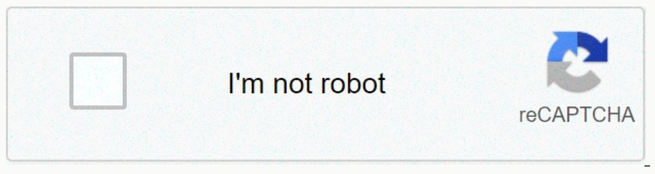

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Growling grass frog habitat

This lesson plan focuses on the groaning grass frog (Litoria raniformis), which allows students to better understand frog biology and the urbanization process to help them identify future urban growth hotspots that will impact frog habitat. Students will then be able to evaluate and make decisions on how best to manage urban growth, particularly through the use of habitat corridors. Frogs are a class of animals in our urban habitats that are often overlooked when studying the impacts of urban growth on biodiversity. The grognant grass frog was once very common in Melbourne, but due to a significant drop in numbers is now considered endangered. This decline can be attributed to habitat fragmentation caused by urban growth and impacts of the Chytrid fungus. Download lesson plan This lesson plan contains modules explicitly related to the Victorian program, as well as significant and effective expansion activities for frog conservation. To receive free classroom resources on paper and additional support, send an email [protected email]. Module 6: 9-10 Using data to manage our frogs436.37 KB (PDF) activities These activities can be used individually or in order. Activity 1: How is urban growth changing Melbourne and its frogs? Students examine the nature and extent of past, present and future urban growth in Melbourne using satellite images - and the impact this has had on the number of frogs. Activity 2: Surveying frogs in our area — excursion or home activity Students participate as citizen scientists in the frog census by identifying current peripheral areas of urban growth and recording frog data at these locations. Activity 3: What is the future of the habitats of the groaning grass frogs in Melbourne? Students use criteria to determine the location of current and future habitats of the groaning grass frogs in Melbourne. They then make predictions on which of these habitats would be most threatened using Atlas Living Australia (ALA) and urban growth models. Activity 4: Creating Habitat Corridors to Manage Future Frog Habitats Students use the Atlas of Living Australia (ALA) and criteria to determine the location of a possible habitat corridor. Students then create an interactive map using Google My Maps to map the distribution of the groaning grass frog, the location of the corridor and provide a justification for their choice. The Victorian program connects the Frog Census Resources app Participate in our community frog monitoring program and collect data to help us manage frog populations and raise awareness of river health issues through our frog census app. Frog Census Growling Grass Frog. Image Trevor Graham.The Growling Grass Frog Litoria raniformis, also known as Southern Bell Frog or Warty Bell Frog is distributed in southeastern Australia, is found in New South Wales (Riverina region), Victoria, Victoria, south-eastern South Australia. It is a large daytime frog that was common and widespread throughout its range, but declined suddenly around 1990 and is now rare and threatened. It was classified as an endangered species under the Victorian Conservation Act 1988 in 2001, and declared endangered in 2002 due to a significant decline in much of its range. There are now isolated populations in the greater Melbourne area and in the southwestern parts of Victoria. The distinctive features are olive green, a warty back (with brown spots in adults), a dorso-lateral fold and a distinct eardrum (ear). DistributionAll known historical recordings of Growling Grass Frog in Victoria. Source: Victorian Biodiversity Atlas, Department of Environment, Water, Land and Planning, Consulted July 29, 2015.The groping grass frog records from 2000 to 2010 show a decline in this historical distribution of species across much of Victoria. Source: Atlas of Living AustraliaEcology and HabitatThe growth of grass frogs requires stationary or slow water with emergent vegetation at the edges and mats of floating and submerged plants. They can live in artificial bodies of water, such as agricultural dams, irrigation canals and disused quarries. Favourable habitat characteristics include abundant aquatic vegetation, minimal tree canopy cover, aquatic bodies with salinity of less than 7.0 mS/cm, or (7,000 CE) that retain water for at least six months of the year. A group of bodies of water (less than 700 m) allows frogs to move from one location to another as conditions change. They usually move on rainy nights. Typical aquatic vegetation comprising one or more species that can be found at groping grass frog sites. Pondweed (Potamogeton tricarinatus) Cumbungi (Typha orientalis) Running Marsh Flower (Villarsia reniformis) Swamp Crassula (Crassula helmsii) Water ribbons (Triglochin procerum) Common Rose (Phragmites australis) Water sofa (Paspalum distichum) Common Rush (Juncus usitatus) Common point (Eleocharis acuta) Ribbon grass (Vallisneria gigantea) Common Milfoil (Myriophyllum papillosum)A major factor appears to be a combination of vegetation types in each site: Tall emergent (for example. Spike Rush) vegetation provides protection for adult frogs from predators. Floating attached (for example. The running vegetation of the marshes protects tadpoles. Submerged and emerging vegetation, as well as feathery and non-feathery vegetation (e.g. The types of Crassula and pondweed marshes provide spawning sites as well as protection for tadpoles in tangled submerged growth. Cover of grass and shrubs on the banks is also important for emerging frogs to protect against predators and to acquire insect prey as a food source. The grognant grass frog has been recorded 200 metres from the water, so it will easily migrate from a drying site to a stable site with suitable habitat. This species a wide variety of habitats, whether wet or very dry, and this must be taken into account when decisions are made about their survival. BreedingBreeding begins in August when calling males begin to be able to attract females, although females generally do not start laying eggs until October - November.Males will continue to call until the end of March, but females usually do not respond unless the season is very humid and hot. Eggs are laid in the spring, so frogs need water that lasts through the summer for their tadpoles to grow. Females lay up to 4,000 eggs in floating, frothy rafts that sink into submerged vegetation within 12 hours. Tadpoles develop from the same spawning over a long period of time. The tadpole stage can last 3-15 months and they can reach 110 mm in total length. Some are fully developed and come out of the water at 16 weeks, but they have been known to take up to 12 to 15 months to complete the metamorphosis in Tasmania. In Victoria, most tadpoles appeared as frogs at the end of May. The hatching of tadpoles depends on the temperature of the water. 18 to 24 degrees Celsius is the optimum temperature and 24 - 36 hours seems to be the normal duration during which the outbreak occurs. This can take up to five days under low temperature conditions. Large pink-grey tadpoles have yellowish fins and hide in aquatic vegetation or move to deeper waters if disturbed. They develop green/gold coloration towards the end of the tadpole stage. FoodThe groping grass frog is active during the warmer months of the year (September to March) and likes to bask in the sun on mild, sunny days. Like most frogs they usually call, feed and move after dark. The groping grass frog eats a wide range of insects and even small lizards, fish, tadpoles and frogs. It is a sit-and-wait predator. During the winter, these frogs are largely inactive and shelter on land under rocks, logs, thick vegetation, or in the crevices of the ground, often far from the planbres and sometimes collectively. Source: Project Habitat Dams ThreatsHabitat lossDraining or filling water bodies. Obstacles to movement between bodies of water. Low groundwater from fresh water by pumping. Increased salinity of runoff and modification of hydrological systems. Reduced habitat quality due to changes in flow/fill, water quality/salinity, pollution and pesticides and herbicides and increased nutrients. High concentrations of nitrates and phosphates have been identified as an impact. Historical and experimental data suggest that in New South Wales, the decline of the Bell Green and Gold l. aurea frog in its former range was due to high nutrient runoff events. Fertilizers can also increase the nutritional status of water bodies and thus initiate eutrophication, resulting in dissolved oxygen levels lowered that do not support tadpoles (Hamer et al. 2004). Loss of (used by frogs for shelter, displacement or overwintering) lost or damaged by stock grazing, land clearing, destruction/removal of rocks or logs. Observations of dams with improvements under the Habitat Dams project have shown that high-density grazing, particularly in cattle, can have a significant impact on the ability of aquatic vegetation to establish and thrive on a site. High grazing pressure, combined with trampling and higher turbidity levels, can destroy young plants and significantly reduce plant cover even if the plants are well established. Chytridiomycosis diseaseChytridiomycosis is an emerging infectious disease of frog skin caused by the chytrid fungus, Batrachochytrium dendrobatidis and has been linked to continued declines in the amphibious population in the western United States, Central America, Europe, Africa and Australia. Ongoing studies suggest a correlation between resistance to lethal B. dendrobatidis infection and the synthesis (production) of antimicrobial peptides by the host amphibian. Further research is needed to better define the role of antimicrobial peptides in protecting amphibian populations and the effect of environmental factors on the synthesis of the antimicrobial peptide (Rollins-Smith and Conlon, 2005). Introduced fishPredator species such as introduced affinis Mosquitofish Gambusia can have an impact on tadpoles, Mosquitofish are prolific breeders producing offspring three or four times a year. They can tolerate poor water quality and may inhabit waters otherwise unsuitable for many native freshwater fish, increasing their ability to attack tadpoles. Climate changeA extent that a species loating growling grass frog, can be damaged by higher levels of ultraviolet-B radiation caused by the depletion of atmospheric ozone. The effects of all of the above threats can be enhanced by drought or climate change. Conservation and Management MeasuresConservation at VictoriaObjectives Manage currently known and subsequently discovered populations for short-term protection from major threatening processes. Maintaining and improving population size Improve knowledge and understanding of the biology and ecology of the grunting gram-bones frog, including the role and importance of individual threats. Implement survey and monitoring programs to obtain critical demographic data. Increase community awareness of conservation and management of health care specifics of the articleSpecific in the VictoriaDams to Habitat project This project was put on the market in 2007-2008 and was put in place to provide simple management measures that can be used to create a more viable habitat for the frog of grunts, especially in times of prolonged drought and climate change. Until 2013 (5 years of surveying), 30 clusters totalling more than 220 dams were surveyed through the CMAs of Glenelg Hopkns, Corangamite and Wimmera with groaning grass frogs detected in 27 clusters. Summary of Findings Dams to provide breeding habitat for groaning grass frogs is possible using project methods, however, success is not guaranteed. When aquatic vegetation increases at a dam, with or without help, growling grass frogs can move and even breed. Frogs will be encountered in dams that have very little or no vegetation. It is not known how long they remain in these dams and are unlikely to breed in these dams. Improving dams to create breeding habitat for groping grass frogs can be very difficult and costly and its success depends on a wide range of factors, many of which are not easy to control. Agricultural dam 2 years after conservation work to establish habitat for the grognant grass frog. The project will now focus on continuing monitoring of established dams to learn more about how planted vegetation improves frog habitat and how long it takes for dams to become suitable for frogs and b) learn more about the occupancy habits of the grass frog grunting at treatment and control dams and assess where breeding takes place to better understand what influences reproductive success in agricultural dams. Full report: Nicholson, E., Bryant, D., Peterson, G. and Papas, P. (2013) Growling Grass Frog 'Dams to Habitat' Project Progress Report 2013. Unpublished report. Department of Environment and Primary Industries, Heywood, Victoria. Growling Grass Frog 'Dams to Habitat' Report 2013 Reserve measures throughout VictoriaThis are primarily led by the Department of Environment, Lands, Water and Planning in collaboration with watershed management authorities. Surveys using well-known survey techniques to determine the extent and abundance of the species' populations in all regions of Victoria. Ensure that the measures specified in the Action Statement are included in relevant regional capture strategies and biodiversity action plans. Explore the possibility and opportunity to undertake counter-control/reduction of threats against introduced predators of frogs and/or tadpoles, including exotic Gambusia mosquito fish. Promoting conservation management networks for the implementation of desired management measures for identified clusters of high-priority sites. Complete the ffg action statement. Ensure that specific measures in the action statement are incorporated into the plans parks and reserves. Take long-term population monitoring at certain sites throughout the species' range Develop guidelines and implementation plans for reintroduction and translocation of grognant grass frogs, subject to recommendations in the Action Statement. Projects and PartnershipsA sampling and intensity methodology required for grognant grass frog surveys has been completed and should be applied to all future studies. (Heard, Robertson and Scroggie 2006) and ARI Technical Technical 208.It proposed to study predatory interactions - prey of exotic fish (especially introduced mosquitofish) with groping grass frog populations and how these interactions affect habitat quality. Also contribute and monitor the implications of broader research on control methods for Mosquitofish.Research papersReferences and Links Hamer, A. J., Makings, A., Lane, S. J., Mahony, M. J. 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