



ANIMALS AND MONEY

This part of BioS Reports unravels interesting relations between animals and the economy

Edible Gold – How Valuable is the Global Caviar Market?

Lilli Kratzer

Saffron, truffles, caviar: Luxury food items create a very profitable market. Globally, the market for luxury food was valued at 268 billion US\$ in 2020. The largest share is taken up by luxury seafood, like oysters and caviar, and accounts for 30% of the luxury food market, or an estimated 80.4 billion US\$ [1]. Known colloquially as "edible gold" [2], caviar is not only a food item but also a symbol of wealth.

Caviar refers to salt-cured, unfertilized eggs (roe) of sturgeons [3]. In 2018, 380 t of caviar were produced globally [4]. Modern caviar production almost completely relies on sturgeons farmed in aquacultures [5], the most common of which are Siberian sturgeon, Russian sturgeon and White sturgeon [4, 6, 7, 8]. A less commonly farmed, but certainly more expensive variety, is caviar from Beluga sturgeon [4, 7].

Female sturgeons can produce an amount of eggs equivalent to 10-30% of their body weight every time they lay eggs [8]. With each spawning, individual females of Beluga sturgeon produce between 15 - 20 kg caviar, Russian females between 5 - 20 kg caviar and Siberian females between 5 - 8 kg caviar [8]. Beluga caviar can be worth between 5,000 - 10,000 US\$/kg [9], caviar from Russian sturgeon between 1,500 - 4,000 US\$/kg [10, 11] and caviar from Siberian sturgeon between 950 - 3,000 US\$/kg [12]. Depending on which of these sturgeon species, the caviar produced by a single female can therefore be worth around 4,750 - 200,000 US\$ in retail. Since the sturgeons are usually killed for egg harvesting once they first spawn, this value would not increase through further spawning [4]. Using the value of caviar of the sturgeon species above, the amount of caviar produced worldwide in 2018 could have been worth 361 million - 3.8 billion US\$! Excluding the more expensive and less commonly farmed Beluga sturgeon from the calculation, the turn-over could be estimated at a more realistic 361 million - 1.52 billion US\$.

Although the price estimates for caviar are rather broad, caviar business seems to be very profitable. The broad range of caviar prices is influenced by the use of different sturgeon species and other factors, like the farming country and how long the fish are reared until they can lay eggs [4, 13, 14].

The time-consuming process of caviar production, along with overexploitation and ensuing near extinction of caviar-producing sturgeon species have also led to caviar being the most valuable fish roe product worldwide [4, 6, 15]. To combat legal and illegal overfishing and habitat destruction, the trade of both sturgeon and its roe has been regulated under CITES (the Convention on International Trade in Endangered Species) since 1998 [4, 6]. Despite the existing species protection regulations, there is a big and lucrative illegal caviar market, estimated to exceed the legal market between four and ten times [2, 7].

As shown, caviar plays an important role in the market of luxury (sea)food. The production of caviar in aquaculture will likely allow the caviar market to expand, as the product will be cheaper than wild caviar and therefore more accessible to the middle-class [13]. At the same time, traditionally sourced wild caviar will continue to be in demand, as an identifier of wealth [13]. Either way, caviar production will likely continue to be important. Given that species protection violations and overexploitation have so far been linked to the caviar business, the protection of sturgeons should be guaranteed, and if necessary stronger regulations should be put into place, as the demand for caviar increases.



EXCURSIONS AND OTHER NEWS

Small insights in student's or professor's points of view, field trips, and other stuff we do.

Pythons, Vultures, and Co. - Lab Rotation at Dresden Zoo

Jana Skrobanek

Most people go to zoos to have a good time, but zoos can and should do more than that. Further tasks of zoos are education, research and species conservation. But what is needed to achieve these goals and how was I involved in my lab rotation at the zoo Dresden?



Zoos exchange animals sometimes, to prevent inbreeding and to keep zoo animal populations healthy for species conservation. One of my tasks was to organize such animal transports, by getting in touch with other zoos, organizing the transport with companies and handling bureaucracy. For example, I took care of transporting a group of naked mole rats to a zoo in Denmark. Also I maintained a data bank with specific information about the animals, like heritage and medical information and distinctive identification such as ring or transponder number.

Research is often not done by zoos themselves but if asked the zoos provide data, which I did during my lab rotation for Dresden Zoo. I also had the chance to get some hands-on experience in animal handling. Now I know how many people are needed to hold a 6m reticulated python (at least 7 people, one for the head and then one for every meter), the strength of a griffon vulture (It needs three people to prevent the vulture from going up a rock), and the specific insectivore smell of Etruscan shrews that lingers in your nose for quite some time.

I learned how complex it is to run a modern zoo, and appreciated very much that I could take on so many important tasks.

EXCURSIONS AND OTHER NEWS

Dive into Egypt with BioS

Lyanne Abu-Bader

Thalassaphobia, n. Definition: an intense fear of open water, such as the ocean or the sea.

For a second year in a row, BioS students have been invited to join Professors Oliver Zierau and Stephan Wanke on their annual diving excursion in the beautiful coral reefs of the Red Sea. When I first heard about this trip, I never imagined that I would go. I have a deep and crippling fear of the ocean and the creatures that lurk in the depths. Also, I am not the most confident swimmer. So why did I decide to go? I guess peer pressure and FOMO (Fear Of Missing Out) got to me in the end, forcing me to buy a plane ticket to Egypt and securing my spot on the excursion. Still, there were many moments before the trip that I was still debating if I should go. Despite my fears, I went, I dove, and it was one of the coolest experiences of my life.

We spent two exciting weeks in Hurghada, Egypt, where we dove every day and enjoyed the beautiful and diverse wildlife that the Red Sea has to offer. The first week was in the Roots Red Sea camp. Since many of us were first time divers, we trained and received our diving certification during the first few days at the camp. These training days were intense, since we had a lot to do and to learn, but I really enjoyed the company of my peers. However, I did not enjoy diving. Maybe it was the difficult skills we needed to perform, or the fact that my mask kept fogging up, making the ocean seem just as dark as it does in my nightmares, but the first few dives mostly involved me cleaning my mask and looking longingly towards the surface.

Then, after hearing my grievances, one of our guides took my mask in one hand and his lighter in the other, and he burned the plastic just slightly until it turned black. He instructed me to wash off the black with soap and water, and, by some magic that I cannot understand, my mask never got foggy again. The difference I felt during our next dive was incredible. I was so busy looking at the beauty of the creatures around me that I forgot to be scared.

The rest of the trip was a dream. After one week at the camp, we took our things and boarded Big Blue, a lovely boat that housed and sailed us to various diving spots in the Red Sea for the last week of our trip. We saw so many creatures on our dives, including fish with gorgeous colors, a sea turtle, an octopus, pufferfish, moray eels, rays, and, the highlight, a pod of dolphins! My fear never fully went away. In fact, I still felt very anxious in between dives throughout the whole trip. However, seeing all of these animals face to face really minimized the feeling that one would try to eat me. I am so grateful to myself for facing my fears and allowing me to experience a whole new part of the world.