Nano zinc oxide

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Effect of fish breeding pool location on hematological and biochemical, anti-oxidative serum indiced in cultured rainbow trout (*Oncorhynchus mykiss*)

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Abstract

The aim of this study was to investigate the effect of fish breeding pools on the health of fish in relation to their blood factors. The pools were selected from three different locations, depending on the geographical location and the distance from the agricultural lands. District one, the source of water was river, the second district was from the well and the third district was provided by spring. Farmers in the district one consumed the highest amount of agricultural pesticides and the district two had the least consumption. Total 66 fish samples were isolated from pools in three regions; blood samples were taken and examined biochemical, hematological and oxidative factors. The level of liver enzymes, alanine aminotransferase (ALT) and aspartate aminotransferase (AST), in district two was the highest and there was a significant difference with the other regions ($p<0.05$). The hematological parameters, hemoglobin (Hb) and Hematocrit (PCV), were lowest in the district two. In the case of differential counting of white blood cells, heterophils, monocytes, and eosinophils in district two was higher than other regions ($p<0.05$). The level of Superoxide dismutase (SOD) was the highest in the district one ($p<0.05$). In district two, despite lower consumption of pesticides in agriculture, because of the low distance of the pool from agricultural lands, we showed a high level of liver enzymes, a low level of blood-related factors associated with anemia and an increase in blood cells, which is an indicator of probable microbial contamination. In general, the fish health of this district was less than the others. Therefore, it could be suggested that the location of the fish breeding pool has an impact on the health of fish.

Keywords: Fish Farming Pool, Rainbow Trout, Biochemical and Serum Antioxidant factors, Hematological Parameters

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Identification of gill parasites of Parishan Lake's fish from Kazerun

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Abstract

According to inadequate information about parasitic fauna of Parishan Lake's fish, six species of fish in Parishan Lake including *B. luteus*, *Barbus grypus*, *Carassius carassius*, *Mastacembelus mastacembelus* and *Cyprinus carpio* (Common carp and Mirror carp) were examined for parasitic infestation in faculty of veterinary medicine Islamic Azad university Kazeroon branch. Seven monogenean species or genus including *Dactylogyrus extensus*, *D.anchoratus*, *D. pavlowsky*, *D. carassobarbi*, *D. barboides*, *Gyrodactylus sp.* and *Mastacembelus sp.* and three protozoan genus including *Ichthyophthrius sp.*, *Trichodina sp.* and *Myxobolus sp.* were detected and identified. The results showed that 75.7 % of 74 examined fish were infected while, 24.3 % of them had no infection. The highest abundance of infection happened in summer by 88.5 % and the lowest frequency of infection occurred in autumn by 60%. In addition, the highest rate of infection caused by *D. carassobarbi* (25 %) and the lowest percentage of it was recorded by *D. barboides*, *D. pavlowsky* and *D.anchoratus* together (1.31 %). One way anova showed that there was no significant difference between the rate of infection and season (P=0.132) and the range of infection among six species in the study (P=0.12).

Keywords: Fish, Parishan Lake, Gill, Parasitic infection, Fars province

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