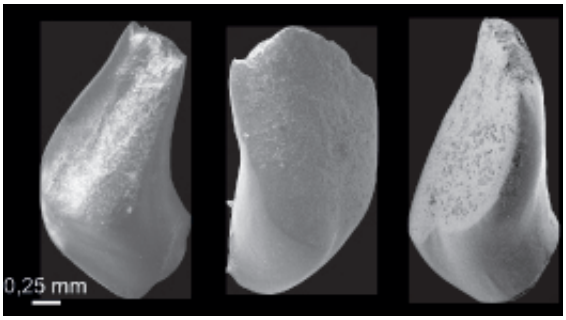
Bighead carp evolve from 5 to 150 centimeters in 37 million years

March 13 2014, by Ilona Bröhl



Teeth of the 37 million year old bighead carp fossil. Credit: Senckenberg

During excavations in the open lignite-mining pit Na Duong in Vietnam, a joint team from the University of Tübingen and the Senckenberg Center for Human Evolution and Palaeoenvironment Tübingen discovered the world's oldest bighead carp. With a length of only 5 centimeters, Planktophaga minuta is also the smallest known fossil representative of this East Asian group. Modern bighead carp are among the largest members of the carp family, reaching a length of up to 1.5 meters and a weight of 50 kilograms.

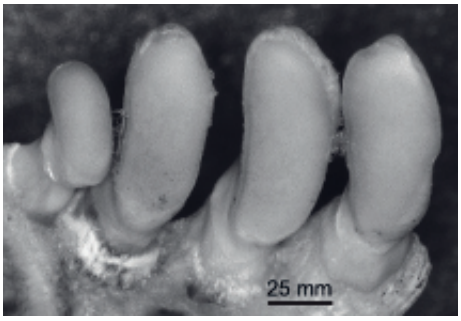
Since 2008, an international research team led by Prof. Dr. Madelaine Böhme from the Senckenberg Center for Human Evolution and Palaeoenvironment (HEP) of the University of Tübingen has been studying prehistoric ecosystems and fossils in Vietnam. In the course of this research the scientists discovered approximately 37 million-year-old

sediments from Lake RhinChua, dating to the late Eocene. These freshwater sediments contained a wealth of fossilized animals and plants; hence, Lake RhinChua is also referred to as the "Asian Messel" by the researchers.

During their studies the team discovered teeth belonging to an entirely new genus and species of fish: The oldest known bighead carp, Planktophaga minuta, is a representative of the "East Asian group of Leuciscinae." With a length of ca. 5 centimeters it is the smallest fossil representative of this East Asian group, and a mere dwarf compared to its modern living relatives. Modern bighead carp are among the largest members of the carp family. They grow up to a length of 1.5 meters and can weigh in at 50 kilograms.

Planktophaga minuta and its relatives

Besides Planktophaga minuta (which translates to small plankton eater), an additional six species of carp have been discovered in Lake RhinChua. All of them have living relatives that are still found today in China's Pearl and Yangtze River system. This is proof that the roots of the modern freshwater fish fauna in Southeast Asia reach far into the past.



Teeth of a modern bighead carp. Credit: Senckenberg

Bighead carp in Exile

Originally, the bighead carp was native to the larger rivers and stagnant water bodies of southern China. During the 1960s, bighead carp were introduced in Europe, including Germany, as a means to control aquatic plants. Only later did researchers discover that the bighead carp failed to "fulfill this task," since they mainly feed on animal plankton. In Europe, introduced bighead carp can be found in ponds, lakes and occasionally in streams and rivers.

More information: The report is available online: www.palmuc.de/bspg/images/pdf/10_boehme.pdf

Provided by Senckenberg Research Institute and Natural History Museum