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**IB Biology**

***Classify each of the following species as autotrophs, consumers, detritivores and/or saprotrophs based on their modes of nutrition.***

1. [*Amanita phalloides*](http://eol.org/pages/1009706/overview/), commonly known as the death cap, is a poisonous basidiomycete fungus, one of many in the genus [*Amanita*](http://eol.org/pages/18878/overview/).

Fungi, such as the death cap, are not able to ingest their food like animals do, nor can they manufacture their own food the way plants do. Instead, fungi feed by absorption of nutrients from the environment around them. They accomplish this by growing through and within the substrate on which they are feeding. Numerous hyphae network through the wood, cheese, soil, or flesh from which they are growing. The hyphae secrete digestive enzymes which break down the substrate, making it easier for the fungus to absorb the nutrients which the substrate contains.

**Answer:**

1. [*Cyanobacteria*](http://eol.org/pages/3223/overview/)

Also known as blue-green algae, cyanobacteria grow in any type of water and are photosynthetic. [Cyanobacteria](http://eol.org/pages/3223/overview/) live in terrestrial, fresh, brackish, or marine water. They usually are too small to be seen, but sometimes can form visible colonies, called an algal bloom. [Cyanobacteria](http://eol.org/pages/3223/overview/) have been found among the oldest fossils on earth and are one of the largest groups of bacteria. [Cyanobacteria](http://eol.org/pages/3223/overview/) have been linked to human and animal illnesses around the world, including North and South America, Africa, Australia, Europe, Scandinavia, and China.

**Answer:**

1. *Aimophila aestivalis*: Bachman's Sparrow

Bachman's sparrows are omnivorous, eating mainly insects and seeds. The feed on the ground. Insects consumed include beetles, bugs, grasshoppers, crickets, millipedes, and spiders. They also eat the seeds of grasses, especially Panicum species, sedges, and wood sorrel.

**Animal Foods:** insects; terrestrial non-insect arthropods

**Plant Foods:** seeds, grains, and nuts

**Answer:**

1. [*Gromphadorhina portentosa*](http://eol.org/pages/1074947/overview): Madagascar hissing cockroach

Food Habits: Their most frequent food is decaying plant material, including fallen fruit, because it is so readily available. They also eat smaller insects and animal carcasses.

Animal Foods**:** carrion; insects

Plant Foods**:** leaves; seeds, grains, and nuts; fruit; lichens

Other Foods**:** fungus; detritus; dung

**Answer:**

1. *Acer saccharum*: Sugar Maple

Sugar maple is rated as  very tolerant of shade, exceeded among hardwoods only by a few  smaller, shorter lived species. Maximum photosynthetic activity  generally occurs under about 25 percent of full sunlight. The  species can survive for long periods under heavy shade and still  show a strong response to release*.*

**Answer:**

1. *Euglena gracilis*

[Euglena](http://eol.org/pages/11704/overview/) is a genus of [unicellular](http://en.wikipedia.org/wiki/Unicellular%22%20%5Ct%20%22wikipedia%22%20%5Co%20%22Unicellular) [flagellate](http://en.wikipedia.org/wiki/Flagellate%22%20%5Ct%20%22wikipedia%22%20%5Co%20%22Flagellate) [protists](http://en.wikipedia.org/wiki/Protists%22%20%5Ct%20%22wikipedia%22%20%5Co%20%22Protists). The species [*Euglena gracilis*](http://eol.org/pages/918864/overview/)*,* has been used extensively in the laboratory as a [model organism](http://en.wikipedia.org/wiki/Model_organism%22%20%5Ct%20%22wikipedia%22%20%5Co%20%22Model%20organism).

Most species of [*Euglena*](http://eol.org/pages/11704/overview/) have photosynthesizing [chloroplasts](http://en.wikipedia.org/wiki/Chloroplast%22%20%5Ct%20%22wikipedia%22%20%5Co%20%22Chloroplast) within the body of the cell. However, they can also take nourishment by eating it, like animals.

**Answer:**

1. [*Ophiactis savignyi*](http://eol.org/pages/598269/overview): Savigny's Brittle Star

Food Habits: Savigny's Brittle Star feeds mainly on small particles of detritus. The stomach typically contains foraminiferans, bryozoans, organic detritus, and small gastropods. This brittle star is a suspension feeder using its tube feet to catch small particles and moving them toward its mouth. [Ophiactis savignyi](http://eol.org/pages/598269/overview/) is also characterized as a deposit feeder, cleaning the outer surface of its habitat and filtering food from the water. A large individual suspension feeds by raising its arms into the water column. [Ophiactis savignyi](http://eol.org/pages/598269/overview/) will also situate itself at the base of the excurrent pore of a sponge to collect food particles.

**Animal Foods:** mollusks; aquatic crustaceans; other marine invertebrates; zooplankton

**Plant Foods:** bryophytes; phytoplankton

**Other Foods:** detritus

**Foraging Behavior:** filter-feeding

**Answer:**

1. Dionaea muscipula: Venus Flytrap

The Venus flytrap's leaves are modified in an extraordinary way in order to feed on insects, although it does still obtain energy from the sun. The plant is an innocuous looking rosette, but the leaf blades terminate in distinctive bivalve traps with sharply toothed edges.

**Answer:**

1. *Salmo trutta*: Brown Trout

Eats aquatic and terrestrial insects and their larvae, crustaceans (especially crayfish), molluscs, fishes, and other animals. In streams, young feed mainly on aquatic and terrestrial drift invertebrates; in lakes, they feed on zooplankton and benthic invertebrates (Sublette et al. 1990). Large adults feed on fishes, crayfish, and other benthic invertebrates.

**Answer:**

1. *Rhizopus stolonifer*: Black Bread Mold

They have the network of filament (hyphae) which penetrate inside the bread surface and extract the nutrient from it. They are multicellular with the cell wall made up of chitin. This versatile phytopathogen excretes the fungal peptic enzymes that degrade and dissolve the pectin contained in the middle lamella of the plant cells. (Miguel Gerardo Velázquez–del Valle, 2007)

**Answer:**

Information on these species was obtained from: Encyclopedia of Life. Available from http://www.eol.org. Accessed 24 Jul 2014.