The epitome of fine dining and fêted by the world's greatest chefs and gourmands as a delicacy *par excellence*, caviar is one of the most famous animal products in the world. The salt-cured eggs (or roe) of the sturgeon might not be to everyone's taste, but there is no denying caviar's gastronomic and cultural importance, nor its prohibitive cost. The most expensive types of the so-called black gold can fetch up to $30,000 per kilo, with some of the highest prices reserved for the caviar of wild sturgeons caught in the Caspian Sea.

But now there's a problem. Sturgeons are in trouble, with scientists estimating that global populations have declined by as much as 90 per cent over the past 30 years. Experts point to the Caspian Sea as a textbook case of the concept of the tragedy of the commons – in which a common resource is exploited to the benefit of an individual – with its endemic species of sturgeon in danger of extinction as a result of over-exploitation, pollution and habitat loss. "The main problems facing sturgeon in Azerbaijan are illegal poaching and loss of their spawning grounds due to hydroelectric dams in the rivers," says Rory Moore of the Blue Marine Foundation (BLUE), which works globally to create marine reserves and establish models of sustainable fishing. In Azerbaijan, BLUE has been working with local NGO International Dialogue for Environmental Action (IDEA) and the Ministry of Ecology and Natural Resources to create the first marine protected area in the Caspian Sea for the sturgeon and other marine species.

Meanwhile, an ambitious new project is taking shape. Designed to help bolster the wild sturgeon population in the Caspian through a coordinated rear-and-release programme while also producing the world's first truly sustainable and eco-friendly caviar, the Azerbaijan Fish Farm is scheduled to open in autumn next year. "We want to play a leading role in the sturgeon restoration process," says company CEO, ▶

BIGGER FISH

Caviar is synonymous with luxury, and that's the problem – the Caspian Sea's sturgeon population is being overfished. But on the coast of Azerbaijan there are new projects dedicated to saving this ancient species

Words by **James Parry**

Opposite The tanks of a modern fish farm in Azerbaijan *This page* A farmed sturgeon aged about 2–3 years

Rufat Tabasaranskiy, "while setting new standards of welfare and sustainability in terms of producing caviar and other sturgeon products." The project will have two locations, the farm itself and a separate saline facility near the release site on the Caspian shore, with overall investment projected to total $15–16 million. As a not-for-profit company, all surplus income will be reinvested in the project and in sturgeon conservation more generally.

Construction work began on the farm last year, at a site covering 60 hectares near the village of Banka, 180km south of the Azerbaijani capital Baku, and on the banks of the River Kura. "The location is very important for us," explains Tabasaranskiy, "for a combination of reasons. After the Volga delta in the north Caspian, the mouth of the Kura is the second biggest traditional 'pasture' site for young sturgeon in the entire sea, where they spend up to a year feeding and developing before heading out into the open sea. The marine protected area offshore makes it an ideal release site for the young fish that we will be rearing." One other factor also helped persuade the project team that they were setting up business in the right place. There was formerly a specialized aquaculture unit here, built in 1954 but which fell into disuse after the breakup of the Soviet Union in 1991. Many of the former workers still live in the area and have useful skills and experience to offer. "Social responsibility is an important part of our ethos," continues Tabasaranskiy, "and so we want to help boost the local economy and employment prospects." Approximately 100 personnel are expected to work at the plant when it is fully up and running.

Delivering a project of such scope and complexity is no easy task. The farm will be rearing young sturgeon – known as fingerlings – for release into the wild, while also maintaining a brood stock of adult fish for the supply of caviar and other products. Almost the entire fish will be utilized in one way or another, with meat either sold as fillets or smoked, and even the skin cured for use in crafts and decoration. Ethical and eco-friendly practices will be followed throughout. "The sustainability label is very important to our proposed approved retailers and so we will be vigilant about ensuring total compliance throughout the production chain," affirms Tabasaranskiy. This approach extends to the use of specially developed organic fish feed and a zero tolerance of the antibiotics and other additives that have traditionally been used at fish farms to ensure artificially high levels of productivity at the expense of animal welfare.

CAREFUL SELECTION

Fertilized fish eggs will be brought to the farm from several different captive sources, each of which will be carefully checked in order to ensure the strongest possible DNA. The focus will initially be on three species of sturgeon: Russian sturgeon (*Acipenser gueldenstaedtii*), starry or

"The sturgeon is such an important part of the Caspian's culture and ecosystem that we cannot simply stand by and watch it disappear"

stellate sturgeon (*Acipenser stellatus*), and Persian sturgeon (*Acipenser persicus*), but it is intended to also breed the highly endangered beluga or European sturgeon (*Huso huso*) in a later phase of the project. Only stock originating from the Caspian will be considered, to retain ecological integrity.

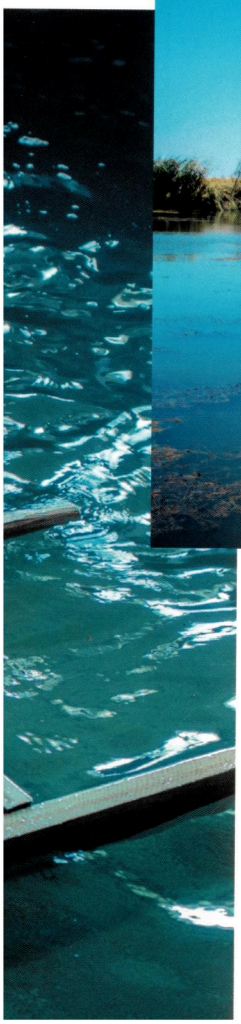
Initially, the imported eggs will be kept in a special incubator in the farm hatchery and, upon hatching, the fingerlings will be transferred into pools of ever-increasing size and levels of salinity (young sturgeon are born naturally in freshwater but will lead much of their lives in the sea). Some young fish, of between one and two years in age, will also be brought into the project. "Although sturgeons are quite resilient when they reach maturity, the fingerlings are very dependent on particular conditions in terms of water composition, temperature and salinity," explains the project's consultant biologist, Zaur Salmanli. "We will be using the latest technology to monitor their environment." The project has set itself an ambitious target of just 15 per cent in terms of projected mortality rates, which compares to current levels of 20–25 per cent at other sturgeon farms.

The fingerlings will be released into the wild when they are two to three months old, by which time they will be up to four centimetres long. The project anticipates releasing several million fingerlings over the coming years, which sounds a large number, but many will not survive life outside the fish farm. Natural predators such as larger fish and birds prey on young sturgeons, which once mature (only after 15–20 years in most cases) are then vulnerable to being poached. Levels of illegal hunting remain high throughout the region, with poachers setting gill nets across river mouths to catch the fish as they come to spawn. They especially target adult females full of eggs – the highly prized caviar – thereby depriving the ecosystem of the natural regeneration required to ensure the ultimate survival of the species.

TO CATCH A THIEF

In the time-honoured tradition of using poachers-turned-gamekeepers, the project will be reaching out to those currently engaged in illegal fishing. "We aim to help alleviate the pressure on wild sturgeon by providing training and alternative employment for former poachers, not only at the fish farm itself but elsewhere in the agricultural sector," says Tabasaranskiy. The project is also working closely with the Azerbaijani authorities through the Ministry of Ecology and Natural Resources and will contribute to outputs required under the international convention on sturgeon conservation.

"The ultimate goal is to help boost the wild population of sturgeons, reduce poaching, and produce environmentally aware caviar and other products through sustainable practices," explains Tabasaranskiy. "The sturgeon is such an important part of the Caspian's culture and ecosystem that we cannot simply stand by and watch it disappear." ●



From far left
Beluga sturgeon fingerlings; a fish farm tank; the Kura river; fishing for sturgeon in the Caspian Sea, 1959

A FISH FIT FOR A KING

There are 27 different species of sturgeon, distributed across Eurasia and North America in both freshwater and marine environments.

Sturgeons are thought to be among the oldest of fish, with origins dating back over 200 million years and an appearance largely unchanged.

Beluga sturgeon can reach a length of 7–8m, weigh up to a tonne and live to be more than 100 years old – truly venerable giants.

Sturgeons were highly regarded long before caviar became a luxury. In medieval Europe they were declared the preserve of royalty, alongside whales. Commoners were forbidden to catch or eat them under pain of severe penalty.