Rana catesbeiana pdf

Aguiar, H. 1992. O sistema vertical ranabox. In Anais de VII Encontro National de Ranicultores. Rio de Janeiro, Brazil, Avril 6-9, 1992, p. 65-70. Association of dos Ranicultores de Rio de Benitez, M.M. and Flores Nava, A. 1997. The growth and metamorphosis of Tadpole Rana catesbeiana (Shaw) were fed alive and additional feeds, using the oreochromis tilapia niloticus (L.) as a biofertilizer. Aquaculture Research, 28:481-488. Carmona, K., Olvera, M.A., Flores-Nava and V. Onetiveros, A. 1997. La nutrici n de la rana y su importancia en ranicultura. In the Meme. II Technofrog 97. International Meeting on Frog And Technology Research. Santos, Brazil, July 19-23, 1997, page 75-81. Academy of Brasilira de Estudos Teknikos et Ranicultura. Chamberlain, F.M. 1897. Notes on the edible frogs of the United States and their artificial distribution. U.S. Bureau of Fisheries. Fisheries document for 1897. 249-261. Washington, D.C., USA. Chen, T.P. 1976. The practice of aquaculture in Taiwan. Page Bros, Norwich, United Kingdom. 162 p.d. Cully, D.D. 1976 Culture and Management of the Laboratory Frog. Laboratory Animal, 5:30-36. Callie, D.D. 1991. Bullfrog culture. In C.E. Nash (ed.), Aquatic Animal Production. World Animal Science C4, page 185-205. Elsevier, Amsterdam, Netherlands. Cully, D.D., Rider, N.D., Amborsky, R.L. and Meyers, S.P. 1978. The current state of terrestrial culture with an emphasis on nutrition, disease and the reproduction of the bull wound of catesbeyan. Proceedings of the World Society of Mariculture, 9:653-670. Doliset, T.R. 1997. Avalya Ao do Mercado uniform de carne de Rana. In the Meme. II Technofrog 97. International Meeting on Frog And Technology Research. Santos, Brazil, July 19-23, 1997, page 3-11. Academy of Brasilira de Estudos Teknikos et Ranicultura. Easley, K.A., Culley, D.D., Rider, N.D. and Penkala, J.E. 1979. Environmental impact in hormonally induced spermization of the bull Rana catesbeiana. Experimental zoology, 207:407-416. Flores Nava, A. 1992. Specific indicators of phytoplankton consumption and preference for tadesthes of the bull nakesbeyan fed polyculture of microalgae. In Abstracts of World Aquaculture 92, Orlando, Florida, May 21-25, 1992, p. 139-140. World Aquaculture Society, Baton Rouge, Louisiana, USA. Flores Nava, A. 1993. Avances en la investigaci n y desarrollo de la tecnolog a del cultivo de rana en el sureste de M xico. In the Meme. I Simposio Internacional de Investigaci aku cola en Centroam Rica. San Jose, Costa Rica, octubre 5-8, 1993, p. 99-106. National University of Costa Rica. Imprenta Universitaria, San Jose, Costa Rica. Flores Nava, A. 1994. A review of frog farming in M xico. In K.P.P. Nambiar and T. Singh, 94, Colombo, Sri Lanka, August 29-31, 1994, 131-137. INFOFISH, Kuala Lumpur, Malaysia. Malaysia. A. 1999. Intensive cultivation of Thero Ran's wound of catesbeyan. Manually. Aquaculture methods. Regional Fisheries Development Support Programme at the Central American Isthmus (PRADEPESCA-Uni n Europe). Panama. 42 pages Flores-Nava, A. and Vera, p. 1999. The growth, metamorphosis and feeding behavior of Rana catesbeyans Shaw, 1802 tadpoles at different density of upbringing. Aquaculture Research, 30:1-7. Flores Nava, A. 2000. Frog farming: a comparison between wet and semi-dry growing systems. Global Aquaculture Advocate, 1(1):52-54. Flores Nava, A. 2001a. The common aspects of the biologist Catesbey frog are essential for its cultivation. In T. Jaramillo, Olivera, J. Vel zquez, J. (eds.), Reproduction and Wildlife Management, page 195-210. Out Noma Metropolitan University, M Siko, Disrito Federal, Mexico. Flores Nava, A. 2001b. In T. Jaramillo, Olivera, J. Vel zquez, J. (eds.), Reproduction and Wildlife Management, 211-233. Out Noma Metropolitan University, M Siko, Disrito Federal, Mexico. Flores Nava, A. 2002. The feasibility study is to create a frog farm for a foreign market in Panama. Limited edition of the document. CONVENTION HO/AFN 0125-2002. HO-Panama Group, Panama. 33 pages Fontanello, D., Arruda-Soares, H., Mandelli, D., Penteado, Los Angeles and Giusto, C.L. 1984 In Ras Feed. Mem. IV National Found Ranicultors. Goyania, Brazil, 5-9 South, 1984, page 91-107. Mim. Assonia or Goyania are two Ras breeders. Glorious, J.C., Amborsky, R.L., Amborsky, G.F. and Callie, D.D. 1974. Microbiological studies of septic bulls, Katesbey frog. American Journal of Veterinary Research, 35:1241-1245. Gosner, K.L. 1960. Simplified table for the staging of anuran embryos and larvae with notes to identify. Herpetological Chicago, 4:183-190. Rider, N.D., Smith, C.A. and Callie, D.D. 1978. Effect of age and photoperiode on the size and condition of the ovaries in the bull's drogue (Rana catesbeyan Shaw) (Amphibian, Anura, Ranida). Herpetology, 12(3): 287-290. Lindenbaum, I. 1997. Foreign trade statistics: Frog ancas market in the U.S. and France. In Proceedings II Technofrog 97. International Meeting on Frog And Technology Research. Santos, Brazil, July 19-23, 1997, page 26-38. Brazilian Academy of Technical Stuthes in Raniculture. Lopez-Lima, S. and Agostinho, C.A. 1988. Aria ao de Ras. Editorial Globo (Cole ao do agricultor-pequenos animais), Rio de Janeiro, Lopez Lima, S. and Agostinho, C.A. 1992. Technological de kria ao de ras. Wee Osa Federal University. University Seal, Vi osa, Minas Gerais, Brazil. 168 pages Mayes, I. 1963. A training brochure for artificial cr from an edible bull frog frog Catesbeiana frog. Newsletter n National de Cr Dito Ejidal, Oficina de Piscicultura, Distrito Federal, M xico. 47 pages of Nas, G.V. 1968. Amphibian university of Michigan. Bioscience, 6:767-775. Oloris, M. 1997. La ranicultura en Uruguay: desarrollo y perspectivas. In Proceedings II Technofrog '97. International Meeting on Frog And Technology Research. July 19 23. Santos, Brazil, page 8. Academy of Brasilira de Estudos Teknikos et Ranicultura. Ontiveros, E.W., Valdez, R.A., Lily, A., Romano, M. and Flores Nava, A.2002a. Influencia ambiental sobre el sistema end crino-reproductivo, maduraci n gon dica y desoves en hembras de Rana catesbeiana, Shaw, 1802. In Memory de la. XXVII Reuni n Anual de la Academia de Investigaci n en la Reproducci n, A.C. Morelia, Mich., M xico, jul. 1, 2002, page 250. Academy de Investigaci n en la Reproducci n, D.C., Mexico, Distrito Federal. Ontiveros, W. Flores-Nava, A., Orozco, H., Lily, A., Navarro, M.C. and Ambriz, G. 2002b. Estimaci n del n mero de espermatozoides en test culos, partir de la masa corporal en rana toro Rana catesbeiana Shaw, 1802. In Memorias de la VII Reuni n Nacional de Herpetolog a. Guanajuato, M Siko, new. 25-28, 2002, page 122. Sociedad. Mexicana de Herpetologist A. Parianontont,. and Daorerk, V. 1994. Frog farming in Thailand. In K.P.P. Nambiar and T. Singh (94, Colombo, Sri Lanka, August 29-31, 1994, p. 126-130. INFOFISH, Kuala Lumpur, Malaysia. Rubin, R. 1979. La Rana y sous Explotaci n. Editorial Continental, M xico, Distrito Federal. 132 pages Ryan, M.J. 1980. The reproductive behavior of the bull Rana catesbeyan. Kopeia, 1:108-114. Santana Costa.1992. Desenvolvimento do aparelho reprodutor e fatores associados ao ciclo reproductivo da ra-turo no sistema anfigranja. Unpublished dissertation by MSc. Federal University of Vi-Osa, Mina Gerais, Brazil. 98 pages of Vizotto, L.D. 1979. Aspectos t cnicos de ranicultura. In Anais de I Encontro National de Raniculture. Mimiog. University of Sao Paulo, Brazil, Jan. 12, 15, 1979, page 27-67. University of Sao Paulo, Brazil. Species of Amphibular American Bulls Adult Male Status Preservation Least Concern (IUCN 3.1) Presented assortment - dark green synonyms List Rana catesbeiana Shaw, 1802 Rana pipiens - Daudin, 1802 Rana Taurina Cuvier, 1817 Rana mugiens Merrem, 1820 Rana scapularis Harlan, 1826 Rana conspersa LeConte, 1855 Rana Catessiana Cope, 1889 Rana Katessiana Werner, 1909 Rana (Rana) catesbeiana - Boulanter, 1920 Rana nantaisisen Heh, 1930 Rana mugic , 1947 Rana catesbyana Smith, 1978 Rana (Rana) Dubois, 1987 Rana (Aquaran) catesbeiana Dubois, 1992 Rana (Noviran, Aquaran) catesbeiana Hillis and Wilcox, 2005 Lithobates (Aquarana) catesbeianus Dubois, 2006 Rana (Lithobates) catesbeiana Fukett and Dubois, 2014 American bull (Lithobates catesbeianus), often simply known as a bull in Canada and the United States, is a great true frog native to eastern America. It is usually inhabited in large permanent bodies of water such as swamps, ponds and lakes. Bullfrogs can also be found in human made habitats such as pools, koi ponds, canals, ditches and culverts. The bull got its name from a sound that the male will make during breeding, which sounds like a bull roar. The bull is large and usually eaten throughout its range, especially in the southern United States, where they are numerous. Their presence as a food source has led to bulls spreading around the world outside their native range. Bullphrogs were introduced in the western United States, South America, Western Europe, China, Japan and Southeast Asia. In these places they are invasive species because of their insatiable appetite and the large number of eggs they produce, which has a negative impact on local amphibians and other fauna. Bullfrogs are very skittish, which makes grip difficult, and so they often become set. In addition to food, bulls are also used for autopsies in scientific classes. Albino bulls are sometimes kept as pets, and bull tadpoles are often sold in ponds or fish shops. Thomsonomy Some authorities use the scientific name, Lithobates catesbeiana, although others prefer Rana catesbeiana. Etymology Is a Specific Name, Catesbeyan (Female) or Catesbeyan (Male), in honor of the English naturalist Mark Catesby. The description of the American bull's spin (upper) surface of the bull has an olive-green basal color, straight or mottled and a strip of grayish-brown color. The ventral (under) surface is non-white, with yellow or gray. Often, a noticeable contrast in color is observed between the green upper lip and the pale lower lip. Teeth are tiny and useful only in clinging. The eyes are visible with brown irises and horizontal, almond-shaped pupils. Tympana (drum membranes) is easy to see just behind the eyes and dorsolateral skin folds end next to them. The limbs are spotted or striped in gray. The legs at first glance are short and strong, and the hind legs are long. The front tsy are not webbed, but the hind legs have membranes between the numbers, except for the fourth nose, which is unwebbed. Bullphrogs are sexually dimorphic, with males smaller than females and have yellow throats. Men have tympanum larger than their eyes, while tympanum in women is about the same size as the eyes. Bullphrogs measure from 3.6 to 6 in (9 to length of muzzle to ventilation. They grow rapidly in the first eight months of life, typically increasing in weight from 5 to 175 grams (0.18 to 6.17 ounces), and large, mature people can weigh up to 500 grams (1.1 pounds). In some cases, bull bulls were reported reaching 800g (1.8lbs) and up to 8cm (20cm) from muzzle to ventilation. The distribution in the typical aquatic habitat of the bull is native to the eastern part of North America. Its natural range stretches from the Atlantic coast to the extreme west, like Oklahoma and Kansas. It is not located on offshore islands near Cape Cod and is largely absent in Florida, Colorado, Nebraska, South Dakota and Minnesota. It was introduced on Nantucket Island, Arizona, Utah, other parts of Colorado and Nebraska, Nevada, California, Oregon, Washington and Hawaii. In these states, it is considered an invasive species and there is concern that it could outcompete native amphibian species and upset the ecological balance. It is very common on the west coast, especially in California, where it is believed to pose a threat to the Californian redhead frog, and is considered a factor in the decline of this vulnerable species. Other countries to which the bull was introduced include Mexico, the western half of Canada, Cuba, the Dominican Republic, Jamaica, Italy, the Netherlands, Belgium and France. You can also find this in Argentina, Brazil, Uruguay, Venezuela, Colombia, China, Korea and Japan. Reasons for the introduction of bull's-bread in these countries included their deliberate release, either to provide a food source or as biological control agents, to escape frogs from breeding sites, and to escape or release frogs who have been ucks as pets. Conservatives are concerned that the bull is relatively immune to the fungal infection chytridiomycosis and as it invades new territories, it could help spread this deadly disease to more susceptible native frog species. Population management In areas where the American bull is introduced, the population can be controlled by a variety of means. One project (Project 3n-Bullfrog) uses sterile triploid (3n) bullish. The breeding behavior of male bulls have large tympanums and develop yellow throats during the breeding season the breeding season of bulls usually lasts from two to three months. A study of bulls in Michigan has shown that males arrive at the breeding site in late May or early June, and remain in the area in July. Territorial males occupying areas are usually located on an area of 3 to 6 m (9.8 to 19.7 feet) from each other and loud ringing. At least three different types of calls were noted in male bull pies under different circumstances. These distinctive calls include territorial calls made as threats to other men, advertising made to attract attraction and meeting the challenges that precede the battle. The bull bulls have a long breeding season, with males constantly re-entering sexual activity throughout. Males are present in the breeding pond for longer periods than females throughout the season, increasing their chances of mating multiple times. The sex ratio is usually skewed towards men. Conversely, women have brief periods of sexual susceptibility during the season. In one study, female sexual activity usually lasted for one night and mating did not occur if women initiated physical contact. Men only clasp women after they have declared their readiness to mate. This finding refutes previous claims that the male frog will button any female without telling whether the female consented. This masculine and feminine behavior causes high competition between men and men in the bull population and sexual selection for women to be an intense process. Kentwood Wells postulated leks, territorial polygins and harems are the most likely classifications for the bull mating system. Leks would be a valid description because men are going to attract women, and women arrive at the place for copulation. In a 1980 study on bullfruits in New Jersey, the mating system was classified as polygynous resource protection. The men defended the territory within the group and demonstrated typical physical forms of defense. Choirs of male bulls unite in groups called choirs. The behavior of the male choir is similar to that of birds, mammals and other vertebrates. The choirs are dynamic, formed and remain bound for several days, temporarily breaking down, and then forming again in a new area with another group of males. The male movement was experimentally noted as dynamic. In the study, a Michigan study, the choirs were described as attraction centers in which more of them amplified the common acoustic displays of males. It is more attractive to women as well as attractive to other sexually active men. The choirs in this study were dynamic, constantly forming and disintegrating. New choirs have been formed in other areas of the site. The men moved and were very mobile in the choirs. A review of several studies on bull pies and other anuranams noted male behavior in groups, which varied according to the density of the leks population. With a higher population density, leks favored due to difficulties in protecting individual territories among a large population of men. This variance causes differences in how women choose their comrades. When male population density is low and men retain clearer, clearer areas, women's choices determined by the quality of the territory. When the male population Above, women depend on other signals to choose their comrades. These signals include the positions of men in the choir and differences in the behavior of the male display among other determinants. Social dominance in choirs is established through challenges, threats, and other physical manifestations. Older men tended to gain more central places, while young men were confined to the periphery. Owning a choir is the number of nights the male participates in the breeding choir. One study distinguishes between the possession of a choir and the dominant possession. Dominant tenure is more strictly defined as the amount of time a man maintains a dominant status. The lifespan of the choir is limited due to the increased risk of predation, loss of feeding capacity and higher energy consumption. The appeal is considered to be energy-expensive for anurans in general. Energy is also consumed by the movement and aggressive interaction of male bulls in the choir. Aggressive Behavior For the establishment of social dominance in choirs, bull darts demonstrate various forms of aggression, especially through visual manifestations. Position is a key factor in establishing the social status and threatening applicants. Territorial males have inflated poses, while non-territorial males remain in the water, showing only their heads. For dominant (territorial) males, their elevated posture shows their yellow throat color. When two dominant males collide with each other, they engage in a fight battle. Males have their vents stacked, each person in a straight position rising to well above the water level. A study in New Jersey found that males approached each other within a few centimetres and then tilted their heads backwards, showing their shiny-colored gulular bags. Gular is diouromatic in bullish, with dominant and fitter men displaying yellow gulars. The New Jersey study also reported low posture, with only the head above the surface of the water typical of subordinate or non-territorial males and females. High posture was demonstrated by territorial males, who swam on the surface of the water with inflated lungs, showing off their yellow gulars. Men optimize their reproductive fitness in different ways. Early arrival at the breeding site, prolonged breeding with continuous sexual activity throughout the season, ownership of centrally located territory in the choir, and successful movement between dynamically changing choirs are all common ways for males to maintain dominant or territorial status in the choir. Older men have greater success in all these areas than young men. Some males play a lower role researchers call silent male status. These silent men take a submissive pose, sit next to the residents of the men and and no attempt to oust them. Silent males do not try to intercept females, and wait for the territories to become vacant. This has also been called an alternative or satellite male strategy. The growth and development of the Bullfrog larvae and mouthparts Of The Juvenile with a small, gray, oval-shaped area on top of the head, a dark eye after selecting a male, the female lays eggs on its territory. During mating, or ampplex, the male rides on top of the female, grabbing her limbs. The female selects a site in shallow water among the vegetation and lays a batch of up to 20,000 eggs, and the male simultaneously releases sperm, which leads to external fertilization. Eggs form a thin floating leaf that can cover an area of 0.5 to 1.0 m2 (5.4 to 10.8 sq m). Embryos develop best at water temperatures of 24 to 30 degrees Celsius (75 and 86 degrees Fahrenheit) and hatch within three to five days. If the water temperature rises above 32 degrees Celsius (90 degrees Fahrenheit), developmental abnormalities occur, and if it falls below 15 degrees Celsius (59 degrees Fahrenheit), normal development stops. Newly hatched tadpoles prefer to live in shallow water on a shallow gravel bottom. This may reflect fewer predators in these places. As they grow, they tend to move into deeper waters. Tadpoles initially have three pairs of outer gills and several rows of genital teeth. They pump water through the gills with the movements of the mouth floor, capturing bacteria, single-celled algae, protozoa, pollen grains and other small particles on the mucus in the filtration organ in their pharyng. As they grow, they develop ingest larger particles and use their teeth for rasping. They have down-faced mouths, deep bodies, and tails with wide dorsal and ventricular fins. The time of metamorphosis varies from a few months in the southern part of the range to 3 years in the north, where cold water slows down development. The maximum life expectancy in the wild is estimated at 8-10 years, but one frog has lived in captivity for almost 16 years. Feeding Bullfrogs are voracious, opportunistic, ambush predators that prey on any little animal they can overpower and stuff down their throats. It has been found that the stomachs of bulls contain rodents, small lizards and snakes, other frogs and toads, amphibians, crayfish, small birds, scorpions, tarantulas and bats, as well as many species of invertebrates, such as insects, which are the usual food of ranid frogs. These studies have shown the bull diet to be unique among North American ranids in incorporating a large percentage of aquatic animals such as fish, tadpoles, sheep snail horns, and dytiscid beetles. Bull captures are able to capture large, strong prey due to the powerful capture of their jaws after the initial hitting his tongue. The bull is able to make a benefit to light light on the water-air interface, hitting the rear position to the intended target location. The comparative ability of bulls to capture submerged prey, compared to green frog, leopard frog and tree frog (L. clamitans, L. pipiens and L. sylvaticus, respectively), has also been demonstrated in laboratory experiments. The movement of prey causes feeding behavior. First, if necessary, the frog performs one thing, orienting the bodily rotation, ending with a frog aimed at prey, and then, if necessary, approaching the jumps. Once within striking distance, the bull begins its feeding kick, which consists of a ballistic lunge (eyes closed as during all jumps), which ends with the opening of the mouth. At this stage, the fleshy, slimy-coated tongue spreads to prey, often absorbing it, while the jaws continue their forward journeys to close (bite) just as the tongue is removed. A large prey that does not fit completely into the mouth, dding hands. In laboratory observations, bulls receiving mice usually swam underwater with prey in their mouths, apparently with a beneficial effect of changing the mouse's defense from counterattack to fighting for air. Suffocation is the most likely cause of death of heat-blooded prey. The biomechanical background projection of the tongue is the speed of hitting the bull's tongue much faster than it should be if the muscles were the only force behind it. Instead, when the frog's mouth is closed, the tension is placed in the elastic tissue of the tongue as well as in the elastic tendons of the lower jaw. It's like the tension on the slingshot pulled all the way back. When a frog attacks prey, opening its mouth is like letting go of a slingshot; The elastic force stored in the tongue and jaw combined to shoot the tip of the tongue to the prey is much faster than the ability of the prey to see the impact and avoid capture, completing the strike and searching in about 0.07 seconds. Another advantage of this attack, based on elastic force, is that it does not depend on the background temperature. A frog with a cold body temperature has muscles that move slower, but it can still attack prey at the same rate as if its body were warm. Ballistic projection of the tongue of a related leopard frog is possible due to the presence of elastic structures that allow the storage and subsequent release of elastic energy recoil. This explains the projection language with higher power than will develop due to muscle action alone. In addition, this mechanism frees the musculature of the tongue from physiological limitations, such as limited peak power - mechanical efficiency and thermal dependence, disconnecting the activation of the contracting units of the depressor mandibulae from actual muscle movement. In other words, kinematic parameters, Using the help of different from those that developed muscle projection, which is the difference in speed, power output, and heat dependence. Jumping - The fishing mechanism Definition Bullfrogs are able to jump distances 10 times their body length due to the ability to activate muscle contracting units before expanding the muscle plantaris. In this process, sarcomacut generates tension in elastic structures such as tendons, which in turn catch the energy generated by the strain. Such are subsequently released as plantaris are actively stretched during jumps, adding to the energy generated by muscle action alone, thereby generating supermaximum forces that allow the bull to jump long distances. Thus, the fishing mechanism relies on elastic structures acting as muscle force amplifiers and their ability to absorb elastic voltage energy and preserve it for later explosive release while jumping. The benefits of the fact that the catch mechanism relies on elastic structures used as power amplifiers implies a number of conditions, very convenient for the bull. Sonomytrometry and electromyographic records of the sole muscles confirm the link between the presence of muscle-tendon units and the decrease in variable transmission. By providing an additional output by connecting the elastic energy of the voltage, the elastic structures free the muscles from the need to reduce the speeds, which would otherwise prevent the amount of force generated, thus the amount of power. This is also helped by reduced gearing, which allows the bull spur to generate the desired speed of movement, freeing plantaris from strenuous reduction speeds, reaching the speed desired by slower, stronger contractions. As with its ballistic language projection, the elastic structures in the sole of the muscle also give it thermal independence. The jumps of peak power and mechanical efficiency of the high-altitude frogs of the genus Hyla, Eleutherodactylus, Colostethus, and Atelopus, which reach them at temperatures as low as 5 degrees Celsius, are not statistically different from those achieved by tropical bufo toads at 35 degrees Celsius. , North American river otters (Lontra canadensis), predatory fish and sometimes other amphibians. Predators of American bulls once in adulthood can range from 150 grams (5.3 ounces) of belted kingfishers (Megaceryle alcyon) to 1,100 pounds of American alligators (Alligator mississippiensis). Eggs and larvae are unpleasant for many salamanders and fish, but high levels of tadpole activity can make them more visible to predators not restrained by their unpleasant taste. People prey on bulls like a game and consume their feet. Adult frogs try splashing and jumping into deep water. Captured person can squawk or radiate a shrill scream that can surprise the intruder enough for the frog to escape. An attack on one bull is likely to alert others in the vicinity of danger, and they will all retreat to safer waters. Bullphrogs can be at least partially resistant to copper venom (Agkistrodon contortrix) and cotton snakes (Agkistrodon piscrusivo), although these species are known as natural bull predators, like northern water snakes (Nerodia sipedon). The human use of Bullfrogs in the Asian supermarket The American bullfrog provides food source, especially in the south and parts of the U.S. Midwest. The traditional way of hunting them is to paddle or pole silently by canoe or boat in ponds or swamps at night; When the frog's call is heard, the light glows on the frog, which temporarily inhibits its movement. The frog will not jump into deeper waters as long as it approaches slowly and steadily. When close enough, the frog gigged with a multi-tined spear and brought in the boat. (quote needed) Bullfrogs can also be chased on the ground, again taking great care not to shake them. In some states, breaking skin by catching them is illegal, and used to either grab concerts or grab hands. Only parts usually eaten by hind legs, which resemble small chicken drumsticks, have a similar flavor and texture and can be cooked in a similar way. An American bull caught at night by a pond in the southern United States at a makeshift frog concert in almost natural enclosed ponds has been taken, but fraught with difficulties. Although feed pellets are available, frogs will not willingly consume artificial diets, and providing enough live prey is challenging. The disease is also usually a problem, even if great care is taken to ensure sanitary conditions. Other problems that need to be overcome may be predation, cannibalism and poor water quality. Frogs are big, have powerful jumps, and inevitably escape, after which they can wreak havoc among the local frog population. Countries that export bull legs include the Netherlands, Belgium, Mexico, Bangladesh, Japan, China, Taiwan and Indonesia. Most of these frogs are caught out of the wild, but some are in captivity. The United States is a net importer of frog legs. The American bull is used as a sample for autopsy in many schools around the world. These are the amphibious states of Missouri, Ohio and Oklahoma. The Genome of the Nuclear Genome (52) (5.8 Gbps) of the North American bull (Rana (Lithobates) catesbeiana) was published in 2017 and provides a resource for future Ranidae research. Inquiries - IUCN Amphibious Specialist Group. (2015). catesbeianus. RED IUCN IUCN endangered species doi:10.2305/IUCN. UK.2015-4.RLTS.T58565A53969770.en - Frost, Darrell (2011). American Museum of Natural History: Species of Amphibians of the World 5.5, online reference. Herpetology. American Museum of Natural History. Received 2013-02-17. David M. Hillis (February 2007). Restrictions in naming parts of the Tree of Life. Molecular philogenetics and evolution. 42 (2): 331–338. doi:10.1016/j.ympev.2006.08.001. PMID 16997582. David M. Hillis; Wilcox, Thomas. (February 2005). New World Phylogeny of true frogs (Rana). Molecular philogenetics and evolution. 34 (2): 299–314. doi:10.1016/j.ympev.2004.10.007. PMID 15619443. - yuan, z.-Ya.; et al. (2016). Spatiotemporal diversification of true frogs (rana genus): A historical basis for a widely studied group of model organisms. Systemic biology. 65 (5): 824–42. doi:10.1093/sysbio/syw055. PMID 27288482. Rana Catesbeyan. Amphibiaweb.org. Feduchcha, Alan (editor) (1985). Birds of Catisby Colonial America. Chapel Hill, North Carolina: University of North Carolina Press. 208 page ISBN 978-0807848166. (Rana catesbeyan, Foreword, p. xiii). b c Knapp, W. W. (2008-05-28). Bullfrog - Rana Katesbeyan. Frogs and toads of Georgia. Archive from the original for 2018-10-25. Received 2013-01-20. a b c Cardini, F. (1974). Specializing power response Bullfrog, Rana catesbeiana, to capture the prey submerged in water. M.S. Thesis, U. Massachusetts, Amherst, Massachusetts and B Lutz, G.; Avery, J. Regional Aquaculture Centre. Received 2013-01-09. Constant Dead Connection - ANIMAL BYTES- North American Bullfrog. The sea world. Archive from the original 2013-07-30. Received 2013-01-09. Rana Catesbeyan. Department of Fisheries and Aquaculture. Received 2013-01-09. a b c McKercher, Liz; Gregoire, Denise R. (2011-09-14). Lithobates catesbeianus (Shaw, 1802). Non-individual aquatic species. U.S. Geological Survey. Received 2013-01-20. Hammerson, Jeffrey (2008). Ran of Draytonia. Red list of threatened species by IUCN. 2008. Extracted 2013-01-23.old-form URL - b Crayon, John J. (2009-12-03). Catesbeyan (Rana catesbeyan) (amphibian). Global database of invasive species. A group of specialists in invasive species. Received 2013-01-20. An archival copy. Archive from the original 2017-10-10. Extracted 2017-01-29.CS1 maint: archived copy as a title (link) - b c Lu, Christine; Sfuls, Ambika (2010-08-23). Rana Catesbeyan. AmphibianWeb. Archive from the original 2016-05-10. Received 2013-01-20. Borze, Amael; Kosh, A. Tiffany; Kim, Miyoung; Jang, Ikweon (May 31, 2017). Introduced bull spurs are associated with an increase in the prevalence of batrachochytrium dendrobatidis and a decrease in the appearance of Korean tree drugs. OOP ONE. 12 (5): e0177860. Bibkod:2017PLoSO. 1277860B. PMC 5451047. PMID 28562628. Project 3n-Bullfrog - b c d e f h i Emlen, Stephen T (1976). Lek organizing and mating strategies in bullfrog. Behavioral ecology and sociobiology. 1 (3): 283–313. doi:10.1007/BF00300069. JSTOR 4599103. Blair, Albert (1963). Notes on the behavior of anuran, especially Rana katesbeyan. Herpetology. 19 (2): 151. a b c d e Emlen, Stephen T (1968). Territoriality in a bull's-go, Rana catesbeyan. It's a backup. 1968 (2): 240–243. doi:10.2307/1441748. JSTOR 1441748. b Wiewandt, Thomas A (1969). Vocalization, aggressive behavior and territoriality in the bullish, Rana catesbeiana. It's a backup. 1969 (2): 276–285. doi:10.2307/1442074. JSTOR 1442074. a b c d e f g h i j k Wells, Kentwood D (1977). Territoriality and male mating success in green frog (Rana clamitans). Ecology. 58 (4): 750–762. doi:10.2307/1936211. JSTOR 1936211. a b c d e f g Ryan, Michael J. (1980). Bullfrog Reproductive Behavior (Catessian's Rana) (PDF). It's a backup. 1980 (1): 108–114. doi:10.2307/1444139. JSTOR 1444139. Blair, W. Frank (1958). Call the structures and species groups in the U.S. treefrogs (Hyla). Naturalist of the Southwest. 3 (1/4): 77–89. doi:10.2307/3669039. JSTOR 3669039. Boguert, Charles Mitchill (1960). The effect of sound on the behavior of amphibians and reptiles, the American Institute of Biological Sciences. Littlejohn, M. J.; Martin, AA (1969). Acoustic interaction between two species of leptodactylyde frogs. Animal behavior. 17 (4): 785–791. doi:10.1016/S0003-3472(69)80027-8. Murphy, Christopher G. (1994). Choir possession male barking treefrogs, Hyla gratiosa. Animal behavior. 48 (4): 763–777. doi:10.1006/anbe.1994.1301. S2CID 53184986. Judge b, Kevin A.; Ronald J. Brooks (2001). Choral participation of male bull bulls, Rana catesbeyan: testing the hypothesis of energy restriction (PDF). Animal behavior. 62 (5): 849–861. doi:10.1006/anbe.2001.1801. Michael J. Ryan; Tuttle, Merlin D.; Tuft, Lucinda K. (July 1981). The costs and benefits of frog-chorused behavior. Behavioral ecology and sociobiology. 8 (4): 273–278. doi:10.1007/BF00299526. Wurbright, Lawrence L.; Stuart, Margaret M. (1987). Foraging the success of the tropical frog, Eleutherodactylus coqui: the cost of the call. It's a backup. 1987 (1): 69–75. doi:10.2307/1446039. JSTOR 1446039. Kenneth N. Prestwich; Brugger, Christine E.; Topping, Maria (July 1, 1989). Energy and communication in three types of hylid frogs: power, energy output and efficiency. In the journal Experimental Biology. 144 (1): 53–80. CiteSeerX 10.1.1.500.5149. Pou, F.H., et al. (1992). Behavioral Energy, page 395-436 in Environmental Amphibian Physiology, University of Chicago Press, ISBN 0226239446. b c Casper, G.S. and Hendrix, R. (2005). Amphibian Decline: Preservation Status State Types, M. Lannoo (ed.) UCLA Press ISBN 0520235924. Robert K. Stebbins; Nathan W. Cohen (1995). The natural history of amphibians. Princeton University Press. 181-184. ISBN 978-0-691-03281-8. Mikula (2015). Fish and amphibians are like bats of predators. European Journal of Ecology. 1 (1): 71–80. doi:10.1515/eje-2015-0010. a b c Moyle, Peter (2012-07-04). The bull frog. Eat the invaders. Received 2013-02-18. Sandusky, Paula E.; Deban, Steven M. (2012-12-01). Temperature effects on biomechanics prey capture in frog rana pipiens. In the journal Experimental zoology Part A: Environmental Genetics and Physiology. 317 (10): 595–607. doi:10.1002/jez.1751. PMID 22952141. Steven M. Deban; Lappin, A. Christopher (2011-04-15). Heat impact on dynamics and propulsion control of ballistic capture of prey in toads: maintaining high performance at low temperature. In the journal Experimental Biology. 214 (8): 1333–1346. doi:10.1242/jeb.048405. PMID 21430211. Alazini, Emanuel; Thomas J. Roberts Muscle performance during frog jumping: the effect of elasticity on muscle length. Proceedings of the Royal Society of London B: Biological Sciences. 277 (1687): 1523–1530. doi:10.1098/rspb.2009.2051. PMC 2871832. PMID 20106852. Thomas J. Roberts; Marsh, Richard L. (2003-08-01). Sensing the limits of muscle accelerations: lessons in jumping from bull frogs. In the journal Experimental Biology. 206 (15): 2567–2580. doi:10.1242/jeb.00452. PMID 12819264. Rob S. James; Carlos A. Navas; Herrel, Anthony (2007-03-15). How important are skeletal muscle mechanics in setting limits on jumping performance?. In the journal Experimental Biology. 210 (6): 923–933. doi:10.1242/jeb.02731. PMID 17337705. Murray, BG; J.R. Jel The weight of the autumn migrants from coastal New Jersey. The banding bird. 35 (4): 253–63. doi:10.2307/4511101. JSTOR 4511101. American alligator (Alligator mississippiensis) longevity, aging and life history. Database on aging and longevity of animals. Received 2014-02-06. Conant, Roger. (1975). Field Guide for Reptiles and Amphibians of East and Central North America, Second Edition. Houghton Mifflin, Boston. Ryan, M.J. (1980). Reproductive behavior of the bull (Rana catesbeiana) (PDF). It's a backup. 1980 (1): 108–114. doi:10.2307/1444139. JSTOR 1444139. How to catch a bull. Vicky How to do something. Received 2013-02-17. B Lutz, C. Greg; Avery, Jimmy L. (1999). Bullfrog culture. Regional Aquaculture Centre. Received 2013-02-17. Torres Gutierrez, Melissa (February 25, 2015). Dismemberment of a frog: a rite of passage for high school. Npr. Official State Amphibian. NetState.com 2012-07-11. Archive from the original 2011-05-14. Received 2013-01-23. Rana catesbeyan isolate Bruno, gene shotgun sequencing project. 2017. To quote the magazine requires the magazine (help) - Hammond, S. Austin; Renee L. Warren; Benjamin P. Vanderwald; Kuchuk, Erdi; Khan, Hamza; Evan A. Gibb; Pandoon, Pauan; Heather Kirk; Zhao, Yongjun; Martin Jones; Andrew J. Mungall; Coop, Robin; Pleasure, Stephen; Richard A. Moore; Robert A. Holt; Round, Jessica M.; Ohora, Sarah; Branden W. Valle; Veldhoen, Nick; Helbing, Aben K.; Birol, Inanz (November 10, 2017). The North American bulldozer genome project provides insight into the hormonal regulation of long non-coding RNA. Natural communications. 8 (1): 1433. Bibkod:2017NatCo... 8.1433H. doi:10.1038/s41467-017-01316-7. PMC 5681567. PMID 29127278. External Commons links have media related to Rana catesbeiana. Wikispecies has information related to Rana catesbeiana Herps of Texas: Rana catesbeiana British Columbia Frog Watch program: Bull Frog Fact sheet Bullfrog on the Global Invasive Species Species Database - Bullfrog (Lithobates catesbeianus), National Invasive Species Information Center, National Agricultural Library of the United States. Extracted from the rana catesbeiana taxonomy. rana catesbeiana call. rana catesbeiana for sale. rana catesbeiana is closely related to. rana catesbeiana pronunciation. rana catesbeiana shaw. rana catesbeiana classification. rana catesbeiana iucn