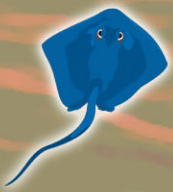
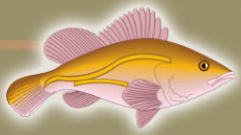
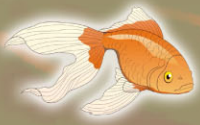
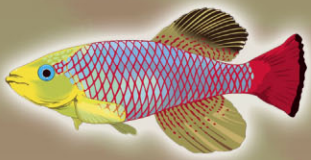
Living Creature Called Fishes

Bio Kit for Kids NO. 6









2011-2020
United Nations Decade on Biodiversity

THAILAND

Living Things Called Fishes

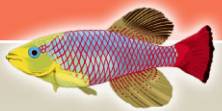
Fishes are vertebrate aquatic species. Their body is perfectly designed for underwater life; it is covered in scales, breathes through gills, uses fins and tail for swimming. They are cold-blooded and have only two heart chambers, compared to human's heart.

Scales Most fishes have scales, which are almost round shape, to protect them. The scales are larger when fishes grow in size. Shark scales are like small sharp teeth. Some fishes such as seahorses and filefishes have weird shaped scales for protection. The rings on a scale tell the age of its owner.

seahorse

filefishes

Gills All species of fish have gills for breathing. To start breathing, fishes take water into the mouth while the gill covers are closed. Then they close the mouth and the water is expelled through the gills in which capillaries absorb oxygen dissolved in the water and release carbon dioxide to the water.



Fins Fins are important organs for swimming. Dorsal and anal fins help balance the body while pectoral and pelvic fins function as rudders for controlling direction. The tail is used for propulsion. Rays use pectoral fins for swimming. Eels have no dorsal and pelvic fins and cannot swim well.

stingray

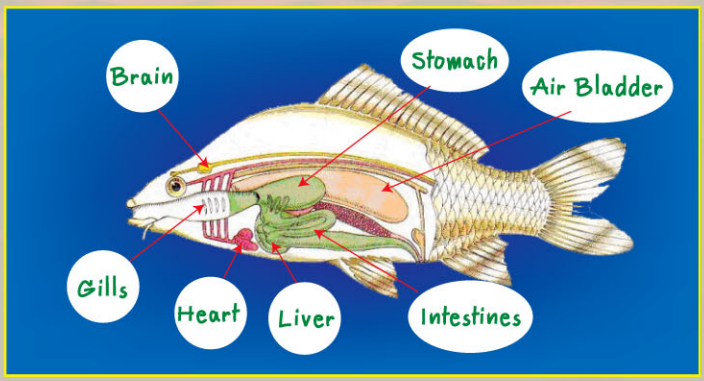
common swamp eel

Fishes have one heart with 2 chambers which receive deoxygenated blood (venous blood) and pump it to the gills. they have a brain efficiently developed for vision and perception of odours.

Fishes live in water. Some species of fish live only in freshwater such as rivers, swamps and lakes. Some live in seawater but some live in both.

Fishes are cold-blooded animal. Their body temperature varies according to water temperature. They will die if water is too hot or cold. So fishes will seek for places that have optimum temperature for living.

Internal organs function and have structure like other vertebrates. Fishes have simple stomach and intestines. Herbivorous fishes have longer intestines than carnivorous ones. The liver is the largest internal organ of fish and produce digestive enzymes and bile. The air bladder helps buoyancy.

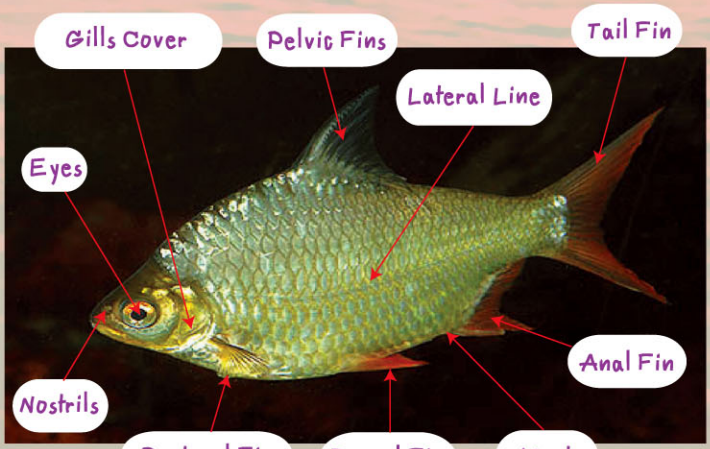


Most fishes have air bladders so they can float in water. Sharks and stingrays have no air bladders so they sink when stop swimming. The air bladder of some fishes such as sea catfishes, croakers and white perches are used for cooking some delicious food called fish maw.


Stingray


Dry Air Bladder


Braised Fish Maw in Red Gravy



Sensory Perception of Fish

Eyes Most fishes have eyes with good vision. They are located on each side of their heads. This allows them to see things in lateral, forward, backward, upper and lower directions. They sleep with their eye open as they have no eyelids.

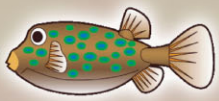
Nostrils Fishes use nostrils for perception of odours and chemicals in water, not for breathing. Sharks have very sensitive nostrils that can sense blood odours of prey in the distance.

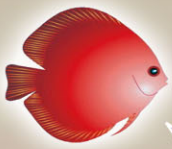
Lateral line Fishes detect vibration of water through plenty of sensory nerves in the lateral line.

The Origin of Fish

Fishes appeared before the Ordovician period or around 500 million years ago. Fishes in this period had round-mouth and no jaws and are called ostracoderms. After the period, they (evolved into) to those had thick scales. In the Devonian period (360 million years ago) fishes whose skeletons were made of cartilage, such as sharks, appeared. In this period, there was also the evolution of bony fishes.

Although the number of insect and molluscs is more than that of fishes, among vertebrates, fishes are highest in number of species. There are 32,000 species of fish found in the world or a half of vertebrates. In Thailand there are at least 2,820 species of which 720 live in freshwater and 2,100 live in saltwater.





Fish existed in the world 500 million years ago. It is believed that fishes evolved from amphioxuses which have cartilage as backbone.

Amphioxus

Fish fossil

Types of Fish

Fishes are categorised into 3 types which are cyclostomes, chondrichthyes and osteichthyes.

Lamprey

Cyclostomes are jawless fish and have funnel-like sucking mouth to suck blood from prey. They are, for example, lampreys and hagfishes. They have eel-like bodies, flat tails, no paired fins and no scales. They live in most temperate regions and are also found in the Andaman Sea, Thailand.

Chondrichthyes are the fish whose skeletons are made of cartilaginous cells and have jaws that are separate from the skull. They have rough and spiny scales covering the body. Sharks and stingrays are the examples of this species of fish. There are 800 species living in the sea and freshwater. Most of them are viviparous.

Shark

Arowana

Osteichthyes are the fish whose skeletons are made of bone cells, and have jaws joined to the skull. They are different in shapes and live in the sea and freshwater. Most of them, such as arowanas, are oviparous.

The Value of Fishes for Humans.

Fishes are important food sources with rich nutrition humans. Fishes consist of easily digestible proteins and minerals such as calcium, phosphorus, including vitamins. Fishes contain unsaturated fat and does not cause cardiovascular disease so they are preferable diet. People all over the world consume fishes and other aquatic creatures more than 143.7 million tons annually. Thailand has high potential in fishery and the total fishery products are 4.05 million tons or 2.8 % of global fishery products. Also, Thailand exports fishery products globally which are worth 190,000 million baht annually.

Omega 3 fatty acids are essential fatty acids for human. They are part of brain function and help reduce cholesterol in bloodstream and dementia. They are mostly found in marine fishes essuch as white perches, mackerels and tunas. They are also found in freshwater fishes such as snakehead fishes and red tilapias. Stripped catfishes have 2,570 milligrams per 100 grams of fish, which is the highest amount among freshwater fishes, and are more than those of salmons 1.5-8 times.

Stripped Catfish

Stripped Catfish Meat

Processed Stripped Catfish Meat

Thai History and Myths Regarding Fish

Thais have been familiar with fish for a long time. Fishes are deeply bound by Thai way of life, tradition, and culture. Over the past 700 years during the reign of King Ram Khamhaeng of Sukhothai Kingdom, the words "There are fishes in the water and there is rice in the paddy fields" were carved on the Ram Khamhaeng Inscription I. Apart from this, there are interesting stories about fish connected to Thai history and myths.

Carps are the first fish appeared in Thai historical records such as the poetry of the northern people. The fish were also brought along with the migration of Thais from the south of China.

Glass Catfishes (Gaang Pra Ruang) There is a myth about glass catfishes that King Pra Ruang ate a glass catfish and left its fish bones to a river. After that he said "go swim little fish", then the fish bones became a living fish again and was named Gaang Pra Ruang since then.

The Royal Barge Suphannahong was built and has been used as the royal barge of the King since Ayutthaya era. A fishery expert said the head of the barge was imitated from the head of seahorses.

Goldfishes were brought from China to Thailand by Chinese vendors for raising as ornamental fish, during the reign of King Phetracha, and are still popular as pets.

Asian Redtail Catfish According to a myth of Ayutthaya period, It said King Uthong, the founder and the first king of Ayutthaya Kingdom, dreamed that he and his troops arrived at a swamp in Nong Sano, and he saw an Asian redtail catfish jumped into the air and fell on the land. It made loud noises like war drums. He recognised the dream as the sign of auspicious time to establish the kingdom right there in Nong Sano.

The Best Records of Thai Fishes

The followings are eight examples of the best records of Thai fish. Some fish own domestic records but some made global ones. Other records of Thai fishes are still more but not presented here.

Mekong Giant Catfish It is the largest bony fishes in Thailand and in the world. The length of it can reach 3 metres and the weight can be up to 300 kilograms. It feeds on algae and dead plant material. It is found only in Mekong River and its branches. It is nearly extinct because of hunting and habitat degradation.

Whale Shark It is the largest marine fishes in Thailand and in the world. The length of it can reach 12.65 metres and the weight can be up to 21.5 tons. It has torpedo-like body and is calm nature. It feeds on planktons and tiny creatures. It is found in the Gulf of Thailand and in the Andaman Sea. It tends to be extinct by hunting.

Boraras micros It is the tiniest fish in Thailand and is ranked third in the world. The length of the fish is around 1.35 centimetres. It is found only in Kud Ting Wetland in Nongkai Province. It tends to be extinct by habitat degradation and pollution.

Siamese Tigerfish It is the most expensive fish in Thailand. It is sold for more than ten thousand baht. It was found in Chao Praya River, Mekong River, and Bung Boraphet in Nakhon Sawan Province. It is extinct in the wild by hunting for food and sale as pets, and habitat degradation.

Grey Large-Eye Bream It was the first Thai fish recorded and given a scientific name in 1830. It was found in the Andaman Sea for the first time. It is recognised as rare marine fish. The first specimen of the fish has been collected in National Museum of Natural History in Paris.

Batfish It lives in the highest habitats range in Thailand, which are mountains at the height of more than 1,000 metres. There are 9 species found in Thailand. It is threatened by hunting. (As shown in the picture, it is *Oreoglanis siamensis* and is found only in Doi Inthanon National Park in Chiang Mai Province.)

Lanternfish It lives in the deepest sea in Thailand at the depth of more than 2,000 metres. It was found in the Andaman Sea in 2006.

Fish Fossils The oldest fish fossil found in the country is located in Phu Namchan in Kuchinaria, Kalasin Province. It lived in the Cretaceous or 150 million years ago. (As shown in the picture, it is *Leopidotes buddhabutrensis* having hard scales to protect the body.)

Thai Fish Stamps Set II issued in 1968. There were eight stamps in the set. In this set, a picture of a fish described as "goby" was in fact a "Queen of Siam goby". The Queen of Siam goby was found for the first time in 1937 by Dr. Hugh M. Smith, the former Director General of Department of Fisheries, in Ong Ang Canal behind Pahurad Market, Bangkok. Queen Rambhai Barni gave permission to name the fish after her name, Rambhai. At present, the fish cannot be found in Bangkok due to habitat degradation. However, it can be found in some canals in Pra Pradaeng, Samut Prakan province and in Pangnga and Phuket provinces.

Magilogobius rambaiae
The Queen of Siam goby

The Beauty of Fish of Thailand and Linguistic Appreciation of Thai Poets

Ancient Thai Poets usually used surrounding things as material to write beautiful poems.

In Ayutthaya period, there was a very famous Thai poet, Prince Thammathibet (1705-1746). He composed a boat song called "Bot Chom Pla" (fishes praising song) in Thai. The song described the beauty of the fish in the river, mentioning various species and admiring their colours and their graceful swimming.

The red-tail and the tinfoil barb were two species among many mentioned in the Bot Chom Pla. The beauty of the fish was described in comparison with that of ladies.

Barbonymus altus

Barbonymus schwanenfeldii

Note

The red-tail and the tinfoil barb almost look alike. You can tell them apart by their body colours. The body of the red tail is golden while the tinfoil barb's is silvery. The edge of the tail fin and the dorsal fin of the tinfoil barb is obviously black.

There was another well known poet who wrote poems praising the beauty of a variety of fish he found. He was Sunthorn Phu (1786-1855). He lived in Ratanakosin period.

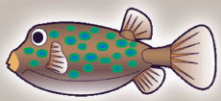
The Siamese giant carp was one among many fishes mentioned in an epic poem of Sunthorn Phu, Pra Apaimanee. Its stunning swimming was described.

Catlocarpio siamensis

Catlocarpio siamensis Model

Note

The Siamese giant carp is usually referred to in many poems and often described as strong, swift and powerful. This is because of its big head and wide mouth including its big scales.



Last but not least

After learning interesting things of fish, we would like to encourage you to preserve our fish and natural resources. The easy ways to do so are the followings.

- Protect water resources from degradation. For example, do not drop litter into water resources and do not change nature of water resources.

- Jointly conserve fish by halting the fish catching during spawning period and opposing illegal fishing. Anyone who witness illegal fishing activity should report to responsible agencies.
- Take care of your ornamental fish you raise by changing the water in the fish tank regularly. Study nature of fish and know what fish can live together in the same tank.
- Love all the pets you have at home. If they are unwell, consult with pet experts or take them to veterinarians. Some diseases of pets can spread to humans.
- Take ornamental fishes you no longer want to the nearby fishery agency. Do not release them to water resources because some of them are alien species which can compete against local fishes for food. They can eat all local fishes, making them extinct in the wild.
- Ask your parents to bring you to aquariums if you want to know more about fishes.

Thank you all speakers in the conference on Fish Biodiversity in Thailand held on 3 December 2009 at Narai Hotel, Bangkok.

For more information, please visit http://chm-thai.onep.go.th

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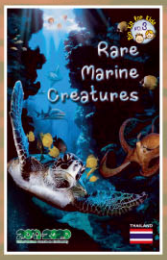

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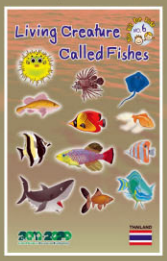

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