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This indicated that when females are housed in small groups, they form a stable dominance order, or "pecking order". ^ Panijpan, Bhinyo; Sriwattanarothai, Namkang; Laosinchai, Parames (2020). 265 (2): 163–177. PMID 31406496. Retrieved 13 November 2020. doi:10.1007/s10646-014-1345-0. PMID 30513419. Fishkeeping World. Plants or rocks
that break the surface often form a base for bubble nests. This is due to the males attempting to attract potential mates to their nest, so eggs can successfully be laid.[76] It has also been found that in determining a suitable mate, females often "eavesdrop" on pairs of males that are fighting. Bettas may have first entered the United States in 1910, via
importers in California; there is also evidence they were imported in 1927 from Cambodia.[31] While it is unclear when bettas became popular in the aquarium trade, the early 20th century marked the first known departure from centuries of breeding bettas for aggression, to instead selecting for colour, finnage, and overall beauty for ornamental
purposes.[31] In 1927, an article was published in Germany describing the long, flowing fins of the "veiltail" breed, which indicates an emphasis on aesthetic beauty.[35] In the 1950s, an American breeder created a larger and longer-finned veiltail, while around 1960, Indian breeders discovered a genetic mutation that allowed for two caudal fins,
producing the "doubletail" variety. ^ a b Bray, Dianne. ^ a b Bray
to attacking each other if housed in the same tank; without a means of escape, this will usually result in the death of one or both fish. 46 (4): 382. 31. 43 (2): 91-104. ^ a b Pennisi, Elizabeth (17 June 2020). PMID 33515118. Courtship behaviour There has been much research in the courtship behaviour between male and female Siamese fighting fish. Journal of Comparative Psychology. 20 (5): 369-378. Retrieved 6 November 2018. "Siamese Fighting Fish, Betta Splendens, despite the term scientifically applying to the entire genus, which includes B. ^ "Betta Origins". (1968). 2: 862-879. Mitochondrial DNA Part B. In addition to these hybrids within the genus Betta,
 intergeneric hybridisation of Betta splendens and Macropodus opercularis, the paradise fish, has been reported. [58] Colors A male betta Wild bettas exhibit strong colours only when agitated. Slavoud, R.W.; Rainey, C.J. (1983). Bangkok, Associated Press in (17 November 2016). Wikispecies has information related to Betta splendens. ISSN 0963
9292. ^ "Metallics and Masked". Retrieved 3 March 2016. Later experiments confirmed the presence of genetic variation in hatchery stocks in Thailand, with low average numbers of alleles per locus and high heterozygosity rates.[103] Notable color phenotypes in B. Betta Guide. ^ a b Clotfelter ED, O'Hare EP, McNitt MM, Carpenter RE,
Summers CH. "Betta Primer". Though this is obviously safer than exposing the fish to another male, prolonged sight of their reflection may lead to stress in some individuals. ^ AFP (5 February 2019). During this experiment, a dummy female was placed in the tank. splendens can reach sexual maturity in as early as 4-5 months. ISBN 978-
1843178613. ^ "Betta Splendens & Siamese Fighting Fish". IUCN Red List of Threatened Species. splendens is generally green, brown and grey, while the fins are short; wild fish exhibit strong colours only when agitated. Siamese Fighting fish were selected as prime models due to having comparable serotonin transporter pathways, which accounts
for their aggression. ^ "Why betta bowls are bad". "Behavioral and brain- transcriptomic synchronization between the two opponents of a fighting pair of the fish Betta splendens". The Guardian. Retrieved 20 May 2021. ^ Yang W, Wang Y, Zhu C, et al. In contrast, the female fish who were kept isolated did not continue to exhibit the male typical
behaviours after testosterone was discontinued.[82] Another study exposed male Siamese fighting fish to endocrine-disrupting chemicals. ^ Forsatkar, Mohammad Navid; Nematollahi, Nematoll
S2CID 211230022. ^ "The Fascinating Origin of Betta Fish and Other Fun Betta Facts". "Fighting fish synchronize their moves—and their genes". "Male Siamese Fighting Fish, Betta Splendens, Increase Rather Than Conceal Courtship Behaviour When a Rival is Present". Fishes of Australia. ^ "Pokemon Glitch Discovered by Pet Fish". Work to date In
1990, genetic differences (polymorphisms at several loci) were found between four different color varieties of bettas,[102] though the variations were noted to be small. In 1840, he gave some of his prized fish to Danish physician Theodore Edward Cantor, who worked in the Bengal medical service.[31] Nine years later, Cantor published the first
recorded article describing these fish, giving them the name Macropodus pugnax. Archived from the original on 22 November 2016. The researchers concluded that the male was attempting to court ship behaviour, as the
literature has suggested there are many factors that can dramatically affect the ways in which both male and females can act in courtship settings. Thus, the term "fighting fish. [16][17] Siamese fighting fish were originally given the scientific name Macropodus pugnax in 1849—
literally "aggressive fish with big feet", likely in reference to their elongated pelvic fins.[15] In 1897 they were identified with the genus Betta and became known as Betta pugnax, referring to their aggressiveness. "Transcriptome analysis identifies immune-related genes and antimicrobial peptides in Siamese fighting fish (Betta splendens)". Retrieved
5 October 2015. ^ "Grundlegendes über die Fischgabel" (in German). ^ Bautista, Naim M.; Pothini, Tanushri; Meng, Kelly; Burggren, Warren W. doi:10.1163/15685390376399908. Cellophane Big Ear male Super Orange female and male. "The display of the Siamese fighting fish Betta splendens". Based on Vidthayanon (2013), a Thai ichthyologist
and senior researcher of biodiversity at WWF Thailand, the species is endemic to Thailand, from the Mae Khlong to Chao Phraya basins, the eastern slope of the Cardamom mountains (Cambodia), and from the Isthmus of Kra. Retrieved 1 April 2019. "Fluoxetine inhibits aggressive behaviour during parental care in male fighting fish (Betta splendens,
Regan)". ^ Amparyup, Piti; Charoensapsri, Walaiporn; Samaluka, Nusree; Chumtong, Parichat; Yocawibun, Patchari; Imjongjirak, Chanprapa (April 2020). (8 August 2019). Retrieved 31 January 2017. PLOS Genetics. ISSN 1976-9571. J. ^ November 2020, Demi Williams 09. Reef To Rainforest Media, LLC | CORAL Magazine | Microcosm Publishing.
"Betta water". Retrieved 17 November 2020. 26 March 2014. Ecotoxicology. PMC 6251983. Potential tankmates should usually be added before the male betta so they can establish their respective territories beforehand, rather than compete with the betta. "Artificial selection for male winners in the Siamese fighting fish Betta splendens correlates
with high female aggression". They may set up a territory centered on a plant or rocky alcove, sometimes becoming highly possessive of it and aggressive toward trespassing rivals; consequently, bettas, if housed with other fish, require at least 45 litres (about 10 gallons). "Genetic variation in different varieties of Siamese fighting fish using
isoelectric focusing of sarcoplasmic proteins". Phylogeny and cryptic diversity There are many species in the genus Betta, the majority of which are very morphologically similar. Fights to the death were rare, so bets were placed on the bravery of the fish rather than its survival.[33] The popularity of these fights garnered the attention of king of Siam
(Thailand) who regulated and taxed the matches and collected fighting fish of his own. 16 (1): 34. He said that once the status is recognised, fighting fish farming would be promoted, which would generate money and create jobs. Despite their abundance as pets, B. Animal Behaviour Monographs. The researchers concluded that exposure to these
chemicals can negatively affect the mating success of male Siamese fighting fish. [83] A psychology study used male Siamese fighting fish to investigate the effects of fluoxetine, an SSRI used primarily as an antidepressant in humans. During and after spawning, the male uses his mouth to retrieve sinking eggs and place them in the bubble nest;
during mating some females assist their partner, but more often will simply devour all the eggs she manages to catch. Department chief Adisorn Promthep said that the proposal will be submitted to the National Identity Office under the Prime Minister's Office for approval. "The fresh-water fishes of Siam, or Thailand". ^ Castro, Nidia; Ros, Albert
F.H.; Becker, Klaus; Oliveira, Rui F. Retrieved 12 November 2021. Amazonas. Afterwards, the fry leave the nest and the free-swimming stage begins. PMID 27172056. "Siamese fighting fish confirmed as national aquatic animal". A common misconception regarding keeping B. doi:10.2306/scienceasia1513-1874.2009.35.008. ISSN 1553-7404. "The
Spector of Evil". ^ a b "Siamese Fighting fish, Betta splendens, in the province of Nakornpathom, Thailand". splendens are known
for their intense aggression, which has resulted from intense selective pressures imposed upon them from many generations of artificial selection. Mitochondrial DNA Part A. splendens and their differences from the still-observable wild-type makes them an excellent candidate for a model organism through which to study the genetic basis for
 aggression. However, wild specimens are categorised by the IUCN as vulnerable, indicating the species is likely to become endangered without conservation and agricultural development across central Thailand.[1] Diet Betta splendens is naturally carnivorous,
feeding on zooplankton, small crustaceans, and the larvae of aquatic insects such as mosquitoes. To avoid fights over territory, male Siamese fighting fish are best isolated from one another. Bettas became known outside Thailand through King Rama III (1788-1851), who is said to have given some to Theodore Cantor, a Danish physician, zoologist,
and botanist.[7] They first appeared in the West in the late 19th century, and within decades became popular as ornamental fish. ^ Roth, Annie (14 May 2021). For example, the fish ranked at the top showed higher levels of mutual displays, in comparison to the fish who were of lower ranks. Retrieved 16 May 2021. Retrieved 24 March 2021. This
indicates that aggressive behaviour in the form of fighting has long-lasting effects on metabolism.[80] Behavioural effects of chemical exposure Siamese fighting fish are popular models for studying the neurological and physiological impact of certain chemicals, such as hormones, since their aggression is the result of cell signalling and possibly
genes.[81] One study investigated the effect of testosterone on female Siamese fighting fish. doi:10.1080/23802359.2020.1841582. ^ "'Pla gud' to be national fish". ^ Panijpan, Bhinyo; Kowasupat, Chanon; Laosinchai, Parames; Ruenwongsa, Pintip; Phongdara, Amornrat; Senapin, Saengchan; Wanna, Warapond; Phiwsaiya, Kornsunee; Kühne, Jens;
 Fasquel, Frédéric (December 2014). Bubbles & Bettas. S2CID 23546762. PMID 20846403. Bangkok Post. PMID 25213287. Retrieved 14 November 2020. 173: 258-262. Dzieeczynski, Teresea L.; Kane, Jessica L. Females often flare at other females, especially when setting up a pecking order. ISSN 1513-1874. Limited, Bangkok Post Public
Company. Theaquarium.club. Subsequently, bettas can live and even thrive in harsher environments than other freshwater fish, which in turn leaves them with fewer natural predators and competitors. [23] The tropical climate of the betta's natural habitat is characterised by sudden and extreme fluctuations in water availability, chemistry, and
temperature.[23] Water pH can range from slightly acidic (pH 6.9) to highly alkaline (pH 8.2), while air temperatures drop as low as 15 °C (59 °F) and rise as high as 40 °C (100 °F).[23] Consequently, Siamese fighting fish are highly adaptable and durable, able to tolerate a variety of harsh or toxic environments; this accounts for their popularity as
pets, as well as their ability to successfully colonise bodies of water all over the world. [24] Wild bettas prefer to live in bodies of water teeming with aquatic vegetation and surface foliage, such as fallen leaves and water lilies. [23] The abundance of plants provides security from predators and a buffer between aggressive males, who coexist by claiming
dense sections of plants as territory.[24] Such vegetation also offers protection to females during spawning and to fry during their earliest and most vulnerable stages.[24] Invasive species The betta's worldwide popularity has led to its release and establishment in similarly tropical areas, including southeast Australia, Brazil, Colombia, the Dominican
Republic, southeast United States, and Singapore.[21] In January 2014, a large population of bettas was discovered in the Adelaide River Floodplain in the Northern Territory, Australia.[25] As an invasive species they pose a threat to native fish, frogs and other wetland wildlife.[25] Bettas have also become established in subtropical areas of the
United States, namely southern Texas and Florida, although an assessment by the U.S. Fish and Wildlife Service determined they were no threat to natural ecosystems. [26] Conservation status Due to their popularity, Siamese fighting fish are highly abundant in captivity. Indian almond leaves are increasingly popular for providing something closer to
the natural foliage under which bettas would hide in the wild. doi:10.1016/S0066-1856(68)80001-9. About Betta splendens International Betta Congress. Nemo - Either white based or orange based and have three or four main colours: Orange, red, yellow, black Crowntail male Finnage variations Breeders have developed several different finnage
and scale variations:[63] Veiltail - Extended finnage length and non-symmetrical tail; caudal fin rays usually only split once; the most common tail type seen in pet stores. In captivity, Siamese fighting fish have been selectively bred to display a vibrant array of colours and tail types.[19][20] Distribution and habitat Rice paddies are believed to have
been the first point of contact between bettas and humans. 23-24. "Southeast Asian mouth-brooding Betta fighting fish (Teleostei: Perciformes) species and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA sequences and their phylogenetic relationships based on mitochondrial COI and nuclear ITS1 DNA seque
impacts of various environmental contaminants, including oil.[87][88][89] Improved understanding of the betta genome would allow for more accurate generalisations from these studies. However, such colour changes, common in females of any age, are rare in mature males due to their intensity of colour. GigaScience. Little is known about the
genetic basis of aggression in betas, though differential degrees of aggression have been observed in different domesticated betta populations.[97] Research to date There is evidence that the genetic basis for aggression in betta fish is not exclusively sex-linked - a recent study found that female bettas of the fighting strain show significantly higher
levels of aggression than their female wild-type counterparts, despite the fact that historically only male bettas have been used in fights and thus artificially selected for aggression. [20] However these results are of limited usefulness, given the lack of scientific consensus on the nature of sex determination in bettas. The Wikibook Do-It-Yourself has a
page on the topic of: Breed siamese fighting fish Bettas at Curlie Retrieved from "2 May 2018. Behavioural Processes. splendens and at least 72 other species. ^ "Bubbles & Bettas: Tail Types and Patterns". doi:10.1111/j.1439-0310.2008.01602.x. ^ Haller, Jozesf (1994). GAMING. Setup Bettas are fairly intelligent and inquisitive, and thus require
stimulation; otherwise they can become bored and depressed, leading to lethargy and a weaker immune system.[43][48] Decorations such as plastic or live plants, rocks, caves, driftwood, and other ornaments provide crucial enrichment—provided they do not have rough textures or jagged edges, which can damage the delicate fins. ^ "What Causes
Fin Rot In Bettas". ^ "Ideal Water Temperature for Betta Fish | The Aquarium Club". Within that decade, a German breeder created the "deltatail" characterised by its broader, triangular fins.[36] In 1967, a group of betta breeders formed the International Betta Congress (IBC), the first formal interest group dedicated to Siamese fighting fish. The
IBC aimed to breed varieties that would be healthier and more symmetrical in fins and body shape, with an emphasis on animal welfare.[36] In the aquarium Water As tropical fish, bettas prefer a water temperature of around 75-82 °F (24-28 °C), but have been observed surviving temporarily at extremes of 56 °F (13 °C) to 95 °F (35 °C). ScienceAsia
31-32. ^ Taylor, Maya (23 March 2021). doi:10.1016/j.mgene.2014.10.007. Bell, Alison (ed.). Frontiers in Zoology. 35: 51-59. The betta's diverse colours are due to different layers of pigmentation in their skin. (2006). Etymology Outside Southeast Asia, the name "betta" is used specifically to describe B. Leaffin.com. 35 (1): 8. Contrary to some
marketing materials in the pet trade, bettas cannot subsist solely on vegetation or the roots of plants.[27] Bettas can be fed a varied diet of pellets, flakes, or frozen foods like brine shrimp, bloodworms, daphnia and many others. Betta splendens is more accurately called by its scientific name or "Siamese fighting fish" to avoid confusion with the other
members of the genus. ^ Griffin, Gerald (January 2016). In 1909, the species was finally renamed Betta splendens upon the discovery that an existing species was already named pugnax.[15] Description B. ^ Mari (1 June 2014). ^ a b Betta Fish Care. splendens obtained by high-throughput sequencing.[104] In popular culture The Fisheries
Department of Thailand is promoting pla kat, or Siamese fighting fish, as the national fish. www.petsmart.com. "Behavioral consequences of dietary exposure to crude oil extracts in the Siamese fighting fish, as the national fish. www.petsmart.com." Behavioral consequences of dietary exposure to crude oil extracts in the Siamese fighting fish, as the national fish. www.petsmart.com. "Behavioral consequences of dietary exposure to crude oil extracts in the Siamese fighting fish, as the national fish."
attacking and flaring at his reflection in a mirror Siamese fighting fish display complex behavioural patterns and social interactions, which vary among individual specimens. [65][66] Research indicates they are capable of associative learning, in which they adopt a consistent response following exposure to new stimuli. [66] These characteristics have
made bettas subject to intensive study by ethologists, neurologists, and comparative psychologists. [67][68][69] Males and females flare or puff out their gill covers (opercula) to appear more impressive, either to intimidate other rivals or as an act of courtship. doi:10.1016/j.heliyon.2019.e02646. 140 (1): 71-78. Business Standard India.
doi:10.1007/s10164-016-0489-1. "Betta splendens" in FishBase. One-day-old fry (their yolk sacs have not yet been absorbed) in a bubble nest. Males will occasionally respond aggressively even to their own reflections. "Of Fish and Mirrors: Fluoxetine Disrupts Aggression and Learning For Social Rewards". PMID 3180734. Coconuts. splendens to other
Betta species).[60] Some bettas will change colours throughout their lifetime, a process known as marbling, which is attributed to a transposon, in which a DNA sequence can change its position within a genome, thereby altering a cell.[61] Koi bettas have mutated over time and in some case change colours or patterns throughout their lifetime.
male Rarer colours:[63] Super Orange Metallic Turquoise Lavender Mustard Gas Grizzle Green Metallic Doubletail male Colour to the body to be a Bi-colour. ^ Filby, Amy L; Paull, Gregory C; Hickmore, Tamsin FA; Tyler, Charles R (2010).
PMID 6009828. Studies generally focus on the aggressive behaviours of males during the courtship process. S2CID 56145573. hdl:10400.12/1283. Over the centuries, breeders have been able to make this coloration permanent, and a wide variety of hues breed true. Breeders have also developed different colour patterns such as marble and butterfly
as well as metallic shades like copper, gold, or platinum, which were obtained by crossing B. Gourami native to Thailand Siamese fighting fish, the Halfmoon male displaying his flared opercula. pmid:17553555 ^ a b Clotfelter ED, McNitt MM, Carpenter RE, Summers CH. Physiology & Behavior. ^ ibcadmin
Nattakan (February 2021). Meta Gene. PMC 7299326. doi:10.1093/icb/6.4.629. "50 Betta Fish Tank Mates: The Definitive Compatibility List 2020". Bettatalk.com. Betta Source. University of Illinois College of Veterinary Medicine. Most work in this area has been done on other model organisms such as zebrafish or African cichlid fish, however as with
aggression, work done with other model organisms to identify candidate genes will be tremendously helpful in identifying the genetic basis of pigmentation in bettas. Thompson, T (1966). 27 (6): 4580-4581. (October 2019). Retrieved 30 December 2020. 28. ^ Tudor, M. ^ "10 Safe Betta Fish Tank Mates & Companions". Pharmacol Biochem Behav.
limited that there is little evidence for the genetic basis of basic traits, including sex determination. [86] A recent review article [86] argued for increased scientific investigation into the genome of the Siamese fighting fish, and listed several areas of interest which are paraphrased below: monophyly of the genus Betta including a single-versus-multiple
origin of mouthbrooding; the state of cryptic diversity and evolutionary forces driving speciation in the betta lineage; responsive genes or genetic interaction to parental care, behavioural aggression, pigmentation and other betta biology; and preservation technology for betta as insurance against accidental loss of biodiversity this century. splendens
have been shown to be significantly more aggressive than wild bettas, [20] and in addition show differential responses in cortisol production in new environments. [96] The extreme genetically-driven aggression in fighting strains of B. "The Bachorlette: Female Siamese Fighting Fish Avoid Males Exposed to an Estrogen Mimic". Retrieved 18 January and Indian Strains of B. "The Bachorlette: Female Siamese Fighting Fish Avoid Males Exposed to an Estrogen Mimic". Retrieved 18 January and Indian Strains of B. "The Bachorlette: Female Siamese Fighting Fish Avoid Males Exposed to an Estrogen Mimic". Retrieved 18 January and Indian Strains of B. "The Bachorlette: Female Siamese Fighting Fish Avoid Males Exposed to an Estrogen Mimic". Retrieved 18 January and Indian Strains of B. "The Bachorlette: Female Siamese Fighting Fish Avoid Males Exposed to an Estrogen Mimic". Retrieved 18 January and Indian Strains of B. "The Bachorlette: Female Siamese Fighting Fish Avoid Males Exposed to an Estrogen Mimic". Retrieved 18 January and Indian Strains of B. "The Bachorlette: Female Siamese Fighting Fish Avoid Males Exposed to an Estrogen Mimic". Retrieved 18 January and Indian Strains of B. "The Bachorlette: Female Siamese Fighting Fish Avoid Males Exposed to an Estrogen Mimic".
2018. Encyclopedia Britannica. However, it is believed the name is derived from the Malay word ikan betta, with ikan meaning "fish" and bettah referring to an ancient warrior tribe, which is pronounced "bet-tah".[14][15] Another vernacular name for Siamese fighting fish is plakat, often applied to the short-finned ornamental strains, which is derived
from the Thai word pla kat (Thai: [][][][]], which literally means "biting fish". Retrieved 11 June 2011. Pigmentation for studying the genetic basis for coloration. [100] Additionally,
producing a specific color on demand would be of great interest to the commercial betta fish industry, as the price of a fish is largely determined by its coloration. 23-24 (citing Walt Maurus, A Complete Guide to Bettas are less
 aggressive and territorial than males, and thus can live with a greater variety of fish; for example, brightly coloured or large-finned fish will not usually disturb a female. Practical Fishkeeping Magazine. Retrieved 22 October 2014. {{cite web}}: CS1 maint: archived copy as title (link) ^ "Koi vs Marble Betta". splendens have been bred for aggression
for over six centuries due to the culture surrounding fighting betta fish and betting money on the results.[95] This has genetically differentiated them from their wild-type counterparts - fighting strains of B. ^ a b c d "Colors & Patterns". Combat is characterised by fin nipping, flared gills, extended fins, and intensified colour.[72] The fight continues
until one participant is submissive or tries to retreat; one or both fish may die depending on the seriousness of their injuries, though betta Fish. Betta Fish Center. splendens chromosomal[90] and mitochondrial[91] genomes have been sequenced. Incubation lasts for 24-36
hours; newly hatched larvae remain in the nest for the next two to three days until their yolk sacs are fully absorbed. ^ Smith, Hugh M. ^ a b c Dr. Martin Brannah, The Betta Bible, p. ^ "Betta Fish | Advocating For Proper Care & Information". S2CID 8930322. ^ Robert (22 May 2019). doi:10.3109/19401736.2015.1101573. 7 November 2020.
Archived from the original (PDF) on 22 October 2014. "Sex Reversal in Female Betta Splendons as a Function of Testosterone Manipulation and Social Influence". 11 (1): 498. In this first period of their lives, B. doi:10.1017/S0967199415000313. He added that credible records show that pla kat of the Betta splendons as a Function of Testosterone Manipulation and Social Influence".
were first collected for fighting during the reign of King Rama III.[105] The titular character in the novel Rumble Fish and subsequent film adaptation is a Siamese fighting fish.[106] In both, the character Motorcycle Boy is fascinated with the creatures and dubs them "rumble fish". When no barriers were present, the males were more likely to
engage in gill flaring at an intruder male fish. 90 (1): 53-60. However, the fighting between the two males decreased as the day progressed. ISSN 1471-2164. (June 2016). However, the fight between the two males decreased as the day progressed as the day progressed. ISSN 1471-2164.
resulted in changes to fin length, body coloration and gonads that resembled typical male fish. However, this has been proven to damage their health, life expectancy, and cause negative behavioural changes. [107] A scene in the James Bond film From Russia with Love shows three Siamese fighting fish in an aquarium as the villain Ernst Stavro
Blofeld likens the modus operandi of his criminal organisation, SPECTRE, to one of the fish that observes as the other two fight to the death, then kills the weakened victor.[108] In 2020, a Siamese fighting fish kept in a home aquarium in Japan named Lala was livestreamed successfully 'completing' a copy of Pokemon Sapphire by use of a laser that
followed the fish and triggered button inputs mapped on a grid behind the tank.[109] Lala's playthrough of the game was carried out over four months, commencing in June 2020 and concluding in November,[110] and the experiment also resulted in the discovery of a glitch that softlocked the game was carried out over four months, commencing in June 2020 and concluding in November,[110] and the experiment also resulted in the discovery of a glitch that softlocked the game was carried out over four months, commencing in June 2020 and concluding in November,[110] and the experiment also resulted in the discovery of a glitch that softlocked the game was carried out over four months, commencing in June 2020 and concluding in November,[110] and the experiment also resulted in the discovery of a glitch that softlocked the game was carried out over four months, commencing in June 2020 and concluding in November,[110] and the experiment also resulted in the discovery of a glitch that softlocked the game was carried out over four months, commencing in June 2020 and concluding in November,[110] and the experiment also resulted in the discovery of a glitch that softlocked the game was carried out over four months, commencing in June 2020 and concluding in November, [110] and the experiment also resulted in the discovery of a glitch that softlocked the game was carried out over four months.
Miss Grand International 2020 contest held in Bangkok in 2021, Laos used a costume was a copy of another costume designed be worn by Miss Universe Thailand - Amanda Obdam - in Miss Universe 2020.[112][113] See also National symbols of Thailand
References ^ a b c d Vidthayanon, C. ^ "Guidelines released for keeping Fighters". Like all tropical fish in captivity, bettas are susceptible to several kinds of diseases, usually caused by bacterial, fungal, or parasitic infections. Metabolic costs of aggression Studies have found that Siamese fighting fish often begin with behaviours that require high
cost, and gradually decrease their behaviours as the encounter proceeds. [76] This indicates that Siamese fighting fish will first begin an encounter a waste if the fish is not successful. 29-30. PMID 17884114. The researchers expected
that males would conceal their courtship from intruders; instead, when another male fish was present, the male was more likely to engage in courtship behaviours with the dummy female fish. 93 (1-2): 83-88. Retrieved 16 November 2020. doi:10.1037/0735-7036.102.3.262. PMID 26703926. Retrieved 11 September 2021. Ethology. 6 November 2018.
ISSN 2047-217X. doi:10.5479/si.03629236.188.1. hdl:10088/10206. Full Mask - Face is same colour as body, rather than the body Dragon - Rich strong base colour with the scales on the main part of the body a pale iridescent Multicolour - Three or more colours on the body that do not fit into any other
pattern category Pastel - Light shade of colour seen only on the fins, body remains a flesh hue Koi - Judged from the top down and look like their carp counterparts. He speculates that if the fish were to be set free in the river, they wouldn't behave so aggressively. fishkeepingacademy.com. splendens is that they should live in vases or bowls.
S2CID 5293321. Both sexes display pale horizontal bars if stressed or frightened. PMC 6686523. It is generally advised to feed a betta at least once daily, with only the amount of food it can eat within 3-5 minutes; leftover food should be removed. [29] Some sources recommend that bettas undergo a "fast" for at least once daily, with only the amount of food it can eat within 3-5 minutes; leftover food should be removed. [29] Some sources recommend that bettas undergo a "fast" for at least once daily, with only the amount of food it can eat within 3-5 minutes; leftover food should be removed. [29] Some sources recommend that bettas undergo a "fast" for at least once daily, with only the amount of food it can eat within 3-5 minutes; leftover food should be removed. [29] Some sources recommend that bettas undergo a "fast" for at least once daily, with only the amount of food it can eat within 3-5 minutes; leftover food should be removed. [29] Some sources recommend that bettas undergo a "fast" for at least once daily, with only the amount of food it can eat within 3-5 minutes; leftover food should be removed. [29] Some sources recommend that bettas undergo a "fast" for at least once daily, with only the amount of food it can eat within 3-5 minutes; leftover food should be removed. [29] Some sources recommend that bettas undergo a "fast" for at least once daily in the amount of food it can eat within 3-5 minutes; leftover food should be removed. [29] Some sources recommend that bettas undergo a "fast" for at least once daily in the amount of food it can eat within 3-5 minutes; leftover food should be removed. [29] Some sources recommend that bettas undergo a "fast" for at least once daily in the amount of food it can eat within 3-5 minutes; leftover food should be removed. [29] Some sources recommend that bettas undergo a "fast" for at least once daily in the amount of food it can eat within 3-5 minutes; leftover food it can eat within 3-5 minutes; leftover food it can eat within 3-5 minutes; leftover food it can e
processed.[28] Bettas can go up to two weeks without eating, and it is not uncommon for them to have no appetite for one or two days, especially following stressful episodes such as a water change or being introduced into a new tank.[28] Reproduction and early development If interested in a female, male bettas will flare their gills, spread their fins
and twist their bodies in a dance-like performance. doi:10.1016/j.physbeh.2017.02.021. ^ a b "Archived copy" (PDF). doi:10.101
Bettas are also affected by the pH of the water: a neutral pH of 7.0 is ideal, but slightly higher levels are tolerable. [38] Due to their labyrinth organ, bettas can endure low oxygen levels, but cannot survive for long in unmaintained aquaria, as poor water quality makes all tropical fish more susceptible to diseases like fin rot. [39] Thus, notwithstanding
the betta's well known tolerance of still water, a mechanical filter is considered necessary for their long-term health and longevity. [40][41][42][43] Similarly, live aquatic plants provide a supplemental source of filtration, in addition to crucial enrichment to the betta. [41] Aquarium size and cohabitants Despite frequently being displayed and sold in
small containers in the pet trade, bettas do best in larger environments; while they can survive in cups, bowls, and other confined spaces, they will be much happier, healthier, and longer-lived in a larger aquarium.[40][41][42] Although some betta enthusiasts claim there is a minimum tank size, determining a strict baseline is somewhat arbitrary and
subject to debate.[44] The general consensus is that the ideal tank should be no less than 9-19 litres (3-5 US gallons), though a tank of just 4 litres (1 gallon) can also suffice if it is cleaned regularly—at least every other day for small, unfiltered tanks—and maintained at an acceptable temperature of 24-26 °C (75-78 °F).[45] Although male bettas are
solitary and aggressive towards one another, they can generally cohabit with many types of fish and invertebrates if there is adequate space and hiding places. Serotonin decreases aggression via 5-HT1A receptors in the fighting fish Betta splendens. ^ Froese, Rainer; Pauly, Daniel (eds.) (2014). ISSN 0967-1994. doi:10.1016/j.aquatox.2018.11.025.
"The Siamese fighting fish: Well-known generally but little-known scientifically]" (PDF). PMC 6820098. ^ Song, Ying-Nan; Xiao, Gui-Bao; Li, Jiong-Tang (1 November 2016). "About Betta splendens - International Betta Congress". For example, one study found that when male fish are in the bubble nest phase, their aggression toward females is quite
low. In the wild, betta spar for only a few minutes before one fish retreats; domesticated betta, bred aggression, can engage for much longer, with winners determined by a willingness to continue fighting; once a fish retreats; the match is over. Conservation status Vulnerable (IUCN 3.1)[1] Scientific classification Kingdom:
Animalia Phylum: Chordata Class: Actinopterygii Order: Anabantiformes Family: Osphronemidae Genus: Betta Splendens Binomial name Betta splendens Binomial na
 endemic to the central plain of Thailand, where they were first domesticated at least 1,000 years ago, among the longest of any fish.[6][7][8] They were initially bred for aggression and subject to gambling matches akin to cockfighting. www.aqueon.com. 2010:933-43. 314-315. Retrieved 19 November 2017. doi:10.2305/IUCN.UK.2011-
1.RLTS.T180889A7653828.en. 26 ^ ibcadmin. "Thai pageant fans fighting mad over 'stolen' fish costume | Coconuts Bangkok". Rumble Fish. Recent speciation efforts have included use of DNA barcoding to differentiate specially comparing the CO1 gene of the mitochondrial genome, resulting in new theories about the relatedness between
phenotype, the latter of which changes color over the course of its lifetime. Colours among captive bettas include red, orange, yellow, blue, steel blue, turquoise/green, black, pastel, opaque white, and multi-coloured. History Information on precisely how and when Siamese fighting fish were first domesticated and brought out of Asia is sparse.[31]
Genetics imply domestication at least 1000 years ago.[32] Fighting fish Some people in Malaysia and Thailand are known to have collected wild bettas at least by the 19th century, observing their aggressive nature and pitting them against each other in gambling matches akin to cockfights. Their aggressive behaviour was found to be elevated when
no exception. Aquariadise. "Courtship By Subordinate Male Simease Fighting Fish, Betta Splendens: Their Response to Eavesdropping and Niave Females". bioRxiv; 2018. doi:10.1186/s12983-019-0333-x. ^ Bronstein, Paul M. ^ "Betta Fish Information; Plakats, Veiltails, Halfmoon, Crowntail". The researchers were curious if exposure to these
chemicals would affect the ways in which females respond to the exposed males. (February 2019). Behaviour. In 1896, German tropical fish expert Paul Matte brought the first specimens into Germany from Moscow, most likely from the strain developed by Carbonnier. [31] This indicates bettas were already somewhat established in France and Russian from Moscow, most likely from the strain developed by Carbonnier.
by the turn of the 20th century. ^ Martin Brammah, The Betta Bible, p. Receptive females will respond by darkening in color and developing vertical lines known as "breeding bars". (2017). ^ "Fish Identification". (2011). Fischbesteck24.de. 99: 403-413. ISSN 2470-1394. "Capacitating the local farmers to enhance global marketing of Thailand's
national aquatic animal, the Siamese fighting fish" (PDF). ^ a b c Dr. Martin Brammah, The Betta Bible, p. Flaring also occurs when they are intimidated by movement or a change of scene in their environments. PMID 32555673. ^ Dzieweczynski, Teresa L.; Lyman, Sarah; Poor, Elysia A. Scarlett; Lopez-Anido, Rebecca N.; Yocius, Charly A.; Conling and the control of the
Sarah M.; Hamlin, Heather J. The layers, from deepest within to the outermost, consists of red, yellow, black, iridescent (blue and green), and metallic (not a colour itself, but reacts with the other colours). doi:10.1007/s13258-020-01027-2. Aquatic Toxicology. ^ a
Aquaculture. 8 November 2017. ^ a b c d Dr. Martin Brammah, The Betta Bible, p. "Development of Betta splendens embryos and larvae reveals variation in pigmentation patterns". Currently, the complete B. "Unravelling the neurophysiological basis of aggression in a fish model". doi:10.1016/j.aquaculture.2005.03.020. ^ a b c d e f g Martin
Brammah, The Betta Bible, pp. Aquaculture International. In contrast, if a female did not "eavesdrop" on a fight between males, she will show no preference in mate choice. Thaiger. ^ Eisenreich, Benjamin; Greene, Susan; Szalda-Petree, Allen (2017). ^ "Pokemon fans pet fish unbelievably manages to beat game all by itself". splendens usually grows
to a length of about 6-8 cm (2.4-3.1 in).[18] Although aquarium specimens are widely known for their brilliant colours and large, flowing fins, the betta fish is an excellent candidate for a model organism, particularly for aggression and pigmentation development, due to
their extreme phenotypes in these areas. Contrary to popular belief, bettas are compatible with many other species of aquarium fish.[70] Given the proper parameters bettas will only be aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish are compatible with many other species of aquarium fish.[70] Given the proper parameters bettas will only be aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish than themselves, such as guppies.[71] Betta aggressive towards smaller and slower fish than the slower 
pitted against each other to fight, with bets placed on which one will win. 32 (5): 474-480. Monvises, Adisorn; Nuangsaeng, Bunlung; Sriwattanarothai, Namkang; Panijpan, Bhinyo (2009). Moore, Roger (2012). imbellis, has also been sequenced, [92] potentially allowing for meaningful comparison between species in the future. According to Witten
and Schmidt (1992), Betta splendens is native to Southeast Asia, including the northern Malay Peninsula, central and eastern Thailand, Kampuchea (Cambodia), and southern Vietnam. PMC 2996994. In 1909, British ichthyologist Charles Tate Regan found there was a related species already named Macropodus pugnax, and thus renamed the
domesticated Siamese fighting fish, Betta splendens, or "splendid fighter".[34] Aquarium fish Betta splendens first entered the Western aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when French aquarium trade in the late 19th century; the earliest known arrival is 1874 in France, when France is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th century is 1874 in France in the late 19th
Iwasaki, Yuki; Shigenobu, Shuji; Maruko, Akiko; Oshima, Kenshiro; Iioka, Erica; Huang, Chao-Li; Abe, Takashi; Tamaki, Satoshi; Lin, Yi-Wen; Chen, Chih-Kuan (17 June 2020). PMC 4287851. Betta splendens enjoy a decorated tank, as they seek to establish territory even when housed alone. Heliyon. science.umd.edu. ^ Herb, Brodie M.; Biron,
Suzanne A.; Kidd, Michael R. 16. A 15-day-old, free-swimming fry is infected with Piscindoinium sp. Retrieved 15 November 2020. "Betta Fish Spawn: Guide from Preparing Breeding Tank to Feeding the Fry". "Social Organization and Aggression Within Small Groups of Female Siamese Fighting Fish, Betta Splendens". gamesradar. Modulation of the Fry and Freeding Tank to Feeding Tank to F
deposit of eggs, the male releases milt into the water, and fertilisation takes place externally. ^ Khoo, Gideon; Loh, Eric Y.F.; Lim, Tit Meng; Phang, Violet P.E. (1997). "Complete mitochondrial genome of the Siamese fighting fish (Betta splendens)". "Overview of the betta fish genome regarding species radiation, parental care, behavioral aggression
and pigmentation model relevant to humans". 23 (9): 1794-1802. Retrieved 29 September 2014. ^ a b c Ramos, A.; Gonçalves, D. doi:10.1016/j.beproc.2017.05.005. Flirting fish behave similarly, with vertical instead of horizontal stripes indicating a willingness and readiness to breed. Journal of Ethology. The Betta Bible: The Art and Science of
much of the cryptic diversity in the genus. 115 (2): 186-195. Fish & Shellfish Immunology. Current theories about the speciation and suggest that the speciation is best described by a model of either allopatric or parapatric speciation.[86]
Genetics of betta biology Aggression B. Super Yellow Plakat Halfmoon male and female. Patterns should be uniform with clean color defining lines. The eggs remain in the male's care. doi:10.2307/1422809. Crowntail - Fin rays are extended well beyond the membrane and consequently the tail can take on the appearance of a crown; also called
fringetail Combtail - Less extended version of the crown tail, derived from breeding crown and another finnage type Halfmoon - "D" shaped caudal fin exceeds 180° angle (a byproduct of trying to breed half-moons), which can sometimes
cause problems because the fins are too big for the fish to swim properly[64] Rosetail - Variation with so much finnage that it overlaps and looks like a rose Feather tail - Similar to the Rosetail, with a rougher appearance Plakat - Short fins that resemble the fins seen in wild-type bettas Halfmoon plakat - Short-finned Halfmoon; plakat and halfmoon
Halfmoon variety in that their tails have a span between 130 -170 degrees Half-Sun - Combtail with caudal fin going 180°, like a half-moon Elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal, often white, resembling the ears of an elephant Ear - Pectoral fins are much larger than normal fins are much larger tha
www.fishbase.org. ^ "Betta Fish Facts". 250 (1-2): 110-119. "Wild Betta fighting fish species in Thailand and other Southeast Asian countries". PMID 31687501. splendens is listed as "vulnerable" by the IUCN, due to increasing pollution and habitat destruction. Earthsfriends.com. Retrieved 4 October 2015. S2CID 231762344. ^ "Siamese fighting fish
 2020). "Next-generation sequencing yields complete mitochondrial genome assembly of peaceful betta fish, Betta imbellis (Teleostei: Osphronemidae)". 5 (10): e02646. ^ Carey, Alexis N.; Lyvers, Benjamin H.; Ferrill, Rachel N.; Johnson, Rachel L.; Dumaine, Anne Marie; Sly, Belinda J. ^ Elcoro, Mirari; Da Silva, Stephanie; Lattal, Kennon (2008)
Males build bubble nests of various sizes and thicknesses at the surface of the water, which interested females may examine. Betta male building a bubble nest. ^ "betta". (2003). "Siamese fighting fish in colours of Thai flag sells for £1,200". doi:10.1023/A:1018357400571. PMID 18683612. 16 (6): e1008831. "Betta Fish: The Dazzling Siamese
Fighting Fish". In the wild, Siamese fighting fish spend most of their time concealing themselves under floating plants to avoid potential predators. [49] Abundant vegetation of any kind is
generally recommended to provide maximum security and to cater to the betta's instinct to claim protective territory. American Journal of Psychology. Fighting strains of B. ISSN 1742-9994. It was found that when shown videos of the exposed males, the females favoured those who were not exposed to the endocrine-disrupting chemicals, and avoided
those males that were exposed. Female bettas can also become territorial towards one another in confined spaces.[10] Bettas are exceptionally tolerant of low oxygen levels and poor water quality, owing to their special labyrinth organ, a characteristic unique to the suborder Anabantoidei that allows for the intake of surface air.[11] In addition to its
 with other fish. 7 (11). Retrieved 25 March 2021. The researchers then allowed the females to interact with a control group of unaltered females; when the females still exhibited male-typical behaviours. ^ "AMAZONAS Videos: Bettas in the Wild - What They Tell Us
About Tank Size". ^ a b c "Betta Fish Care Sheet & Supplies | PetSmart". "Metabolic Costs of Aggressive Behaviour in the Siamese Fighting Fish, Betta Splendons". A recent study found that a fighting pair of bettas will synchronise their gene expression profiles, with particular emphasis on 37 co-expression gene modules, some of which were only
synchronised after a certain duration of time had been spent fighting. [98] Work to identify the genetic basis for aggression has also been performed more generally in other model organisms which could serve as starting points for
research into aggression in betta fish. "Thailand makes Siamese fighting Fish Use Gill Flaring As The First Display Towards Territorial Intruders".
PMID 32081810. ^ Gordon, H. ^ a b 5 Tips to Improve the Look of Your Betta Aguarium. However, more progress must be made on the annotation of the betta genome before this is feasible. "Betta Fish Introduction". 5 (6): 537-549. splendens fry are totally dependent on their gills; the labyrinth organ, which allows the species to breathe atmospheric
oxygen, typically develops at three to six weeks of age, depending on the general growth rate, which can be highly variable. Further reading Simpson, M. Bettasource.com. American Zoologist. PMID 28237550. ^ Martin Brammah. This name is used in
Thailand for all members of the Betta genus, which share similar aggressive tendencies, rather than for any specific strain of the Siamese fighting fish. It is not recommended to keep male and female bettas together, except temporarily for breeding purposes, which should always be undertaken with caution and supervision. ISBN 978-0385375689.
306-313. ISSN 2380-2359. Betta splendens can be hybridised with B. ^ Siamese Fighting Fish (Betta splendens) Ecological Risk Screening Summary ^ "betta food". S2CID 43321556. ^ "Fish are not office decorations". The researchers also found that the duration of the displays differed depending on whether an attack occurred.[75] The results of
this research suggest that female Siamese fighting fish warrant as much scientific study as males, as they seem to have variations in their behaviours as well. ^ Fan, Guangyi; Chan, Judy; Ma, Kailong; Yang, Binrui; Zhang, He; Yang, Xianwei; Shi, Chengcheng; Law, Henry; Ren, Zhitao; Xu, Qiwu; Liu, Qun (11 July 2018). imbellis, B. "Visual
Reinforcement in the Female Siamese Fighting Fish, Betta Splendens". 27 August 2021. "The 1,000-Year Secret That Made Betta Fish Beautiful". English-speakers sometimes mispronounce betta as "bay-tuh", after the second letter in the Greek alphabet. PMID 30010754. Michael O'Mara Books. Other genetic work Some of the few candidate genes
identified in the literature specific to bettas are immune related genes, which were found in the first whole-body transcriptome of B. 6 (4): 629-741. Institute for Innovation and Development of Learning Process, Mahidol University, Rama 6 Road, Bangkok 10400, Thailand. {{cite web}}: CS1 maint: multiple names: authors list (link) ^ a b
Sermwatanakul, Amonrat (2019). IDZ AQUARIUM. Similarly, a report from Froese and Pauly (2019) identifies Betta splendens as native to Cambodia, Laos, Thailand, and Vietnam.[4][21] They are also found throughout the neighbouring Malay Peninsula and in adjacent parts of Sumatra, likely due to human introduction.[22] Wherever they are found
Betta splendens generally inhabit shallow bodies of water with abundant vegetation, including marshes, floodplains, and paddy fields.[1] The historic prevalence of rice farming across Southeast Asia, which provided an ideal habitat for bettas, led to their discovery and subsequent domestication by humans.[21] The combination of shallow water and
high air temperature causes gases to rapidly evaporate, leading to a significant deficit of oxygen in the betta's natural habitat. [21] This environment likely led to the evolution of the lung-like labyrinth organ, which allows Siamese fighting fish—like all members of the suborder Anabantoidei—to breathe directly from the air. ^ a b c Robert (5 July
2019). ISSN 0362-4331. mahachaiensis, and B. A. ^ Hinton, S.E. (2013). Bettafish.org. It was found that when exposed to fluoxetine, male Siamese fighting fish exhibited less aggressive behaviour than is characteristic of their species.[84] Similarly, research has found that bettas are responsive to serotonin,[68] dopamine,[69] and GABA.[85] Genetics
Despite its commercial popularity, little is known about the Betta splendens genome. 27. BMC Genomics. Fighting fish were also present in Australia by 1904, based on an article written by British-born zoologist Edgar Ravenswood Waite and published by the Australian Museum in Sydney.[31] Waite indicates that Australian specimens were brought
from Penang, Malaysia, near the border with Thailand.[31] He also makes reference to two articles about "fighting fish" published by Carbonnier in 1874 and 1881. A Rehn, Jeremy (October 2019). doi:10.1093/gigascience/giy087. PMID 25606468. "Indian Almond Leaves | How and when to use them!". Once the female has released all of her eggs, she
is chased away from the male's territory, as she will likely eat the eggs.[30] If she is not removed from the tank, she will most likely be killed by the male. Any combination of these layers can be present, leading to a wide variety of colours within and among bettas.[59] The shades of blue, turquoise, and green are slightly iridescent, and can appear to
Herbert (1988). 207: 34-42. In regards to the males, the "loser" is more likely to attempt to court the fish who did not "eavesdropped" and those who did not. [77] One study considered the ways in which male Siamese fighting fish alter their behaviours during courtship when
another male is present. PMID 28478321. "Types of Betta Fish 2020: Which is the Perfect One for You?". He carefully keeps them in his bubble nest, making sure none fall to the bottom, repairing the bubble nest as needed. doi:10.1371/journal.pgen.1008831.
behavior in Betta splendens". doi:10.1002/ab.20147. 2019. Dexerto. Not all Siamese fighting fish respond negatively to other males, especially if the tank is large enough for each fish to create their own designated territory.[73] Aggression in females In general, studies have shown that females exhibit similar aggressive behaviours to males, albeit
less frequently and intensely.[74] An observational study examined a group of female Siamese fighting fish over a period of two weeks, during which time they were recorded attacking, flaring, and biting food. ^ a b "Your Betta Needs More Than a Bowl - Veterinary Medicine at Illinois". Petco ^ a b "Betta Fish Are Suffering by the Millions". Retrieved
15 March 2017. At present, use of the betta fish as a model organism for studying aggression is in its beginning phases. "Variable stress-responsiveness in wild type and domesticated fighting fish". Zygote. The New York Times, Most do this regularly even if there is no female present, use of the betta fish as a model organism for studying aggression is in its beginning phases. "Variable stress-responsiveness in wild type and domesticated fighting fish". Zygote. The New York Times, Most do this regularly even if there is no female present, use of the betta fish as a model organism for studying aggression is in its beginning phases. "Variable stress-responsiveness in wild type and domesticated fighting fish".
splendens. ^ a b Forsatkar, Mohammad; Nematollahi, Mohammad; Bron, Culum (August 2016). ^ a b c Adisorn Monvises, Bunlung Nuangsaeng, Namkang Sriwattanarothai, Bhinyo Panijpan. Tankmates must be tropical, communal, nonterritorial, and not have a similar body type or long flowing fins; coldwater fish like goldfish have incompatible
temperature requirements, while aggressive and greature requirements, while aggressive and danios, are considered most ideal, since they usually keep to themselves and can endure the territorial nature of bettas with their numbers. [46] Brightly coloured fish with large fins,
such as male guppies, should be avoided, as they may invite fin nipping by the male betta. PMID 33458245. Their tannins allegedly confer several health benefits, [50] including treating certain ailments like fin rot and bladder disease, and stabilising the pH of the water, [51] Health and wellness When properly kept and fed a correct diet, Siamese
fighting fish generally live between three and five years in captivity, though in rare cases may live as long as seven to ten years. [52] One study found that bettas kept in tanks of several gallons and provided with proper nutrition and "exercise"—in the form of being chased around by a stick for a short period—lived over nine years; by contrast, a
control group of bettas confined to small jars lived far fewer years. [53] A larger tank with proper filtration, regular maintenance, and an abundance of decor and hiding spaces, along with a rich, protein-based diet, increases the likelihood of a long lifespan. ^ "7 Excellent Betta Tank Mates for Your Siamese Fighting Fish". (velvet), a common killer of
betta fry in captivity. B. "Biochemical Costs of a Three Day Long Cohabitation in Dominant and Submissive Male Betta Splenons". Cambodian - Body is pale, almost colourless, and fins are a solid colour Butterfly - Fins have distinct bands of colours Marble - Irregular patterns throughout body and fin Piebald - Pale flesh-coloured face irrespective of
*body colour. Due to their short digestive tracts—a characteristic of most carnivores—bettas have difficulty processing carbohydrates such as corn and wheat, which are commonly used as fillers in many commercial fish foods. [28] Thus, regardless of the source, a proper betta diet should consist mostly of animal protein. [29] Bettas are susceptible to
overfeeding, which can lead to obesity, constipation, swim bladder disease, and other health problems; excessive food may also pollute the water. Aggressive Behavior. "Chromosome-level reference genome of the Siamese fighting fish Betta splendens, a model species for the study of aggression". Bettaboxx. Both genomes have yet to be annotated,
though a roadmap for future efforts has been outlined.[86] Notably, the mitochondrial genome for the peaceful betta, P. Most illnesses result from poor water quality and cold water, both of which weaken the immune system.[54] The four most common illnesses are white spot, velvet, fin rot, and dropsy; with the exception of the latter, which is
incurable, these ailments can be treated with a combination of over-the-counter fish medication, increased water temperature, and/or regular water changes.[55] If betta fish are kept in communal tanks, fin nipping from other fish can lead to the onset of fin rot and this can make it more difficult to diagnose.[56] Varieties Over a century of intensive
selective breeding has produced a wide variety of colours and fin types, and breeders around the world continue to develop new varieties. [57] Often, the males of the species are sold preferentially in stores because of their beauty relative to the females, which almost never develop fins or vibrant colours as showy as their male counterparts; however,
some breeders claim to have produced females with fairly long fins and bright colours, 2007;87(2):222-31. When a female witnesses aggressive behaviour between males, she is more likely to be attracted to the male who won, "Pokemon Ruby and Sapphire has been beaten by a Siamese fighting fish", Retrieved 20 August 2015, livescience.com.
"Complete Betta Fish Care Guide (Tank, Diet & Aggression)". BettySplendens.com. ^ "All About Indian Almond Leaves For Betta Fish". Similarly, researchers have found that when pairs of male Siamese fighting fish were kept together in the same tank for a three-day period, aggressive behaviour was most prevalent during the mornings of the first
two days of their cohabitation. De novo transcriptomic characterization of Betta splendens for identifying sex-biased genes potentially involved in aggressive behavior modulation and EST-SSR maker development. S2CID 34997965. For other uses, see Siamese fighting fish (disambiguation). PMC 2441580. The male in the dominant position initially
had metabolic advantage; although as the experiment progressed, both fish became equal in regards to metabolic advantages.[79] In regards to oxygen consumption, one study found that when two male bettas fought, the metabolic rates of both fish did not differ before or during the fight.
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