Longevity in Fishes

- Longevity and lifespan are often interchangeably Used
- Although the term refers to time which individuals or group of individuals might live, absolute numbers in years may vary among databases and reports
- The matter turns difficult when “average” or “maximum” is added to describe the term
- For the sake of this bite, it seemed wiser to focus on the applications and the overall concept rather than incomplete data or contradicting figures
- Relying on one comprehensive database “Fish Base” has been found a logic approach to follow
- The data as shown in a following Table refer to “Maximum” longevity which implies that average longevity should be below maximum longevity
- Based on “maximum longevity” in the Table, species could be sorted into long-lived, short-lived as well as intermediate-lived species

Longevity refers to:

- The average number of years that a single individual lives **OR**
- Length or duration of life **OR**
- The age in an unexploited stock at which only 1% of a cohort has survived **OR**
- Maximum expected age, on average, for a species, stock, or a population whereas fishing practices and/or man-induced mortality are absent

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Maximum reported age for selected species (years)

Common name	Scientific name	years	Common name	Scientific name	years
Sturgeon (Beluga)	Huso huso	118	Atlantic bluefin tuna	*Thunnus thynnus*	15
European eel	Anguilla anguilla	88	Gilthead seabream	*Sparus aurata*	11
Siberian sturgeon	Acipenser baerii	60	Rainbow trout	*Oncorhynchus mykiss*	11
Goldfish	Carassius auratus auratus	41	Roho labeo	*Labeo rohita*	10
Common carp	Cyprinus carpio	38	Bluegill	*Lepomis macrochirus*	10
Mangrove red snapper	Lutjanus argentimaculatus	31	Red mullet	*Mullus surmuletus*	10
Channel catfish	Ictalurus punctatus	24	Nile tilapia	*Oreochromis niloticus*	9
Largemouth black bass	Micropterus salmoides	23	Yellowfin tuna	*Thunnus albacares*	9
Orange-spotted grouper	Epinephelus coioides	22	African catfish	*Clarias gariepinus*	8
Grass carp	Ctenopharyngodon idella	21	Redbelly tilapia	*Tilapia zillii*	7
Flathead grey mullet	Mugil cephalus	16	Zebrafish	*Danio rerio*	5.5
European seabass	Dicentrarchus labrax	15	Mosquito fish	*Gambusia affinis*	3

Source: Fishbase

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Longevity in Fishes (influencing factors)

Human activities

Fishing practices (e.g. overfishing)

Habitat alteration or destruction (e.g. damming, habitat loss)

Pollution and disease: the impact could be general or selective

Introduction of exotic species and its possible effects through variety of paths (e.g. predation, competition, hybridization or cross breeding)

Genetic alteration

Could negatively impact fish fitness such what could occur in the improper stock enhancement programs

Sterile trout stock has been claimed to live longer than their sexually mature counterparts. This superiority has been attributed to their better condition and higher lipid reserves while entering winter while the spawning process of sexually mature fish may lead to depleted lipids and possible starvation and mortality

Longevity and sexual maturation & spawning
(Examples)

Sturgeon Beluga (Huso huso)

Most sturgeon species mature at a late age whereas on the average females mature at the age of 15 years while males mature at 10 years

The high world demand for caviar has led to increase the catch of sturgeon of younger age and smaller size. As a result, the longevity of the species has significantly declined

Photo: Siberian sturgeon
Credit: Alejandro Perretta (Uruguay)

European eels (Anguilla anguilla)

The actual lifespan (longevity) of European eels is dependent on maturation. Eels once get mature and spawn, they die. European eels can spawn as early as 7 years old. Hence, if eels spawn immediately after maturation, they may die starting from 7-years old in spite of their high longevity records

Source: Animal Diversity Web

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Longevity in Fishes - Applications

Longevity and aquaculture types: The choice of a given aquaculture system usually considers project size and investment as well as applied technology. The planning of caviar production of sturgeon (top longevity) would require heavy investments and advanced technology while rural aquaculture relies on species of shorter generation such as tilapia for quick turn over.

Longevity and genetic engineering: In some genetic engineering programs, some fish species with relatively short longevity has been used as model fish for technology testing which could be used on target species or even human. Zebra fish (Danio rerio) is an example of model organism.

Longevity and fish safety for human consumption: Fish with high longevity if found in polluted habitats tend to build up pollutants such as heavy metals over time. In general, large carnivorous fishes accumulate high levels of heavy metals in their bodies.

Longevity and conservation programs: The short longevity of these species renders it less vulnerable to moderate exploitation.

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