



Cátà
việt nam

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1. AN OVERVIEW

1.1 Introduction

Vietnam Sturgeon Group is proud to be the leader in the field of sturgeon aquaculture development in Vietnam. After a long time of researching with many dedicated efforts, the Group has successfully built a large-scaled scientific sturgeon farming system. We are constantly expanding the Sturgeon farming network to new potential locations with the aim of turning Vietnam into a leading country in raising and producing this endangered species. Currently, the Group has six subsidiaries operating in incubating, breeding and rearing sturgeons as well as producing black caviar.



1.2 An Overview of the World Sturgeon and Caviar Market

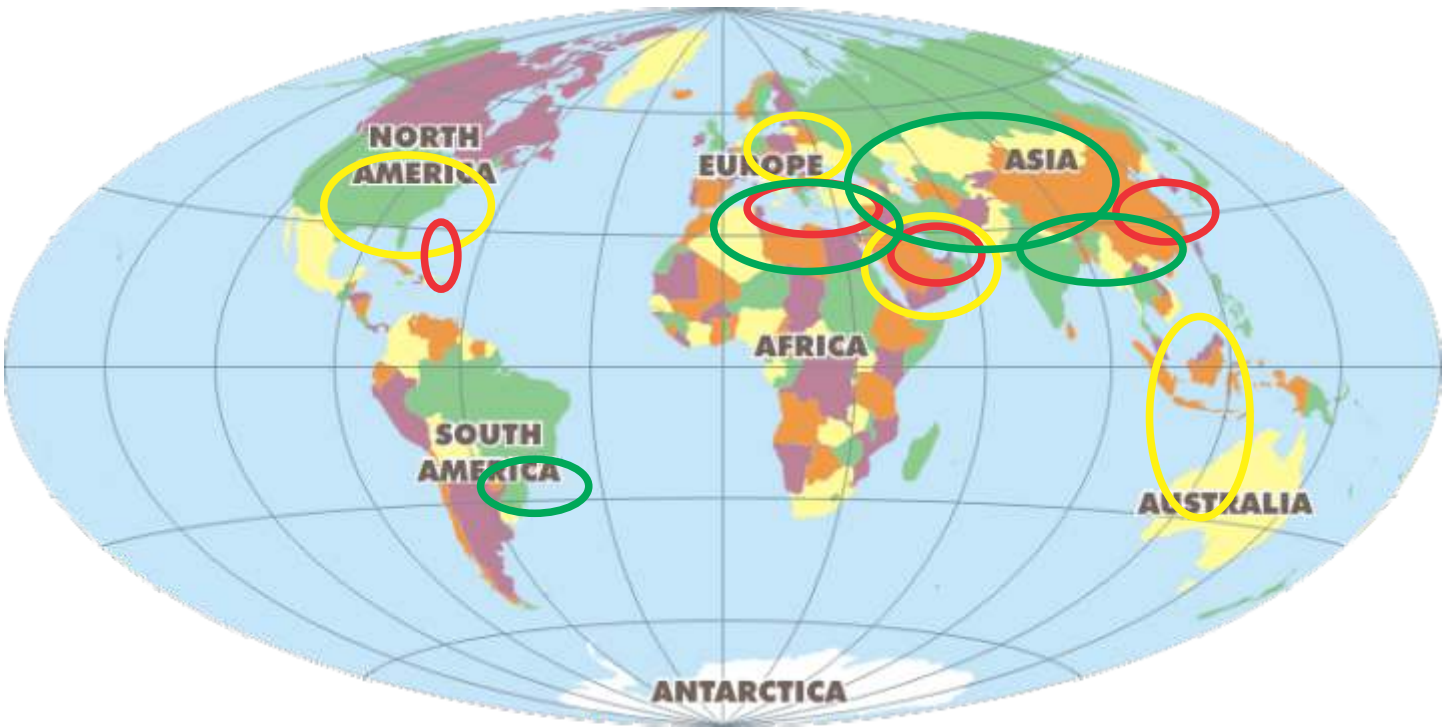
The output of caviar extracted from wild sturgeons in the '70s reached 20,000-30,000 tons/year. In 2001, the production dropped to less than 500 tons annually and only 50 tons in 2011.

The wholesale prices of black caviar on the world market currently range as high as US\$1,000 – \$6,000 per kg.

The prices of commercial sturgeon meat range from US\$8,000 to \$30,000 per ton.

The rapid increase in the quantity of caviar from farmed sturgeons proves a considerable caviar market.

With such a declining production of caviar from wild sturgeon, and the rapid increase in the quantity of caviar from farmed sturgeons, it is believed that there will be a considerable caviar market, and farmed caviar will replace the wild one in the future.



World Sturgeon Consumption map by 2001

1.3 The development of world sturgeon aquaculture

Nowadays, the world sturgeon aquaculture industry has been growing impressively. The leading nations in Sturgeon raising include China, United States, Iran, Uruguay, Kazakhstan, Russia and other Eastern European countries. Sturgeon farming output also increased remarkably from 150 tons in 1984 to 3,000 tons in 2000.

In 2008, the global production of farmed caviar was estimated to be 110 – 120 tons, mostly originating from some of 80 farms in 16 countries. However, this figure is changing rapidly. At present, a total of 36 countries involve in sturgeon aquaculture for meat and caviar (Williot et al 2009), including Vietnam.



2. HISTORY

Before its official establishment in 2007, the Vietnam Sturgeon Group has gone through many years of researching, testing the breeding scheme of the Russia sturgeon under the support and guidance of the Ministry of Fisheries, Ministry of Science and Technology, Fisheries Association along with many agencies and other organizations. As the result, Vietnam - Dalat Sturgeon Ltd. Company, the first foundation of the Vietnam Sturgeon Group, was established.

The important milestones in the history of the Group's activities can be summarized as follows:

- (1) In 2006, Ca Tam Viet Nam's founders and experts first completed the research of "Conservation and Growth of the Family Acipenseridae in Vietnam".
- (2) In 2007, Ca Tam Vietnam Ltd. was established in Da Lat City, beginning sturgeon farming in Vietnam.
- (3) In 2008, Tam Long Dami JSC was established in Binh Thuan Province, establishing the sturgeon farming industry in Vietnam.
- (4) In 2009, the first batch of black caviar was harvested from Siberian Sturgeon (*Acipenser Baerii Baerii*). Total production of Ca Tam Vietnam Ltd. exceeded 50 MT/year. Ca Tam Viet Nam first officially introduced sturgeon commercial products to the Vietnamese market.
- (5) In 2010, black caviar first appeared in the Vietnamese market under the brand name "Caviar de Duc". First success achieved in hatching of the company's sturgeon breeds in Tuyen Lam lake facility occurred in the same year.
- (6) In 2011, Ca Tam Viet Nam became a well-known brand in the local market.
- (7) In March 2011, the company opened a new farming facility in Binh Dinh Province.
- (8) In October 2011, another farm was established in Bac Giang Province, after nearly one year of experimental sturgeon rearing.
- (9) In November 2011, the fifth farming facility, the largest of its kind in Southeast Asia, was built in Dak Lak Province.





3. MISSION

- **Sturgeon conservation**

Be able to reproduce a new healthy generation of the endangered sturgeon species and make a contribution into the protection of the wild sturgeon population

- **Product differentiation**

Produce high quality products, not only by the taste but also through the raising technologies including:

- Optimized quality control
- Feeding fish with natural products
- Diseases prevention and treatment
- Natural habitat conditions

- **Availability**

By expanding our business each year, we will meet the sturgeon and caviar market's demand within the next the decade, providing good prices and quantity enough to reduce illegal wild caviar trade. We are aiming to bring the sturgeon market to its initial accessibility, making it available to a large number of consumers.

4. VISION

- **Worldwide market**

Become an international supplier of sturgeon products and caviar, covering the largest markets, such as the United States, the EU and Japan.

Be able to produce a new generation of sturgeons in our facilities and become the biggest supplier of sturgeon fertilized eggs as well as fry to other farms in the world.

- **Most developed raising technology**

Develop an ideal open water system which would provide the highest rate of productivity and yet sustain a stable eco-friendly farming system.

Raise the most valuable sturgeon species (Beluga – *Huso Huso*, Russian – *Acipenser Gueldenstaedtii*)

- **Biggest in the world**

Become the biggest sturgeon raising farms not only on Southeast Asian, but also in the world.

- **Best caviar quality**

Present to the world black caviar at its highest quality and taste, following the most nourishing and nutritious feeding technology.

Provide an environment that sturgeons would normally live in naturally





5. KEYS SUCCESS FACTORS

- **Open & eco-friendly farming system**
 - Allow fish to grow as they would in their natural habitat while keeping them carefully monitored and providing them with all essential supplementary vitamins and minerals.
 - Regularly control, analyze and assess the influence of sturgeon farming on local environment in coordination with the municipal “Organization of environmental protection”.
- **Farm management**

Smart & systemized farm management, following HACCP requirements, and adjusting to local conditions.
- **Feed quality and quantity**

Systemized nutrition control, combining dry fish feed with live food (worms, small fish or snails, etc.). Due to Vietnam's geographical advantage of it's long coastline and warm water full of abundant resources, our sturgeons are being fed mainly with small fish and other sea creatures.
- **Water quality**

Located in hydroelectric lakes with a regularly strong water flow and cold water, our farms sustain suitable water conditions for sturgeon farming.
- **Market**

Located in hydroelectric lakes with a regularly strong water flow and cold water, our farms sustain suitable water conditions for sturgeon farming.
- **Labor**

It's well known that Vietnam has a comparatively cheap labor, which makes it convenient for us to run a business. Additionally, Vietnamese workers are very initiative, responsible and hard working. They are significantly contributing to the Vietnam Sturgeon Group's success.

6. NETWORK

Vietnam Sturgeon Group has six subsidiaries, including five fully operating facilities on the territory of Vietnam.

(1) Vietnam Sturgeon JSC. : Specializing in sturgeon products and caviar distribution in Hanoi and Ho Chi Minh City markets. The company aims to build and develop the brands “Vietnam Sturgeon” and “Caviar de Đuc” into major sturgeon products and caviar brand names in the region and around the world.

(2) Vietnam – Dalat Sturgeon Ltd. Company: Specializing in sturgeon aqua cultural research & development of hatching technology and caviar production. The company was established in 2007 in Tuyen Lam Hydroelectric Lake, DaLat city.

(3) Tam Long Dami JSC. : Specializing in raising, processing sturgeons and producing black caviar. This subsidiary was established in 2008 in Dami Hydroelectric Lake, Binh Thuan Province.

(4) Vietnam – Binh Dinh Sturgeon Ltd. Company: Specializing in raising sturgeons, developing hatching technologies and caviar production. Established in March 2011, the company is located in Vinh Son Hydroelectric Lake, Binh Dinh Province.

(5) Vietnam – Dak Lak Sturgeon Ltd. Company: Specializing in raising, developing hatching technologies and caviar production. This facility was built in November 2011 in Buon Tua Srah hydroelectric Lake, Dak Lak Province.

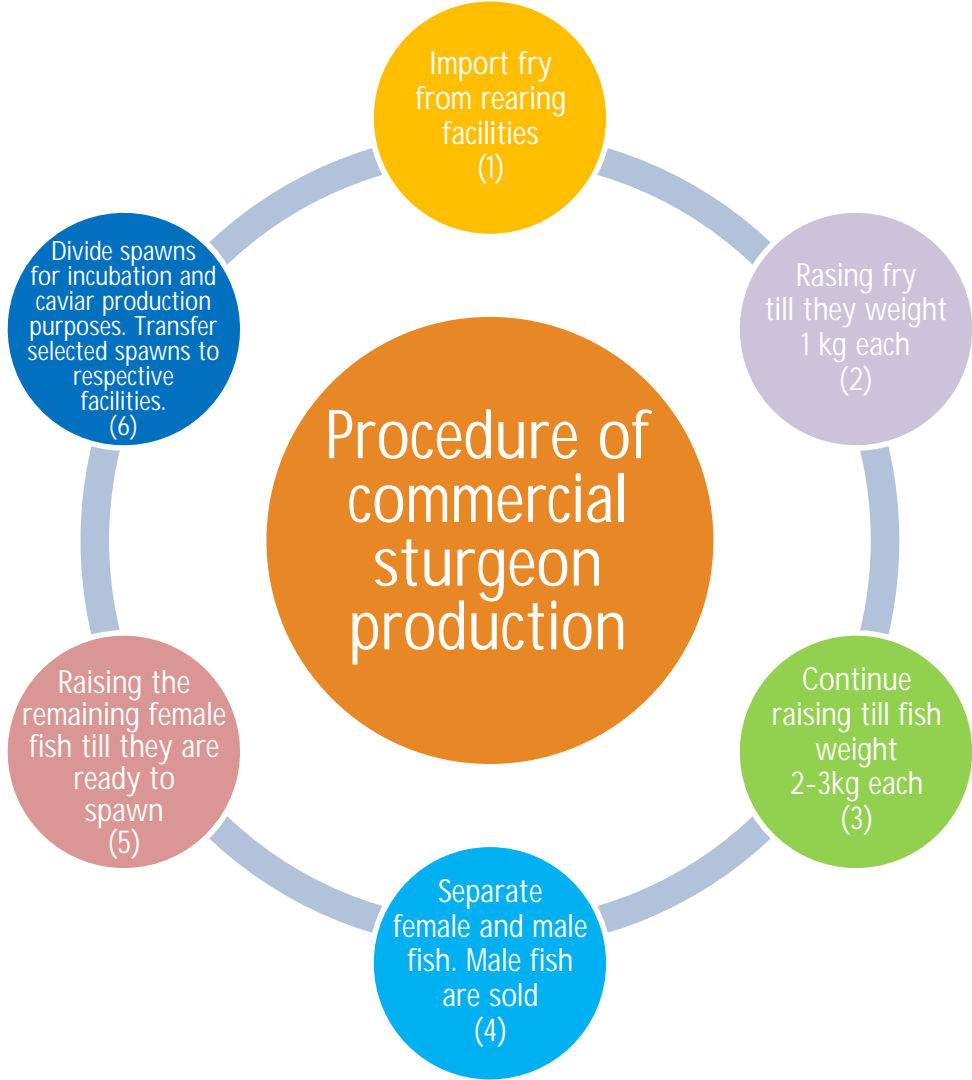
(6) Vietnam – Bac Giang Sturgeon Ltd. Company: Specializing in raising, developing hatching technologies and caviar production. The company was established in October 2011 in Cam Son lake, Bac Giang Province.



7. TECHNOLOGY

The current sturgeon farming technology in the world is based on temperate climate, in which water temperature ranges between 23 to 25°C. To adapt to Vietnam's tropical climate, the farming technology, however, is adjusted in the raising system facilities, the nutrition and food for fish to cope with the climate's differences. After a long time of researching and experimenting, we have found an ideal living environment for this coldwater species, i.e: hydroelectric lake.

Strict implementation of the production procedure under the guidance and supervision of Russian sturgeon specialists also plays an important part in the Group's success.



Procedure of commercial sturgeon production

- 1. The procedure is applied in production at all facilities
- 2. Russian experts consult in stages 1-3
- 3. Experts participate and/or help in stages 4-6
- 4. Farming facilities are following the Global G.A.P standards.

7.1 Successful breeding of fish fry

- After 7 years of researching and experimenting, Ca Tam-Da Lat Company's hatchery successfully bred, hatched and reared larval and juvenile fish of Russian sturgeon (*Acipenser gueldenstaedtii*). This success was a result of strict execution of standards and rules in each step of the hatching procedure, including selecting and raising broodfish, tracking each individual using an electronic chip, creating a suitable hibernation place, stimulating spawning of broodfish, as well as monitoring incubation and rearing of fry.

- Wild sturgeons go through hibernation before spawning. Artificial hibernation places for farm raised sturgeons, however, don't often meet the quality of the natural conditions and fail to stimulate spawning among farmed fish. As a result, spawning success remains low.

The procedure of growing fertilized eggs includes:

- (1) Importing broodfish from the facility
- (2) Screening the current stock of adult fish
- (3) Selecting prime broodfish from the current stock
- (4) Fish wintering
- (5) Spawning and hatching
- (6) Rearing fry till they weight 100gr each
- (7) Export fingerlings to production facilities

Hibernation and hatching require the most care and efforts from specialists. Consequently, success in hatching fry not only marks the Group's achievement in the sturgeon production process but also proves its capacity and proactiveness in the business.





7.2 The Global G.A.P standard

- All production and farming processes at Catam Vietnam's farms and facilities are monitored against the standards of Global G.A.P, a private sector body that sets voluntary standards for the certification of production processes of agricultural (including aquaculture) products around the globe.
- The GLOBALG.A.P. standard is primarily designed to reassure consumers about how food is produced on the farm by minimizing detrimental environmental impacts of farming operations, reducing the use of chemical inputs and ensuring a responsible approach to worker health and safety as well as animal welfare.
- In Vietnam's sturgeon farms, cage systems are carefully arranged in coldwater lakes to take advantage of the natural environment's conditions, yet strictly following the Global G.A.P standard. Therefore, the Vietnam Sturgeon Group's products always enjoy great quality that is equivalent to those caught in the wild while maintaining our commitments to environmental protection.

7.3 Sturgeon's nutrition

- Vietnam Sturgeon Group's nutrition scheme for our farmed sturgeons are among the most advanced ones. Feed are customized to meet different nutritional demands of fish at different stages of their life cycle. Most prepared feed are imported from the world leader in the production and supply of feed for farmed fish, such as Skretting from France. In addition, earthworms and smaller live fish are used in feeding sturgeons in order to provide necessary nutrition for the fish and balance their diet. Russian specialists frequently monitor and change the composition of the feed as well as the quantity of supplements in feed to meet with the local climate conditions. This process differentiates Vietnam's sturgeon feed from other prepared feed available in the market. Moreover, sturgeon specialists adjust the fish's diet according to their growth and health to best feed them.

7.4 Disease control

- Disease prevention and treatment are based upon the entire farm's fish health records since the fish are released into the lake. As a result, Vietnam Sturgeon Group has been successfully controlling common disease on sturgeons, including liver rot, fin rot or wounds, bacteria gill disease, etc. Other factors that help Vietnam Sturgeon Group to improve the fish's health include the use of medicine in treatment, especially antibacterials. We do not use medicine with no clear labels and/or origins.

7.5 Ultrasound screening

- Russian specialists periodically conduct ultrasound examination to distinguish the sexes when fish are biologically mature. This is a crucial step in determining the quantity and prices of caviar products-the strategic products of Vietnam Sturgeon Group.



8. FARMING FACILITIES



- Up to now, Vietnam Sturgeon Group has been successfully operating five farms across provinces in Vietnam, including Lam Dong, Binh Thuan, Binh Dinh, Bac Giang, and Dak Lak.
- In 3 years, the Group will open 10 more facilities and focus on the production of black caviar.

Overview

No	Factors	Time frame	Parameters
1	Total water surface area in use	Up to 2011	15,000 ha
2	Growth rate	Monthly	15-20%/month
3	Average maturity age	N/A	4-5 years
4	Annual output of sturgeon foodfish	2011	200 tons
5	Annual output of caviar	2011	2 tons
6	Total investment cost	2007-2011	500 billion VND (US\$24 million)



8.1 Vietnam-Da Lat Sturgeon Ltd. Company
Vietnam-Da Lat Sturgeon Co, Ltd. was established in 2007 in Da Lat City. The company is the main supplier of fry for the its sturgeon farm at Tuyen Lam Hydroelectric Lake

No	Factors	Parameters
Tuyen Lam Hydroelectric Lake		
1	Total water surface area	360 ha
2	Average atmosphere temperature	22-25°C
3	Average water temperature	20-25°C
Production scale		
1	Total investment cost (2007-2011)	US\$4.8 million
2	Broodfish output	400,000 fish
3		
4		
5		

8.2 Tam Long Dami JSC., Binh Thuan Province
Công ty Cổ phần Tầm Long Đami được thành lập năm 2008 chuyên nuôi trồng, sản xuất và chế biến Cá Tầm thương phẩm và Trứng cá đen tại Hồ thủy điện Đami, tỉnh Bình Thuận.

No	Factors	Parameters/Description
Dami Hydroelectric Lake		
1	Total water surface area	600 ha
2	Average atmosphere temperature	22-28°C
3	Average water temperature	25-30°C
Production scale		
1	Projected total investment cost (2008-2011)	US\$12 million
2	Current water surface area used in farming (2011)	38.000 m ²
3	Projected water surface area used in farming	12 ha
4	Current annual foodfish output (2011)	400 tons
5	Species	Acipenser gueldenstaedtii, Acipenser ruthenus, Huso huso, Acipenser Baerii, Paddlefish
6	Projected annual caviar output	25 tons





8.3 Vietnam – Binh Dinh Sturgeon Ltd. Company:, Binh Dinh Province

Công ty TNHH Cá Tầm Việt Nam – Bình Định thành lập vào tháng 3/2011, chuyên nuôi trồng, sản xuất, chế biến Trứng cá đen và nghiên cứu ấp nở trứng giống tại hồ thủy điện Vinh Sơn, tỉnh Bình Định

No	Factors	Parameters/Description
Vinh Son Hydroelectric Lake		
1	Total water surface area	300 ha
2	Average atmosphere temperature	22-26 ^o C
3	Average water temperature	24-27 ^o C
Production scale		
1	Projected total investment cost (starting in 2011)	US\$5 million
2	Total water surface area used in farming	2.660 m ²
3	Projected water surface area used in farming	6 ha
4	Current annual foodfish output (2011)	30 tons
5	Projcted annual foodfish output	500 tons
	Species	Acipenser gueldenstaedtii, Huso huso
6	Projected annual caviar output	12 tons

8.4 Vietnam-Dak Lak Sturgeon Ltd. Company

Specializing in raising sturgeons, developing hatching technology and producing caviar, this facility was built in November 2011 in Buon Tua Srah hydroelectric Lake, Dak Lak Province.

No	Factors	Parameters/Description
Buon Tua Srah Hydroelectric Lake		
1	Total water surface area	3,700 ha
2	Average atmosphere temperature	26-31°C
3	Average water temperature	25-28°C
Production scale		
1	Projected total investment cost	US\$70 million
2	Total cages'surface area	70 ha
3	Projected annual foodfish output	2,000 tons
4	Species	Acipenser gueldenstaedtii, Huso huso
5	Projected annual caviar output	130 tons



Farming facility at Buon Tua Srah Lake, Dak Lak



Opening ceremony of the 5th Sturgeon farm of Vietnam Sturgeon Group



8.5 Vietnam – Bac Giang Sturgeon Ltd. Company

The company was established in October 2011 in Cam Son lake, Bac Giang Province. Vietnam – Bac Giang Sturgeon Ltd. Company specializes in developing hatching technologies and caviar production. The company was established in October 2011 in Cam Son lake, Bac Giang Province

No	Factors	Parameters/Description
Cam Son Hydroelectric Lake		
1	Total water surface area	3,200 ha
2	Average atmosphere temperature	23.5°C
3	Average water temperature	18°C
Production scale		
1	Projected total investment cost	US\$65 million
2	Total cages'surface area	64 ha
3	Projected annual foodfish output	1,800 tons
4	Annual output of fry	10 million fish
5	Species	Acipenser gueldenstaedtii, Huso huso
6	Projected annual caviar output	120 tons

8.6 Projects' report in 2011

No	Project	Proposed Scale of production	
1	Kon Tum Province	Total surface area Total cages' surface area Projected annual output Total investment cost	700 ha 14 ha 120 tons of foodfish & 10 tons of caviar US\$20 million
2	Khanh Hoa Province	Total surface area Total cages' surface area Projected annual output	300 ha 6 ha 60 tons of foodfish & 5 tons of caviar US\$12 million
3	Dak Nong Province	Total investment cost Total surface area Total cages' surface area Projected annual output Total investment cost	5,000 ha 100 ha 1,800 tons of foodfish & 200 tons of caviar US\$90 million



9. STAFF

9.1 Vietnam Sturgeon Group is proud to be home of an experienced and dedicated workforce, including directors and managers, Russian specialists as well as 500 other workers and specialists.

- Our creative managers and directors whose corporate vision & business mandates have been transformed into success are our legendary leaders.
- Our dedicated staffs have been working really hard and constantly contributing to the corporation's success.
- Our Russian sturgeon specialists with invaluable knowledge and expertise are our treasures. Both of our chief specialists, Mr. Poznyakov Anatoliy and Mr. Dosaev Rafael, who possess more than 20 years of experience are working and conducting research at our facilities.

9.2 Vietnam Sturgeon Group is proud to be working with various Russian specialists in the sturgeon and caviar production industry.

- **Mr. Dosaev Rafael** is a specialist in caviar production with more than 20 years of experience. Mr Rafael supervises the construction and operation of caviar and sturgeon production facilities. He is also in charge of transferring caviar processing technology.

- **Mr. Poznyakov Anatoliy**, an ichthyologist and a specialist in commercial sturgeon, production, has over 15 years of experience. He concentrates in selecting broodfish, fish hibernation, spawning and rearing fry as well as fingerlings. Mr. Anatoliy also assists in training other engineers and develops a unique technology for rearing sturgeon broodfish and fry in Vietnam.





44 Smoked Sturgeon

10. STURGEON PRODUCTS

Sturgeon appeared on earth 200 million years ago. One of the oldest families of bony fish in existence, sturgeon are native to subtropical, temperate sea including the Caspian Sea and the Black Sea as well as other rivers and lakes such as the Delaware River, the Rhin River, the Garonne River, the Elbe River, the Volga River, the Danube and Lake Ladoga. They are distinctive for their elongated bodies with five major rows of dermal "scutes", and lack of scales.

- Sturgeon meat is white and has a fresh, tender and full bodied taste. It was considered to be the reason why the Russian attempted to expand their territory to the Pacific Asia. Nowadays, sturgeon meat and other products from sturgeons are great source of profits.
- Currently, Vietnam Sturgeon Group is raising Russian sturgeons, Beluga, Bester and Siberia sturgeons.
- Our sturgeon products consist of fresh sturgeons, frozen sturgeons, sturgeon fillets, smoked sturgeons and cleaned sturgeons.



11. BLACK CAVIAR

- Black caviar is a luxury and extremely nutritional food. Black caviar, a product made from salt-cured fish-eggs of the Acipenseridae family, is considered among 10 most gourmet and expensive foods that shouldn't be missed. Serving caviar requires both the right decorations and supplementary foods to make the dish a fancy feast while maintaining the fresh, clean, nutty taste and a distinct creamy texture of the food. Caviar is best served cool but not frozen with blini and sour cream, traditional Russian foods, in glass utensils or silverwares.

- Caviar is a great source of vitamin A, D and marine omega-3 polyunsaturated fatty acids. Some scientists claim these vitamins help reduce depressive disorders as well as cardiovascular disease. Caviar contains more than 30% protein and 20% essential fatty acids. Doctors suggest consumption of caviar in individuals who are suffering from tuberculosis, malnutrition and people who are recovering from illness.

- Black caviar is sold all over the world as a royal delicacy. In the West, black caviar is frequently associated with prosperity and luxury. Caviar's retail prices range from US\$1,500 to \$6,000 per kg for the popular kinds. Rare kinds, including Beluga and Kaluga caviar's, may cost up to US\$10,000 per kg.



12. Caviar de Duc

12.1 Vietnam Sturgeon Group is proud to be the first to present Black Caviar to Vietnam market with the brand name: "Caviar de Duc".

- We make a simple combination of Sturgeon roe and salt become a symbol of style and perfection. A melting nutty flavor of our Imperial Osetra caviar will bring you unforgettable moments, a feeling of being special and unique.
- The secret of Caviar de Duc goes deep inside the roots of its origins. In order to create a significant Caviar, "passion" is a MUST. A carrying hand of our workers follows every step of the Sturgeon's life.
- From the first and the most fragile days of the fish, we create perfect conditions for it in the lakes with natural water flow, planktons, sunlight and wind. We clearly understand that only in this habitat our Sturgeons can be healthy and feel like home, only this way each of us will be able to taste the power of nature in each grain of Caviar de Duc.

12.2 Caviar de Duc's products

Caviar de Duc promises to supply the best quality black caviar extracted from Russian (*Acipenser gueldenstaedtti*) and Beluga (*Huso huso*)

(1) Caviar de Duc – Osetra Caviar Malossol

Considered the most flavorful and elite caviar by critics, Russian Osetra is one of the most desired types of caviar in the world. Generally nutty and buttery in taste, the savory roe ranges in color from deep black to light gold and almost white. The texture of Osetra caviar tends to be a bit firmer than other types of caviar, which was traditionally reserved for royalty.

(2) Caviar de Duc – Beluga Caviar

Beluga caviar is one of the most valuable sturgeon caviar in the world, due to the rarity of this fish and the purest taste, earthy nutty flavor. Each year, only about 100 units of Beluga sturgeon are caught around the world. It almost takes about 20 years for the Beluga to reach its mature period.





12.3 Processing methods

- When processing the Black Caviar, first the foremost is to meet the requirements of the strictest Food Safety Criteria such as: Clean and pasteurized room; qualified laboratory... Under the closest quality control system, Caviar de Duc is brought to the market with the highest quality and safety.

Here are the types of caviar processing method in making "Caviar de Duc"

1. Traditional method: "malossol". Experts often prefer this kind of processing method in making caviar. Malossol means lightly salted. Fresh caviar usually has a maximum of only three percent salt. This type of caviar is considered a high quality type. It is the finest process and tends to be more expensive because of the capacity of taste and flavor preservation.

2. The new method: The roe is treated in higher temperature than in the traditional methods which help to clarify the roe. It is the improved process of the traditional method where it can lengthen the preservation or shelf life of the caviar. We can exploit the roe without bringing on an operation on the sturgeon. Each grain still remains its original shape as well as a strong and nutty flavor.

- **Serving caviar**

Following a tradition, serve your Caviar de Duc cold and alone in a crystal bowl that has been placed inside an ice-filled larger bowl. Use a set of mother-of-pearl plate and spoon to feel each delicate taste of Osetra caviar. Metallic (except for golden) utensils may ruin the taste of caviar. Truly fine caviar should be served only with accompaniments that will not interfere with the flavor of the caviar itself.

Vodka and champagne are the ideal textural match for caviar. A very pure, fine vodka is to be served in frozen glass consistently shows off the flavour and texture of each caviar grain. Let the process of enjoying caviar become an art.

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