

# SibFU Researchers contribute to preserving sturgeon in Russian rivers

A research team from Siberian Federal University and the Institute of Biophysics, SB RAS, has developed a unique method for distinguishing 100 % accuracy caviar and fillet of sturgeon fish grown in aquaculture from the ones of their wild relatives.



The researchers suppose that it would help reduce the number of illegally caught valuable fish species and preserve the population.

According to SibFU hydrobiologists, the new method is based on analysis of specific biochemical markers. In particular, they study the composition of fatty acids that are absorbed by fish with food. The presence and ratio of various fatty acids vary significantly in fish living in the wild from ones raised in fisheries.

*'In aquaculture, for rapid growth and weight gain, sturgeons are fed on artificial food made of, for example, plant materials (press cake). This food contains special fatty acids which can later be easily detected in sturgeon fillets and caviar. There are no such markers that can be found in their wild relatives since they mainly eat benthic invertebrates, larvae of small fish, and algae. This food contains its specific biochemical markers,'* — said **Anastasia Rudchenko**,

one of the co-authors of the study, assistant professor of the Department of Water and Terrestrial Ecosystems, Siberian Federal University.



The researchers noted that many species of valuable fish are at present protected by the state law, and fishing is either strictly limited or completely prohibited. However, sturgeon poaching is still widely spread, including sturgeon of the Yenisei River immortalized in "Queen Fish" by Victor Astafiev.

*'We are now patenting our method. In future, it can be used in state centres for standardization of product quality and adopted by prosecutorial authorities. At the moment, we can accurately determine what fatty acids are contained there by a small piece of fillet or several eggs. If we detect mainly oleic and linoleic acids, then the fish grew in aquaculture, and if we find large doses of eicosapentaenoic acid, it's clear that the sturgeon could get it only by eating small river animals, which, in turn, eat the Yenisei diatoms, the primary source of this acid. One cannot confuse these specific "fat markers", they will indicate the origin of the sturgeon and its offal,'* — added **Anastasia Rudchenko**.

By this method, we calculate the ratio of "aquaculture" and "wildlife" fatty acids in fish fillet or caviar. The analysis is carried out using special equipment, chromatographs with mass spectrometric detection, and it takes less than a day.



*'Law enforcement officials have appealed to the university on several occasions with a request to conduct an examination of confiscated caviar and sturgeon fillets to understand if it is a legal product or a result of poaching. But it has been previously impossible. Now, the research team from Siberian Federal University and the Institute of Biophysics, SB RAS, has obtained an effective and high-precision method that can reliably detect illegal fishing of valuable sturgeon fish. We are ready to contribute to the protection of the most valuable natural resources of the Yenisei Siberia,' — noted Dr **Mikhail Gladyshev**, research leader, head of the Department of Water and Terrestrial Ecosystems of Siberian Federal University, Corresponding Member of the Russian Academy of Sciences, professor.*

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