



# Fruit Flies and Cultures (*Drosophila spp.*)

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## **Introduction**

Fruit flies belong to a family of small flies of the Drosophilidae, namely the genus *Drosophila*. There is also an unrelated group of flies that are not covered here known as fruit flies as well, the Tephritidae. In the genus *Drosophila*, there are over 1,500 species with extremely diverse appearances, behavior, and breeding habitat and requirements. Fruit flies are a very cosmopolitan genus, being found throughout most of the world in temperate to tropical deserts, tropical rainforests, deciduous forests, cities, agricultural, and residential areas, swamps, and wetlands. Most species breed and reproduce within damp, moist decaying plant or fungal matter including over ripened fruits, vegetables, bark, flowers, mushrooms, and other materials.

Although wild type fruit flies are commonly associated with being household, gardening, and agricultural pests and nuisances, at least two species, the common fruit fly or vinegar fly (*D. melanogaster*) and the slightly larger *D. hydei* are commonly used, and easily cultured and reproduced feeders for a wide variety of small reptiles, amphibians, invertebrates, and other animals. In addition to being widely used as feeders, fruit flies also have a long history of serving as model organisms in numerous genetic research and developmental biology due to their relatively short life cycles and quick reproduction (often in as little as 7 days). Due to extensive genetic breeding and mutations, several varieties, or cultivars of flightless fruit flies are also widely available (which is known as being apterous), but can still climb smooth surfaces or sides.

## **Taxonomy:**

**Life:** All living, physical, and animate entities

**Domain:** Eukaryota

**Kingdom:** Animalia

**Phylum:** Arthropoda

**Class:** Insecta

**Order:** Diptera

**Family:** Drosophilidae

**Subfamily:** Drosophilinae

**Genus:** *Drosophila*

**Subgenus:** *Sophophora*

*\*Taxonomy subject to change and revision.*

## **Experience Level Required**

Novice/Beginner to Moderate/Intermediate.

## **Legal and Regulatory Status (\*Subject to Change)**

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Consult your nearest United States Department of Agriculture (USDA) branch for any further, current federal regulatory or legal status. Also consult with your local, municipal, and state ordinances and regulations for any ownership restrictions.

### **Size**

Fruit flies are an example of microfauna, often being only 2 to 4 millimeters, or about 1/8 of an inch in size. They are sexually dimorphic, with females being slightly larger than males.

### **Housing and Enclosure**

Fruit fly cultures can be quite simple and inexpensive to house and maintain. Any type of plastic container or bin that is taller than it is wide will work well. The container should be at least two to four times tall as it is wide. Ensure that there is also a secure, tightly fitting lid with adequate ventilation in order to prevent the flies from climbing or hopping out and escaping. For ventilation, several small holes can be poked into the lid using a pin, or by cutting out a section of the lid and installing a fine plastic, poly fabric, or metal screen or mesh covering. Ensure that the covering is fine enough to prevent access by culture predators or pests. A moist media, or substrate should also be provided that fills about 1/2 an inch of the container. Potato flakes, and numerous other commercially available and pre-made media are available as well. This media will be where eggs and fly larvae are laid and develop. Dried excelsior should also then be provided for the adult or mature flies in the container. Also known as wood wool, excelsior can be purchased commercially, and appear as the spaghetti like strands of wood that may be commonly seen at reptile shows and expos, online suppliers, and exotic pet specialty stores.

### **Temperature, Lighting, and Humidity**

Fruit flies can be maintained at around room temperature, or 70 to 80 degrees F. Higher temperatures, however, will lead to faster growth and development in the flies. Also ensure that the media does not dry out, however. Conversely, the media should not become too wet, as the eggs and larvae will drown. To help maintain adequate humidity levels, add a variable amount of distilled water periodically depending on the size of the culture. This can range from only a few drops for smaller cultures to a teaspoon for larger cultures. No further special lighting or heating is required for fruit fly cultures, but obviously, do not expose fruit fly cultures to extreme cold or heat.

### **Feeding, Diet, and Nutrition**

Fruit fly cultures are very easy to feed and maintain. Fruit flies tend to feed on the yeasts, bacteria, spores, and other micro-organisms associated with the various media including fruits, vegetables, woods, and other decaying plant material. In captivity, provide at least a 1/2 an inch of media consisting of potato flakes or other media. There are also many commercially available fruit fly culture diets, recipes, and products, as well as pre-made mixtures with differing instructions which may be used as well. More specific dietary and supplementary product suggestions and recommendations that can best suit one's needs, as well as those of one's animals can be given as well.

### **Handling**

Fruit flies are quite simple to introduce to another culture or enclosure. Simply and firmly tap the base or bottom of the culture a few times on a hard surface before removing the lid in order to knock any flies that have climbed to the top down and to prevent them from escaping when the lid is removed. A relatively smaller lid opening will also limit the amount of area in which the flies can potentially escape or otherwise come through as well.

\*\*Also remember to be sure to practice basic cleanliness and hygiene associated with proper husbandry after touching or handling any animals or animal enclosures to prevent the possibility

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of contracting salmonellosis or any other zoonotic pathogens\*\*

### **Contact**

Authored by Eric Roscoe. For any additional questions, comments, and/or concerns regarding this animal, group of animals, or this care sheet, please email and contact the Madison Area Herpetological Society at [info@madisonherps.org](mailto:info@madisonherps.org)

*Disclaimer: Note that the information provided in these, or any care sheets, are not intended to be all-exhaustive, and further research and care should always be sought and provided when it comes to any species one may prospectively be interested in. These care sheets are also not intended to serve as substitutes for professional veterinary medical care and husbandry should any animal require it. Always seek proper and professional veterinary care for any animal should the need arise, and be prepared ahead of time for any and all husbandry costs and expenses that may occur with any animal beyond the initial purchase. Any animal owned is ultimately a matter of personal/individual care and responsibility. MAHS cannot make any claims or guarantees regarding any information in this care sheet therein. This care sheet may be reprinted or redistributed only in its entirety, including any and all MAHS logos and disclaimers.*

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