生物、古生物、动植物学

1. Living in Water

To us, the environment in which fish **dwell** often seems cold, dark, and **mysterious**. But there are advantages to living in water, and they have played an important role in making fish what they are.	v. 住 adj. 神秘的
One is that water isn't **subject to** sudden temperature changes. Therefore it makes an excellent **habitat** for a **cold-blooded animal**. Another advantage is the water's ability to easily support body weight. **Protoplasm** has approximately the same **density** as water, so a fish in water is almost weightless. This "**weightlessness**" in turn means two things: One, a fish can **get along with** a light weight and simple bone structure, and two, **limitation**s to a fish's size are practically removed. Yet there is one basic difficulty to living in water—the fact that it's **incompressible**. For a fish to move through water, it must actually **shove** it aside. Most can do this by **wiggling** back and forth in snakelike motion. The fish pushes water aside by the forward motion of its head, and with the **curve** of its body and its flexible tail. Next, the water flows back along the fish's narrowing sides, closing in at the tail, and helping the fish **propel** itself forward. The fact that water is incompressible has **literally** shaped the development of fish. A flat and **angular** shape can be moved through water only with difficulty. And for this reason, fish have a basic shape that is beautifully **adapt**ed **to** deal with this **peculiarity**.	受制于 n. 栖息地 n. 冷血动物 n. 原生质 n. 密度 n. 无重状态 适应 n.限制 adj.不能压缩的 v. 挤 wiggle摆动 N.曲线 V.推进 adv. 实际上地 adj. 有角的 v. 适应 n. 特性

2. Birds that cannot fly

We've just seen two **contemporary** large birds that cannot fly: the **emu** and the **ostrich**. Over here is an interesting **specimen** from the past. This stuffed animal is not the giant **penguin** it appears to be, but an auk. This particular kind of **auk** is very rare, only 78 skins are known to exist and most are not **preserve**d as well as this one. The great auk, as you can see, was a rather large bird, and it couldn't fly either. However, evidence suggests that the auk was an excellent swimmer and **diver**. Unfortunately, those abilities did not protect it from being easy **prey** for hungry sailors who years ago sailed the very cold and often icy waters of **Greenland**, **Iceland**, and Scotland. In fact, records indicate that the auk was rather **tasty** and that its eggs. Excuse me . . . that its eggs and feathers were useful as well. Still, it isn't clear what other factors led to the big bird's **demise** around 1844, the last time anyone reported seeing one. Of course, we believe it's important to take extra **precaution**s to preserve the **remaining** great auk skins. After all, these specimens should prove **invaluable** for future scientific research. Does anyone have any questions before we move on to our next bird exhibit?	adj. 当代的 n. 鸸鹋/ n.鸵鸟 n. 样本、范例 n. 企鹅 n. 北极海雀 v. 保护 n. 潜水者 n. 被捕食者 格陵兰岛 冰岛 adj. 可口的好吃的 N.死亡 v.渗漏 n. 预防、警惕 adj. 还留存的 adj. 无价的

3. Tyrannosaurus

Before I tell you about the interesting discovery related to **Tyrannosaurus** rex, I need to review something we studied last semester, the difference between what are commonly called **cold-blooded and warm-blooded animal**s. In warm-blooded animals, birds and **mammal**s, for example, the body temperature normally stays within a **narrow range**, no matter what the outside temperature is. As a result, a warm-blooded animal is usually active in both cold and hot weather because its body temperature can **adjust to** the temperature of its environment. On the other hand, cold-blooded animals, such as most **reptile**s, **amphibian**s, and **insect**s, are unable to create enough heat internally to raise their temperature above the temperature of the environment. So, for example, the temperature of a cold-blooded animal falls when the environment is cool. I hope this **distinction** is clear. Now, moving on to Tyrannosaurus rex, you may know that **dinosaur**s, being reptiles, are generally believed to have been cold-blooded. Well, a recent research study found that the **chemical composition** of the bones of Tyrannosaurus rex was **consistent** with the bones of an animal that has a very narrow range of internal temperature, indicating that it was probably warm-blooded.

n. 暴龙

冷血和热血动物
n. 哺乳动物
小的幅度

v. 适应

爬行动物
两栖动物

n. 区分、差别

n. 恐龙

化学成分
adj.一致的

4. Wasps

Today I want to talk to you about **wasp**s and their nests.	n. 黄蜂
You'll recall that biologists divide **species** of wasps into two	n. 物种、种类
groups: solitary and social. Solitary wasps, as the name	
implies, do not live together with other wasps. In most	
species the male and female get together only to **mate**, and	v. 交配
then the female does all the work of building the **nest** and	n. 窝、巢
providing food for the **offspring** by herself. Solitary wasps	n. 后代
usually make nests in the ground and they separate the	
chambers for individual offspring with bits of grass, stone,	n. 蜂房
or mud, whatever is **handy**. What about social wasps? They	adj. 便利的
form a community and work together to build and maintain	
the nest. A nest begins in the spring when a **fertile** female,	adj. 能繁殖的
called the queen, builds the first few **compartment**s of the	n. 隔间
nest and lays eggs. The first offspring are small females that	
cannot lay eggs. These females, called workers, then build	
a lot of new compartments, and the queen lays more eggs.	
They also care for the new offspring and **defend** the nest	v. 防卫
with their **stinger**s. By the way, only female wasps have	n. 刺
stingers. Most social wasps make nests of paper. The	n. 榆树
females produce the paper by chewing up plant fibers or old	
wood. They spread the paper in thin layers to make cells in	
which the queen lays her eggs. Most of you, I'm sure, have	
seen these nests **suspend**ed from trees. They may also be	v. 悬着
built underground in abandoned **rodent burrow**s.	n.啮齿动物/ n.洞穴

5. Arachnid

Before moving on to a new topic, I want to finish up our unit on **arachnid**s by looking at what may seem a very unusual aspect of spider **behavior**, a species where the young spiders actually **consume** the body of their mother.	n. 节肢动物 n. 行为 n. 消耗、吃
Unlike most other spiders, this species **lay**s one, and only one, **clutch** of 40 eggs in her lifetime. The young spiders **hatch** in mid-spring or early summer, inside a nest of **eucalyptus** leaves. Their mother spends the warm summer months bringing home large **insect**s—often 10 times her weight—for meal. The **catch** is always significantly more than her young spiders can eat. So, the mother **fatten**s herself **up** on this extra **prey** and stores the nutrients in her extra **unfertilized** eggs. As the weather turns colder, there are fewer insect prey to hunt. That's when the **nutrient**s stored in those extra eggs begin to **seep** into the mother's **bloodstream**. So, when there are no more insects to feed to the young spiders, they **attach** themselves to the mother's leg **joint**s and draw nourishment by sucking the nutrient-rich blood. After several weeks, the mother is **deplete**d of all nutrients and she dies.	v. 下蛋 n. 窝、一批 v. 孵 n. 桉树 n. 昆虫 n. 捕获、捕获物 v. 长肥 n. 被捕食者 adj.未受精、施肥的 n.营养物 v.渗漏 n. 血 v. 附着、贴着 n. 关节，接合处 v. 耗尽
But then how do the young get **nourishment**? They start to **feed o**n one another. Now, if you recall our discussion of Darwin, you'll see the **evolutionary** value of this: Only the strongest spiders of the clutch will survive this "**cannibalism**," and the mother spider will have ensured that her **gene**s have an increased chance of survival through future generations.	n. 营养物 v. 吃 adj. 进化的 n.嗜食同类 n. 基因

6. Kangaroo

Now we're entering **Kangaroo** Country. In all, there are more than fifty different species of kangaroo, and the advantage of zoos like ours is that you see them in their natural **habitat**. The ones we have all live in the grasslands. On my right, you can see one of the biggest types: the red kangaroo. It travels about 20 miles per hour. It looks like hard work, but **hopping** actually lets the kangaroo **conserve** more energy than another animal could when running on four legs. In fact, **up to a certain point**, the faster a kangaroo goes the more energy it conserves. Rather than taking more hops to increase speed, the kangaroo makes the length of each jump longer. Let's stop here for a minute. Take a look over on your right at this group of kangaroos **resting**. Can you see that their ears are moving? **Hearing** may well be the kangaroo's most important **sense**. Their two large ears can move independently, so sometimes one ear is pointing forward and the other toward the **rear**. Kangaroos' **eyesight** is also excellent. They have a wide field of vision and, like most **grazing animal**s, they are especially good at **detect**ing movement. Before we move on, I'd like to point out one more thing: If you look closely, you can see a **joey** that's a baby kangaroo **peer**ing out of its mother's **pouch**. Before long that joey will be out of the pouch for good. The mother will push it out by the time it's eight months old.	n. 袋鼠 n. 栖息地 hop:v. 跳跃 v. 保存 某种程度上 Adj.休息的 n. 听觉 n. 官能 n. 后面、背后 n. 视力 食草、放牧动物 v 发觉发现 n. 幼兽 v.看、凝视 n.袋

7. Frog

If you liked the colorful animals we just saw, you're going to love these next animals: **frog**s. You might not normally think of frogs as being colorful, but these frogs definitely are. They are the dart-poison frogs of Central and South America. Look at their striking colors, often yellow with black **stripe**s or deep blue with black spots. Beyond being nice to look at, these **marking**s have a purpose. They warn **predator**s that these frogs are poisonous. When threatened, these frogs **secrete** a **substance** through their skin that would easily kill whatever animal might try to eat them. Their bright colors **communicate** this, and so most animals tend not to hunt them. Now, speaking of hunting, for centuries these frogs were **sought** after by hunters. As you might think, the hunters didn't want to eat the frogs, but rather, they **capture**d them for their poison. They would add the poison to the tips of their hunting **arrow**s. Of course, nowadays most hunters use guns. These days, dart-poison frogs are of less interest to hunters than to medical researchers. Researchers believe that they can make new heart medicine from the poison, because it acts as a **stimulant** on the body's nervous system. Researchers think they could use it to stimulate a weak heart. There is, however, a problem with doing research on these frogs. Those that are caught in the wild will produce their poison until they die. However, those that are born in **captivity**, like the ones you see here, will not produce any poison at all.	n. 青蛙 adj. 惊人的 n. 条纹 n. 斑纹、记号 n. 捕食者 v. 分泌 n. 物质 v. 传达 seek v. 捕获、夺取 n.箭 n. 刺激物 n. 囚禁

8. An introduction

As Dr. Miller mentioned, we're trying to recruit volunteers for the Hawk Mountain **Sanctuary**.	v. 征募、招聘 n. 避难所、保护区
But before I get into the details of the volunteer program, I'd just like to tell you a little about what we do there. One of our main jobs is to keep detailed records of the **migration** patterns of **raptor**s. For those of you who don't know, raptors are birds of prey, like **hawk**s and **eagle**s. Between August and December, we see around twenty different species migrating from Canada and New England. About 20,000 birds. Part of what attracts them to Hawk Mountain is the location on the East Ridge of the **Appalachian Mountains**. What happens is that the sun warms the **ridge** in such a way that **air current**s are formed. The birds just sort of **glide** along on the air, so they use up very little energy. As volunteers, you'll be helping us keep **accurate** counts of the raptors. Any drop in number could mean something's **gone wrong** in the environment because of **pesticide**s or disease, even hunting. We just had a scare with the **broad-winged hawk**s. Their numbers have dropped **drastically** over the last ten years. It was suggested that the birds may have changed their **migratory route**. So for 11 days we had several hundred volunteers—**station**ed every five miles—to observe and count. And sure enough, they discovered that instead of hugging the Appalachians as they'd always done, the broad-wings were cutting a wide path over the **Delaware River**. Needless to say, we were greatly **relieved**.	n. 迁徙 n. 猛禽 n. 鹰 阿巴拉契亚山 山脊 n. 气流 v. 滑行 Adj.精确的 go wrong n.杀虫剂 adv.急剧地 迁移路线 v. 配置、驻扎 特拉华河 adj. 放心的

9. Star fish

Welcome to our **aquarium**. As we begin our tour, the first animal we will see today is the **starfish**. You probably have seen pictures of the starfish, but in a few minutes you will see some **live** ones and learn a little about their structure and life **cycle**. First of all, starfish are not really fish, they belong to the family of **echinoderm**s which are **spiny**, **skinned** sea animal.	n. 水族馆 n. 海星 adj. 活的 n. 循环、周期 n. 棘皮类动物/ adj. 多刺的/adj.有皮的
That is, their skin is covered with **thorny bump**s. Most starfish have five arm-like **extension**s on their bodies. And so they look like a **five-pointed star**. But some other kinds have as many as 40 or more arms. Starfish, like other members of the echinoderm family, have what's called **radial symmetry**. All that means is that the body parts of these animals are arranged around the center, kind of like **spoke**s of a wheel around a **hub**. One of the special features of the starfish is that it can drop off arms as a **defensive** reaction, to get away from an attacker, for example. They can then grow new arms to **replace** the old ones. Starfish **reproduce** by releasing eggs into the sea. These eggs develop into **larvae**, and can swim freely. There early forms which are what larvae are, **differ from** adult starfish, because the larvae have **bilateral symmetry**. That means that the two halves of the larvae look exactly the same, which makes them look a lot different from the later form of the starfish. **Eventually** the larvae sink to the ocean bottom and change into the adult radial form. If you don't have questions, we will go in now and see some of the **creature**s in person.	adj.多刺的/n.肿块 n. 伸长，延伸 五角星 径向对称 n. 辐条，轮辐 / hub: n. 轮轴 adj. 防御的 v. 替代 v. 繁殖 n. 幼虫 v. 不同于 两侧对称[1] adv. 最终 n. 动物、创造物

[1] bilateral symmetry 两侧对称：沿一条中轴身体被一平面分为左右同等的两部分的对称排列，如有机体或身体部分

10. Classification of Trees

OK. In the last class we talked about the **classification** of trees, and we **ended up with** a basic description of **angiosperm**s. You remember that those are plants with true flowers and **seed**s that develop inside fruits. The common **broadleaf tree**s we have on campus fall into this category, but our **pine**s don't. Now, I hope you all followed my advice and **wore** comfortable shoes because, as I said, today we're going to do a little **field study**.

n. 分类分级
最后结论、成果是
n. 被子植物
n. 种子
n. 阔叶树
n. 松树
wear
n. 实地考察学习

To get started, let me describe a couple of the broadleaf trees we have in front of us. I'm sure you've all noticed this big tree next to Brant Hall. It's a black **walnut** that must be 80 feet tall. As a matter of fact, there's a **plaque** identifying it as the tallest black walnut in the state.

n. 胡桃
解释或装饰用的瓷片、金属片

And from here we can see the beautiful archway of trees at the Commons. They're American **elm**s. The ones along the Commons were planted when the college was **found**ed 120 years ago. They have the **distinctive** dark green leaves that look **lopsided** because the two sides of the leaf are unequal.

n. 拱门
n. 榆树
v. 建立、创办
adj. 与众不同的
adj. 倾向一方的

I want you to notice the elm right outside Jackson Hall. Some of its leaves have **wither**ed and turned yellow, maybe due to **Dutch elm disease**. Only a few branches seem affected so far, but if this tree is sick, it'll have to be **cut down**. Well, let's move on and I'll describe what we see as we go.

v. 枯萎、凋败
荷兰榆树病
砍到、削减