Historic Meeting Held on the Danube Salmon (*Hucho hucho*): The Largest Salmon in the World

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'Glowacica' is the Polish name for a very special freshwater fish whose natural range is limited to the Danube drainage, Europe's second largest river basin. The root of the Polish word means "head". Although these fish have an unusually large head, the meaning refers to the position of the fish in the aquatic food web, what ecologists normally refer to as an apex, or top predator. The common name for these fish is huchen ("HOO-kin") or Danube salmon and their scientific name is *Hucho hucho*. Fishes in this genus are recognized as the largest salmonids in the world, reaching lengths greater than 2 meters.

Figure 1. Attendees of the Second International Hucho Symposium held in Łopuszna, Poland during 19-22 September 2012. Dr. Andrzej Witkowski appears in the back row with a 'Polish Highlander' hat.

In September, over 50 specialists from 20 different countries converged in the small town of Łopuszna, Poland in the foothills of the Carpathian Mountains near the Slovakian border. The meeting was the brain child of Dr. Andrzej Witkowski, a professor at the University of Wroclaw, Poland, and a well-respected huchen researcher. Dr. Witkowski called the meeting to order, claimed the species as the "greatest representative of salmonid fishes", and commented that it has been over 20 years since the first meeting was held on their biology and status. He recounted some history, and provided some background on the key historical figures in the study of Danube salmon (he referred to them as the 4 musketeers!). One of these individuals, Dr. Juraj Holcik, was the author of the seminal book published on the species in 1988 "The Eurasian Huchen, *Hucho hucho*: Largest Salmon in the World". This publication helped raise the international profile of the species and included an impassioned plea to reverse the extinction trend. Unfortunately, Dr. Holcik passed away in 2010, but he left a very important research and conservation legacy. Two days were devoted to presentations on our emerging understanding of the biology and current threatened status of this important fish.

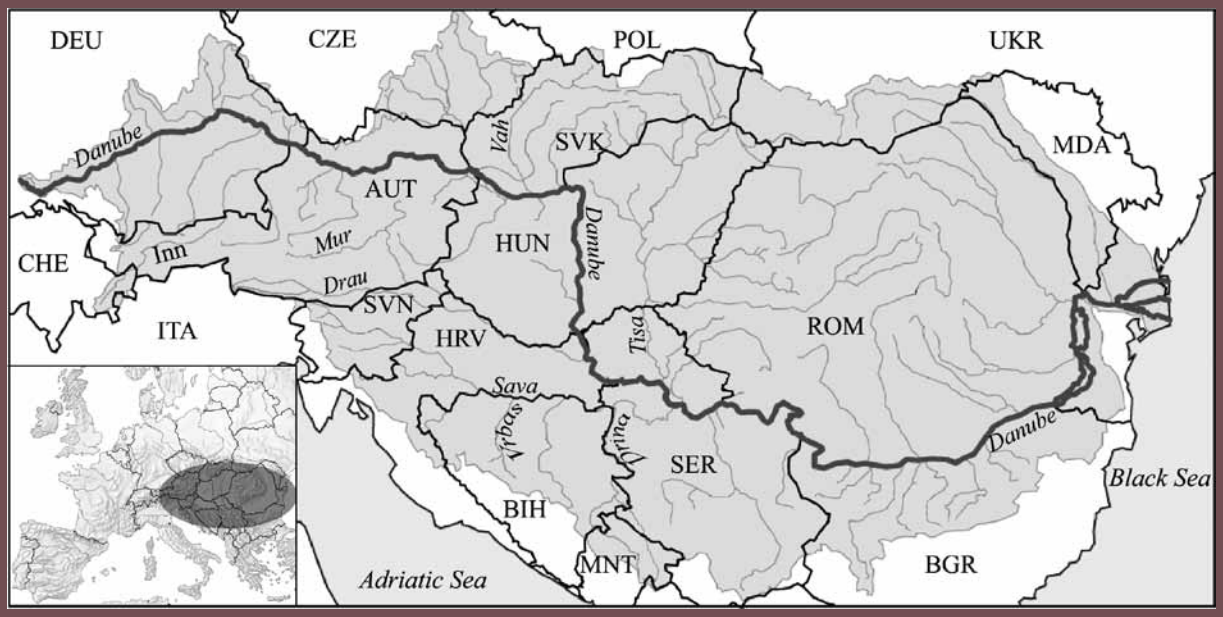

Figure 2. The natural range of Hucho hucho is limited to the upper drainage of the Danube River system in Central and Eastern Europe. It is thought that less than 15 wild populations of the species remain in the drainage. Map produced by Sasa Maric.

Unfortunately, the status of the species has continued to deteriorate since the publication of Holcik's book. The species was last assessed as Endangered by IUCN in 2008. The species range has become reduced and has become increasingly fragmented. Abundance has declined steadily owing to numerous factors. A series of presentations were given on the status of the species in different countries, including Hungary, Croatia, Serbia, Slovenia, Slovakia, Germany, Austria, and Poland. Other presentations focused on the biology and status of other species in the genera *Hucho* and *Parahucho*, with presentations by researchers from the USA, Japan, China and Russia. Dr. Manu Esteve, of the National Museum of Natural Science in Madrid, presented on the reproductive behavior of salmonids, focusing on huchen. Dr. Esteve won the Best Presentation Award for his engaging presentation, taking home the coveted Polish Highlander hat as a prize.

Figure 3. A male (top, left) and a female (bottom, right) Danube salmon spawn in a free flowing reach in the Pielach River, Austria. This is a sight that is becoming increasingly rare. © Clemens Ratschan.

While impacts from overharvest and pollution have been reduced in recent decades, many presentations focused on the increasing threat from hydropower development. The current distribution of the species is extremely fragmented as a result of construction of impassible dams, and many of the remaining wild huchen populations (thought to number less than 14) are increasingly under threat. The habitat for these fish is now restricted to ~10 km river reaches between impassible dams, and the quality of the habitat is declining in their impoundments. Dam projects planned or underway represent a serious risk to this species in the future, since the few free flowing rivers with reproducing populations are often also the ones with the biggest share of the remaining potential for further energy exploitation.

Concern was also raised about too much emphasis on hatchery technology and supplementation as a way to reverse declines in huchen. There is growing evidence here, and in many other case studies around the world, that salmonid hatcheries do not provide an effective "demographic boost" to the wild populations, and in fact can pose a real risk to wild fish by way of ecological and genetic factors.

Workshop attendees enjoyed a scenic raft trip down the Dunajeac River (headwaters of the Baltic Sea) that flows through Poland's Pieniny National Park. The river supported a population of sea run brown trout *Salmo trutta* and Atlantic salmon *Salmo salar*, but these populations were extirpated following dam construction, reminding us all that hydropower development has had profound biodiversity and ecosystem impacts in this region.

Dr. Witkowski closed the meeting with a plea that we must reverse current trends or we face a future where the only way to see Danube salmon will be in a museum. Proceedings of the conference are planned for the Archive of Polish Fisheries.

A large Siberian Taimen in Mongolia. © Clemens Ratschan.

Postscript: The IUCN Salmonid Specialist Group announced the completion of IUCN status assessments for all species in the genera Hucho and Parahucho on 18 October 2012. A total of five species are extant in Eurasia. Four of them are now considered threatened by IUCN criteria, and one is Data Deficient. The assessments were highlighted by a number of different media outlets, including the New York Times Green Blog. Please contact the Chair of the IUCN SSG, Pete Rand (prand@wildsalmoncenter.org) if you are interested in more information on these assessments. We would like to acknowledge the funders that supported this initiative, including especially the Chester Zoo, Mohammed bin Zayed Species Conservation Fund and Ocean Park Conservation Foundation, Hong Kong.