Klasifikasi oreochromis niloticus pdf

Common name (e.g. trout) Genus + Species (e.g. Gadus morhua) Classification / Names Common names | Synonyms | Catalog of Fishes(genus, species) | ITIS | CoL | WoRMS | Cloffa Actinopteri (ray-finned fishes) > Cichliformes (Cichlids, convict blennies) > Cichlidae (Cichlids) > Pseudocrenilabrinae Etymology: Oreochromis: Latin, aurum = gold + Greek, chromis = a fish, perhaps a perch (Ref. 45335); niloticus: From "Filhoa" = the Amharic word for "hot spring" (Ref. 2).More on author: Linnaeus. Environment: milieu / climate zone / depth range / distribution range Ecology Freshwater; brackish; benthopelagic; potamodromous (Ref. 51243); depth range 0 - 20 m (Ref. 32849), usually ? - 20 m (Ref. 34290). Tropical; 14°C - 33°C (Ref. 3); 32°N - 5°S, 17°W - 38°E Distribution Countries | FAO areas | Ecosystems | Occurrences | Point map | Introductions | Faunafri Africa: naturally occurring in coastal rivers of Israel (Ref. 5166), Nile basin (including lake Albert, Edward and Tana), Jebel Marra, Lake Kivu, Lake Tanganyika, Awash River, various Ethiopian lakes, Omo River system, Lake Turkana, Suguta River and Lake Baringo (Ref. 2). In West Africa natural distribution covers the basins of the Senegal, Gambia, Volta, Niger, Benue and Chad, with introduced specimens reported from various coastal basins (Ref. 53405). Widely introduced for aquaculture, with many existing strains. Several countries report adverse ecological impact after introduction. The following subspecies were previously recognized: Oreochromis niloticus baringoensis, Oreochromis niloticus cancellatus, Oreochromis niloticus eduardianus, Oreochromis niloticus filoa, Oreochromis niloticus niloticus, Oreochromis niloticus sugutae, Oreohromis niloticus tana and Oreohromis niloticus vulcani. Length at first maturity / Size / Weight / Age Maturity: Lm 18.6, range 6 - 28 cm Max length : 60.0 cm SL male/unsexed; (Ref. 4967); max. published weight: 4.3 kg (Ref. 40637); max. reported age: 9 years (Ref. 164) Short description Morphology | Morphometrics Dorsal spines (total): 15 - 18; Dorsal soft rays (total): 11-13; Anal spines: 3; Anal soft rays: 9 - 11; Vertebrae: 30 - 32. Diagnosis: A large deep-bodied tilapia, with a relatively small head (Ref. 118638). Jaws of mature male not greatly enlarged, length of lower jaw 29-37% of head length; genital papilla of breeding male not tassellated (Ref. 2). Most distinguishing characteristic is the presence of regular vertical stripes throughout depth of caudal fin (Ref. 4967, 53405); at all life stages, the tailfin is marked with numerous thin vertical stripes; in smaller fishes, these are relatively wide and form an arc, and start at the base of the tailfin (Ref. 118638).Males are bluish pink, sometimes with a dark throat, belly, anal and pelvic fins; females are usually brownish, silvery/white beneath with around 10 thin vertical bars (Ref. 118638). Occurs in a wide variety of freshwater habitats like rivers, lakes, sewage canals and irrigation channels (Ref. 28714). Does not do well in pure salt water, but is able to survive in brackish water (Ref. 52307). Mainly diurnal. Feeds mainly on phytoplankton or benthic algae. Additionally, insect larvae are of some importance, as are aufwuchs and detritus; juveniles tend to be more omnivorous than adults (Ref. 52307). Oviparous (Ref. 205), ovophilic (Ref. 52307). A maternal mouthbrooder (Ref. 2, 52307, 118638), males dig simple pits in shallow water (Ref. 118638). Globally, the most important tilapia species in fish farming and supports major capture fisheries where established (Ref. 118638). It is generally highly invasive (Ref. 118638) and it is known to hybridise with many other Oreochromis species and for this reason further stocking has been banned in a number of countries, e.g. South Africa, Malawi and Zambia (Ref. 118638). Extended temperature range 8-42 °C, natural temperature range 13.5 - 33 °C (Ref. 3). Maximum depth from Ref. 34290. Marketed fresh and frozen (Ref. 9987). Life cycle and mating behavior Maturity | Reproduction | Spawning | Eggs | Fecundity | Larvae Sexual maturity is reached at 3-6 months depending on temperature, reaching about 30 g. Reproduction occurs only when temperatures are over 20°C. Several yearly spawnings every 30 days. Females incubate eggs inside their mouths (approximately for a week) where larvae hatch and remain until the vitellus is reabsorved. Egg size 1.5 mm, larval length at hatching 4 mm. Spawns in firm sand in water from 0.6 to 2 m deep of lakes (Ref. 2) and inshore waters (Ref. 55624). Males set up and defend territory which are visited by the females. Courtship lasts several hours. A single male probably fertilises the eggs of more than one female (Ref. 55624). Eggs are shed in batches in shallow nest and fertilized by male. Each batch of eggs is picked up into oral cavity by female. Females solely involved in broodcare. Female carries up to 200 eggs in her mouth where the larvae hatch and remain until after the yolk-sac is absorbed. Main reference Upload your references | References | Coordinator : Kullander, Sven O. | Collaborators Trewavas, E., 1983. Tilapiine fishes of the genera Sarotherodon, Oreochromis and Danakilia. British Mus. Nat. Hist., London, UK. 583 p. (Ref. 2) Least Concern (LC) ; Date assessed: 06 April 2020 Human uses Fisheries: highly commercial; aquaculture: commercial FAO - Aquaculture: production, species profile; Fisheries: landings, species profile; Publication: search | FishSource | Tools Bio-Quiz | E-book | Field guide | Identification keys | Length-frequency wizard | Life-history tool | Point map | Classification Tree | Catch-MSY | Special reports Check for Aquarium maintenance | Check for Species Fact Sheets | Check for Aquaculture Fact Sheets Download XML Summary page | Point data | Common names | Photos Internet sources AFORO (otoliths) | Aquatic Commons | BHL | Cloffa | BOLDSystems | Websites from users | Check FishWatcher | CISTI | Catalog of Fishes: genus, species | DiscoverLife | ECOTOX | FAO - Aquaculture: production, species profile; Fisheries: landings, species profile; Publication: search | Faunafri | Fishipedia | Fishtrace | GenBank: genome, nucleotide | GloBI | Google Books | Google Scholar | Google | IGFA World Record | MitoFish | National databases | OsteoBase: skull, spine | Otolith Atlas of Taiwan Fishes | Public aquariums | PubMed | Reef Life Survey | RFE Identification | Socotra Atlas | Tree of Life | Wikipedia: Go, Search | World Records Freshwater Fishing | Zoological Record Estimates based on models Phylogenetic diversity index (Ref. 82805): PD50 = 0.5000 [Uniqueness, from 0.5 = low to 2.0 = high]. Bayesian length-weight: a=0.01905 (0.01586 - 0.02290), b=2.97 (2.93 - 3.01), in cm total length, based on LWR estimates for this species (Ref. 93245). Trophic level (Ref. 69278): 2.0 ±0.0 se; based on diet studies. Generation time: 2.9 (2.2 - 3.9) years. Estimated as median ln(3)/K based on 25 growth studies. Resilience (Ref. 120179): Medium, minimum population doubling time 1.4 - 4.4 years (K=0.14-0.41; tm=1-2; tmax=9; Fec < 1,000). Fishing Vulnerability (Ref. 59153): Low to moderate vulnerability (34 of 100) . Climate Vulnerability (Ref. 125649): (0 of 100) . Price category (Ref. 80766): Unknown. Species of fish Nile tilapia Wild type above,aquacultured type (likely of hybrid origin) below Conservation status Least Concern (IUCN 3.1)[1] Scientific classification Kingdom: Animalia Phylum: Chordata Class: Actinopterygii Order: Cichliformes Family: Cichlidae Genus: Oreochromis Species: O. niloticus Binomial name Oreochromis niloticus(Linnaeus, 1758) Synonyms Tilapia crassispina Arambourg, 1948 Perca nilotica Linnaeus, 1758 Chromis nilotica (Linnaeus, 1758) Chromis niloticus (Linnaeus, 1758) Oreochromis nilotica (Linnaeus, 1758) Oreochromis niloticus niloticus (Linnaeus, 1758) Sarotherodon niloticus (Linnaeus, 1758) Tilapia nilotica (Linnaeus, 1758) Tilapia nilotica nilotica (Linnaeus, 1758) Chromis guentheri Steindachner, 1864 Tilapia eduardiana Boulenger, 1912 Oreochromis niloticus eduardianus (Boulenger, 1912) Tilapia nilotica eduardiana Boulenger, 1912 Tilapia cancellata Nichols, 1923 Oreochromis cancellatus cancellatus (Nichols, 1923) Oreochromis niloticus cancellatus (Nichols, 1923) Tilapia nilotica cancellata Nichols, 1923 Tilapia calciati Gianferrari, 1924 Tilapia regani Poll, 1932 Tilapia nilotica regani Poll, 1932 Tilapia inducta Trewavas, 1933 Tilapia vulcani Trewavas, 1933 Oreochromis niloticus vulcani (Trewavas, 1933) Oreochromis vulcani (Trewavas, 1933) Oreochromis niloticus baringoensis Trewavas, 1983 Oreochromis niloticus filoa Trewavas, 1983 Oreochromis cancellatus filoa Trewavas, 1983 Oreochromis niloticus sugutae Trewavas, 1983 Oreochromis niloticus tana Seyoum & Kornfield, 1992 The Nile tilapia (Oreochromis niloticus) is a species of tilapia, a cichlid fish native to the northern half of Africa and the Levante area, including Israel, and Lebanon.[2] Numerous introduced populations exist outside its natural range.[1][3] It is also commercially known as mango fish, nilotica, or boulti.[4] The first name leads to easy confusion with another tilapia which is traded commercially, the mango tilapia (Sarotherodon galilaeus). Description The Nile tilapia reaches up to 60 cm (24 in) in length,[2] and can exceed 5 kg (11 lb).[5] As typical of tilapia, males reach a larger size and grow faster than females.[5] Wild, natural-type Nile tilapias are brownish or grayish overall, often with indistinct banding on their body, and the tail is vertically striped. When breeding, males become reddish, especially on their fins.[5][6] Although commonly confused with the blue tilapia (O. aureus), that species lacks the striped tail pattern, has a red edge to the dorsal fin (this edge is gray or black in Nile tilapia), and males are bluish overall when breeding. The two species can also be separated by meristics.[6] Because many tilapia in aquaculture and introduced around the world are selectively bred variants and/or hybrids, identifying them using the standard features that can be used in the wild, natural types often is not possible.[6] The virtually unknown O. ismailiaensis has a plain tail, but otherwise closely resembles (and may only be a variant of) the Nile tilapia.[7] Regardless, O. ismailiaensis might be extinct, as its only known habitat in northeastern Egypt has disappeared,[8] although similar-looking individuals (perhaps the same) are known from the vicinity.[7] Nile tilapia can live for more than 10 years.[5] Range and habitat The Nile tilapia is native to larger parts of Africa, except Maghreb and almost all of Southern Africa. It is native to tropical West Africa, the Lake Chad basin, and much of the Nile system, including lakes Tana, Albert and Edward–George, as well as lakes Kivu, Tanganyika, and Turkana, and the Awash and Omo Rivers. In Israel, it is native to coastal river basins.[1][2] It has been widely introduced elsewhere, both in Africa and other continents, including tens of countries in Asia, Europe, North America, and South America. In these places, it often becomes highly invasive, threatening the native ecosystems and species.[1][2] However, some introduced populations historically labelled as Nile tilapia either are hybrids or another species; the Nile tilapia and blue tilapia especially often have been confused.[6] The Nile tilapia can be found in most types of freshwater habitats, such as rivers, streams, canals, lakes, and ponds, and ranging from sea level to an altitude of 1,830 m (6,000 ft).[1][2] It also occurs in brackish water, but is unable to survive long-term in full salt water.[2] The species has been recorded at water temperatures between 8 and 42 °C (46 and 108 °F), although typically above 13.5 °C (56.5 °F),[2] and the upper lethal limit usually is at 39–40 °C (102–104 °F).[1] Also, some variations occur depending on the population. For example, those in the northern part of its range survive down to the coldest temperatures, while isolated populations in hot springs in the Awash basin and at Suguta River generally live in waters that are at least 32–33 °C (90–91 °F).[8] Although Nile tilapia can survive down to relatively cold temperatures, breeding generally only occurs when the water reaches 24 °C (75 °F).[5] Subspecies O. n. niloticus Although FishBase considers the species as monotypic,[2] several distinctive populations often are recognized as valid subspecies:[1][8][9] O. n. niloticus (Linnaeus, 1758) – most of species' range O. n. baringoensis Trewavas, 1983 – Lake Baringo in Kenya O. n. cancellatus (Nichols, 1923) – Awash basin in Ethiopia O. n. eduardianus (Boulenger, 1912) – Albertine Rift Valley lakes O. n. filoa Trewavas, 1983 – hot springs in Awash basin in Ethiopia O. n. sugutae Trewavas, 1983 – Karpeddo soda springs at Suguta River in Kenya O. n. tana Seyoum & Kornfield, 1992 – Lake Tana in Ethiopia O. n. vulcani Trewavas, 1933 – Lake Turkana in Ethiopia and Kenya While the species is overall very widespread and common, the IUCN considers O. n. baringoensis as endangered, O. n. sugutae as vulnerable, and O. n. filoa as data deficient.[1] A population found in Lake Bogoria appears to be an undescribed subspecies.[8] The forms referred to as Oreochromis (or Tilapia) nyabikere and kabagole seem to belong to this species, too. An undescribed population found at, for example, Wami River, Lake Manyara, and Tingaylanda seems to be a close relative.[10] Behavior Feeding The Nile tilapia is mostly a herbivore, but with omnivorous tendencies, especially when young.[2] They mostly feed on phytoplankton and algae, and in some populations other macrophytes also are important.[1] Other recorded food items are detritus and aquatic insect larvae,[2] including those of mosquitoes, making it a possible tool in the fight against malaria in Africa.[11] However, when introduced outside its native range, it often becomes invasive, threatening more localized species.[2] The Nile tilapia typically feeds during daytime, which suggests that, similar to trout and salmon, it exhibits a behavioral response to light as a main factor contributing to feeding activity. Due to its fast reproductive rate, however, overpopulation often results within groups of Nile tilapia. To obtain the necessary nutrients, night feeding may also occur due to competition for food during daylight. A recent study found evidence that, contrary to popular belief, size dimorphism between the sexes results from differential food conversion efficiency rather than different amounts of food consumed. Hence, although males and females eat equal amounts of food, males tend to grow larger due to a higher efficiency of converting food to body weight.[12] Social organization Groups of Nile tilapia establish social hierarchies in which the dominant males have priority for both food and mating. Circular nests are built predominantly by males through mouth digging to become future spawning sites. These nests often become sites of intense courtship rituals and parental care.[13] Like other fish, Nile tilapia travel almost exclusively in schools. Although males settle down in their crafted nesting zones, females travel between zones to find mates, resulting in competition between the males for females.[citation needed] Like other tilapias, such as Mozambique tilapia, dominance between the males is established first through noncontact displays such as lateral display and tail beats. Unsuccessful attempts to reconcile the hierarchy results in contact fighting to inflict injuries. Nile tilapia have been observed to modify their fighting behavior based upon experiences during development. Thus, experience in a certain form of agonistic behavior results in differential aggressiveness among individuals.[14] Once the social hierarchy is established within a group, the dominant males enjoy the benefits of both increased access to food and an increased number of mates. However, social interactions between males in the presence of females results in higher energy expenditures as a consequence of courtship displays and sexual competition.[12] Reproduction Typical of most fish, Nile tilapia reproduce through mass spawning of a brood within a nest made by the male. In such an arrangement, territoriality and sexual competition amongst the males lead to large variations in reproductive success for individuals in a group. The genetic consequence of such behavior is reduced genetic variability in the long run, as inbreeding is likely to occur among different generations due to differential male reproductive success.[15] Perhaps driven by reproductive competition, tilapias reproduce within a few months after birth. The relatively young age of sexual maturation within Nile tilapia leads to high birth and turnover rates. Consequently, the rapid reproductive rate of individuals can actually have a negative impact on growth rate, leading to the appearance of stunted tilapia as a result of a reduction in somatic growth in favor of sexual maturation.[16] Female Nile tilapia, in the presence of other females either visually or chemically, exhibit shortened interspawning intervals. Although parental investment by a female extends the interspawning period, female tilapia that abandon their young to the care of a male gain this advantage of increased interspawning periods. One of the possible purposes behind this mechanism is to increase the reproductive advantage of females that do not have to care for young, allowing them more opportunities to spawn.[17] For males, reproductive advantage goes to the more dominant males. Males have differential levels of gonadotropic hormones responsible for spermatogenesis, with dominant males having higher levels of the hormone. Thus, selection has favored larger sperm production with more successful males. Similarly, dominant males have both the best territory in terms of resources and the greatest access to mates.[18] Furthermore, visual communication between Nile tilapia mates both stimulates and modulates reproductive behavior between partners such as courtship, spawning frequency, and nest building.[13] Parental care Species belonging to the genus Oreochromis typically care for their young through mouthbrooding, oral incubation of the eggs and larvae. Similar to other tilapia, Nile tilapia are maternal mouthbrooders and extensive care is, therefore, provided almost exclusively by the female. After spawning in a nest made by a male, the young fry or eggs are carried in the mouth of the mother for a period of 12 days. Sometimes, the mother pushes the young back into her mouth if she believes they are not ready for the outside. Nile tilapias also demonstrate parental care in times of danger. When approached by a danger, the young often swim back into the protection of their mother's mouth.[19] However, mouthbrooding leads to significant metabolic modifications for the parents, usually the mother, as reflected by fluctuations in body weight and low fitness. Thus, parental-offspring conflict can be observed through the costs and benefits of mouthbrooding. Protection of the young ensures passage of an individual's genes into the future generations, but caring for the young also reduces an individual's own reproductive fitness.[16] Since female Nile tilapia exhibiting parental care show extended interspawning periods, one of the benefits is slowing down vitellogenesis (yolk deposition) to increase the survival rate of one's own young. The size of spawned eggs correlates directly with advantages concerning hatching time, growth, survival, and onset of feeding, since increased egg size means increased nutrients for the developing young. Thus, one of the reasons behind a delayed interspawning period by female Nile tilapia may be for the benefit of offspring survival.[17][20] Aquaculture An Egyptian New Kingdom amulet in the shape of a tilapia hieroglyph from circa 1350/1320 BC Main article: Aquaculture of tilapia Tilapia, likely the Nile tilapia, was well known as food fish in Ancient Egypt and commonly featured in their art (paintings and sculptures). This includes a 4000-year-old tomb illustration that shows them in man-made ponds, likely an early form of aquaculture.[5][21] In modern aquaculture, wild-type Nile tilapia are not farmed very often because the dark color of their flesh is undesirable for many customers, and because of the reputation the fish has as being a trash fish.[22] However, they are fast-growing and produce good fillets; leucistic ("red") breeds which have lighter meat have been developed to counter the consumer distaste for darker meat.[citation needed] Hybrid stock is also used in aquaculture; Nile × blue tilapia hybrids are usually rather dark, but a light-colored hybrid breed known as "Rocky Mountain White" tilapia is often grown due to its very light flesh and tolerance of low temperatures.[22] As food Live pla nin on a table at a Thai market The red-hybrid Nile tilapia is known in the Thai language as pla thapthim (Thai: □□□□□□□), meaning "pomegranate fish" or "ruby fish".[23] This type of tilapia is very popular in Thai cuisine, where it is prepared in a variety of ways.[24] The black-and-white-striped tilapia pla nin (Thai: □□□□), meaning "Nile fish", has darker flesh and is commonly either salted and grilled or deep-fried, and it can also be steamed with lime (pla nin nueng manao).[25] Nile tilapia, called بلطي bulṭi in Arabic, is (being native to Egypt) among the most common fish in Egyptian cuisine, and probably the most common in regions far from the coast. It is generally either battered and pan-fried whole (بلطي مقلي bulṭī maqlī [bʊltˤiː maʔliː]) or grilled whole (بلطي مشوي bulṭī mashwī [bʊltˤiː maʃwiːl]). Like other fish in Egypt, is generally served with rice cooked with onions and other seasonings to turn it red.[citation needed] In Israel, Nile tilapia is commonly fried, grilled or baked with veg and spices and eaten with rice or bulgur pilafs. It is also baked in the oven with tahini sauce drizzled over it with potatoes, onions, asparagus, sweet peppers or tomatoes and flavored with sumac and dried mint.[citation needed] Tilapia, often farmed, is a popular and common supermarket fish in the United States.[citation needed] In India, Nile tilapia is the most dominant fish in some of the South Indian reservoirs and available throughout the year. O. niloticus grows faster and reaches bigger sizes in a given time. The littoral areas of Kelavarappalli Reservoir are full of nests of Nile tilapia and they breed during south-west monsoon (July–September). The fish mainly feed on detritus. Zooplankton, phytoplankton, and macrophytes also were recorded occasionally from the gut of Nile tilapia. The demand is heavy, especially from local poor people, as this fish is affordable to the lowest income group in this area.[26] See also Nile perch — a similar-named but different fish that grows much larger and is highly predatory References ^ a b c d e f g h i Diallo, I.; Snoeks, J.; Freyhof, J.; Geelhand, D.; Hughes, A. (2020). "Oreochromis niloticus". IUCN Red List of Threatened Species. 2020: e.T166975A134879289. doi:10.2305/IUCN.UK.2020-3.RLTS.T166975A134879289.en. Retrieved 19 November 2021. ^ a b c d e f g h i j k Froese, Rainer; Pauly, Daniel (eds.) (2015). "Oreochromis niloticus" in FishBase. November 2015 version. ^ Azevedo-Santos, V.M.; O. Rigolin-Sá; and F.M. Pelicice (2011). 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