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SWIMMING FISH SPERMATOZOA – ANALYSIS OF FLAGELLAR MOVEMENT

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In most animal species, spermatozoa motility is dependent on a long appendage called flagellum. The flagellum behavior during the motility period can provide more deeper understanding of basis of spermatozoa motility in a more detailed way and complementary to the methods used so far which consist mainly in the analysis of fish sperm head behavior (velocity, linearity of tracks, etc) obtained by regular CASA. In the present review, a description of the different mechanisms accounting for sperm flagellum movement is presented, with special emphasis regarding to fish spermatozoa. Features and difficulties encountered when studying fish sperm movement are described in detail.

Key words: flagellum, spermatozoa motility, sperm flagellum movement, fish spermatozoa.

**EVALUATION OF THE ROLE OF THE GREAT CORMORANT
(PHALACROCORAX CARBO) IN THE FORMATION
OF AQUATIC BIORESOURCES OF THE DNIEPER-BUG
ESTUARY HYDROECOSYSTEM**

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Based on the results of many years of research, an attempt is made to assess the impact of the great cormorant (*Phalacrocorax carbo*) on the hydrobiocenosis of the Dnieper-Bug estuary, where its population has increased up to 7.4 thousand birds. The average daily quantity of food consumed by cormorant, considering seasonal, age and sexual characteristics, is 0.65 kg. Three low-value food organisms – small gobies, sprat and atherine – are dominant (87.6%) in the feeding diet. The amount of ichthyomass consumed by cormorant in the area of the Dnieper-Bug estuary, which reaches 1.3 thousand tons per year, is twice less than the annual loss of aquatic bioresources due to mass death events.

Key words: Dnieper-Bug estuary, aquatic bioresources, the great cormorant, population numbers, feeding diet.

**WHITEFISH (COREGONUS MARAENOIDES POLJAKOW) LAKE
SVITIAZ SHATSKY NATIONAL NATURE RESERVE
AND ITS MORPHOLOGICAL CHARACTERISTICS**

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In the lakes of Shatskiy National Nature Reserve has acclimatized and existed whitefish (*Coregonus maraenoides* Poljakow). This species was taken its trophic niche, feeding on mollusks, which also were invaders, which reduced the tension of trophic relationships between whitefish and native fish species. The results of the investigations have given the grounds for continuing acclimatization works with whitefish in the Shatskiy lakes under modern conditions.

Key words: lake Svitzaz, whitefish, acclimatization, measurement scheme, morphologic, plastic and meristic signs.

SOME QUESTIONS OF THE SCIENTIFIC JUSTIFICATION OF RECREATIONAL FISHERIES IN WATERS OF UKRAINE

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The estimation of amateur and sport fishing as a powerful social factor of influence on the natural environment, aquatic ecosystems and their fish stocks is presented. The general economic estimation of recreational fishing is given taking into account the natural and resource potential of Ukraine as a promising type of economic activity, one of the factors of economic development of the tourism and fishery industries of the country. An ecological assessment of the main groups of freshwater reservoirs was carried out from the point of view of organizing recreational fisheries. The main criteria for assessing the ecological state of recreational fishing facilities, the main indicators of the intensity of the load on recreational fishing facilities, as well as the parameters of the ecological system of the reservoir for determining the effective stock of living water resources of the reservoir are determined.

Key words: recreational fishing, water ecosystems, scientific monitoring.

**DETERMINATION OF LIMITS FOR CATCHES OF ROACH,
BREAM, ZANDER AND CARP IN ZAPORIZHZHYA (DNIPRO)
WATER RESERVOIR FOR 2018**

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The analysis of the current state of roach, straw, bream zander and silver bream populations of the Zaporizhzhya (Dnipro) reservoir was carried out and the size of the admissible industrial extraction of these fish species in 2018 was determined due to the determination of reasonable limits. In the course of the work, the generalized results of ichthyological studies in the water area of the Zaporizhzhya (Dnipro) reservoir during 2010–2017 were used. The basic biological indicators of these fish species were determined, the age and sex structure of the populations were determined, and the values of the industrial reserve were calculated. Basing on the obtained data, the coefficients of natural, industrial and total mortality were determined. The values of the limits of industrial catch of experimental species of fish are calculated.

Key words: limits, Zaporizhzhya (Dnipro) reservoir, fishery, zander, silver bream, roach, bream.

USE OF BIOMETRIC FINDINGS OF AMERICAN PADDLEFISH (POLYODON SPATULA WALB.) FOR EARLY SEX DIAGNOSIS

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The studies of biometric features of selected paddlefishes aged 6+ years were performed. It was confirmed, that females are characterized by higher body weight above (13,6%), body length (Lt, Lc) as far as head length (C) and rostum length (R) in compare with males. Moreover, statistically significant differences were determined under absolute and relative levels of height of pectoral fins (hP) and ventral fins (hV). The correlation between head (C) and rostum length (R) as well as total (Lt) and body length (Lc) it was confirmed in studied fishes.

Key words: Aquaculture, American paddlefish, morphometry, sex maturation, sex determination.

INTEGRATED METHOD OF HYDROECOSYSTEM ASSESSMENT BASED ON CYTOGENETIC HOMEOSTASIS OF NATIVE FISH SPECIES

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The authors present a rapid method for assessing the ecological and toxicological state of water bodies basing on the results of micronucleus (MN) test of peripheral blood (the frequency of nuclear violations in red blood cells) in native fish species which includes field (haematological material selection, formation and primary processing of "blood" solutions) and laboratory (colouring of solutions, their processing, analysis and evaluation) research stages. The method provides high accuracy and efficient response regarding the level of human impact on fish fauna representatives; it anticipates assessment of the water body according to an integrated 5-point scale.

Key words: hydroecosystem, biomonitoring, native fish species, blood, micronucleus test, assessment, integrated scale.

**IMPROVEMENT OF METHODS FOR THE BIOLOGICAL SAMPLES'
SELECTION AND DNA-EXTRACTION IN NARROW-CLAWED CRAYFISH
(ASTACUS LEPTODACTYLUS ESCH.)
FOR THE MOLECULAR-GENETIC RESEARCH**

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Based on the analysis results of the literary sources, the techniques (methods) for intravital selection of biological samples (the plot of the fifth pair of walking legs (pereiopods Y) and phenol-chloroform DNA extraction in narrow-clawed crayfish (*Astacus leptodactylus* Esch.) have been chosen and improved to the molecular-genetic research.

Key words: narrow-clawed crayfish, methods, biological samples, DNA extraction.