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Mosquito larvae

Posted by Anonymous on Wed, 2015-12-09 10:21

Mosquito larvae. I'm putting together some activities for Year 2 students and was wondering if we are still able to use mosquito larvae in the classroom? I am hoping to demonstrate how having mosquito larvae in pond water covered by a layer of oil will stop them being able to take in oxygen and so die.

Voting:



No votes yet

Australian Curriculum:

Living things grow, change and have offspring similar to themselves

Year Level:

2
3
4
5
6
7
8
9
10

Senior Secondary

Laboratory Technicians:

Laboratory Technicians

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Answer by ritasteffe on question Mosquito larvae

Submitted by on 09 December 2015

Answer reviewed 23rd January 2023

Keeping live animals in the classroom is an engaging activity for younger students, and encourages them to observe life cycles of different insect species whilst discussing and recording changes in development.

Assessing the risks:

Observing mosquito larvae under oil to demonstrate that mosquitoes need oxygen to breathe can be conducted as a classroom activity. However, adequate safety measures should be in place to prevent any mosquito larvae from emerging into the adult mosquito stage and escaping. Because mosquitoes can bite people and cause local irritation or disease, teachers have a duty of care to themselves and others to minimise any harm of being bitten over the duration of this activity.

A layer of oil on top of the water prevents mosquitoes breeding in two ways:

- larvae in the water cannot penetrate the film of oil with their breathing siphon, and so drown and die;
- the film of oil also prevents adult mosquitoes from laying eggs in the water.

Science Assist recommends you conduct a site-specific risk assessment prior to any activity to assess and control the risks. We have developed a Risk Assessment template for schools to use, see [Risk Assessment Template](#).¹

Control measures:

Consider implementing the following to minimise risks.

- This activity should be conducted by the teacher only and is strictly observational for Year 2 students.
- Conduct the experiment before the larvae turn into adult mosquitoes. Depending on temperature conditions, they can mature from egg to larvae to pupa within 5–14 days. Refer to Mosquitoes and their life cycle below.
- Choose a small, clear fish tank or clear plastic container or jar and cover it with a securely fitting mesh, gauze or nylon stocking. In the event of any mosquitoes hatching, this should prevent any from escaping into the classroom.
- An oil depth of 5mm should be adequate to stop the mosquitoes penetrating it with their breathing tube.
- Vegetable oil is okay to use but may become rancid over time. An alternative is paraffin oil.
- Make sure the system set up for this activity is tamper proof and kept in an area where it is secure and can be well supervised.
- Before disposal, make sure all mosquito larvae are dead. DO NOT, release live larvae into the environment.
- Absorb the oil on to paper towel before disposal into the regular waste. Pour the remaining water onto the garden.

Additional Information:

Use of animals in schools:

Animal ethics committee approval is required when certain animals are used in schools for scientific purposes, teaching activities or classroom observation.

Ethics committee approval, as specified in the Animal Welfare Act, is required when research is being conducted on live non-human vertebrate animals and cephalopods. This includes any activity that removes an animal from its normal environment, such as examining blood flow in fish or tadpole tails under a microscope. To be granted a licence, the school must agree to comply by the approved research Code of Practice. The animal research decision guide can be found on the NHMRC [Australian code for the care and use of animals for scientific purposes 8th edition \(updated 2021\)](#) ²

Mosquitoes and their life cycle:

You can collect mosquito eggs (oval-shaped, brown egg rafts) or larvae from ponds or standing water such as: water tanks, old tires, driveway puddles, unfiltered fish ponds, empty flowerpots, and any item that can hold water for more than a few days at a time. Alternatively, some pet stores or aquarium suppliers may cultivate or keep mosquito larvae as a food supply for their fish stocks.

Mosquitoes are small midge-like flies which belong to the family Culicidae (scientific name for the mosquito family).

Their lifecycle has 4 stages—egg, larvae, pupa and adult. The larval stage is the most active aquatic form of the mosquito. Mosquito larvae are small worm-like creatures covered in tiny hair-like spines that assist the larvae to float in water.

The ability to float is important, because mosquito larvae require air to survive. They have developed a specialised structure called a breathing siphon to allow them to take in air. See the link [Mosquito lifecycle](#) ³ for more information.

Public health focus:

Sensitivity to mosquito bites varies, with most people having only a mild reaction. However, some people develop severe symptoms from the saliva of mosquitoes, including: swelling, redness and irritation at the site of the sting or puncture. If the bites are scratched, they may become infected with bacteria and a secondary infection may occur.

Mosquitoes are vectors or transmitters of infectious disease.⁴ Mosquito-borne diseases in Australia include Dengue fever, Australian encephalitis (AE), Ross River (RR) virus disease, Barmah Forest virus disease and, in recent times, Malaria.

Dengue fever is restricted to Queensland where the major vector *Aedes aegypti* occurs. Cases of AE occur sporadically in northern Australia and in the northwest of WA.

Ross River disease is the most commonly reported mosquito disease to humans and occurs in all states of Australia. The diagnosis of mosquito-borne diseases including Dengue, Australian encephalitis, Ross River, Barmah Forest viruses, Murray Valley encephalitis and Malaria can only be confirmed with appropriate blood tests.

References:

¹ Science ASSIST website, (2014, July), '*Risk Assessment template*', retrieved from <https://assist.asta.edu.au/resource/2298/risk-assessment-template>

² National Health and Medical Research Council (NHMRC) website, (2021), '*Australian code for the care and use of animals for scientific purposes 8th edition*', retrieved from <https://www.nhmrc.gov.au/about-us/publications/australian-code-care-and-use-animals-scientific-purposes/australian-code-care-and-use-animals-scientific-purposes-code>

³ Wikipedia website, (Accessed 2023, January 23), '*Mosquito*', retrieved from <https://en.m.wikipedia.org/wiki/Mosquito#Lifecycle>

⁴ HealthDirect website, (accessed 2023, January 23), '*Mosquito-borne diseases*', retrieved from <https://www.healthdirect.gov.au/mosquito-borne-diseases>

Queensland Government Department of Health website, (2020, February 26), '*Prevent mosquito bites*', retrieved from <https://www.qld.gov.au/health/conditions/all/prevention/prevent-mosquito-bites>

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