

## Unit L4 • Natural Selection


### Fish Fence Crisis

The Salmon River Otter Rescue Center has recently built an enclosure for orphaned and injured otters. The needy otters are kept and cared for until they are ready to be released into the wild. To give the otters the most natural habitat possible, the new enclosure stretches across a section of the Salmon River. At either end of this section of the river, a fence of steel bars runs across the river, with the bars set close enough to one another to keep the otters from escaping before they can **survive** on their own in the wild.

But there's a problem. In addition to being prime otter habitat, the Salmon River is also important for the **reproduction** of a large population of wild salmon. Each year, **breeding** salmon must swim from the ocean up the river to their spawning grounds, where they lay and fertilize eggs. When the eggs hatch, the baby salmon swim downstream to the ocean. Later, when they are mature enough to **breed**, they swim up the same river to **breed** in the same spawning grounds where they were born.

The Salmon River Otter Rescue Center and its otter enclosure are halfway between the ocean and the place where the salmon spawn. That means that the salmon have to swim through the new otter enclosure. The captive otters may eat a few of the salmon, but the salmon have always faced that same danger from free otters and other predators in other parts of the river. Hunting otters do not threaten the salmon population's overall **survival**. The bigger problem for the salmon is that the largest salmon are too big to fit between the bars that keep the otters in the enclosure. Salmon that can't fit between the bars can't reach the spawning grounds, and therefore can't produce offspring.



 What do you think will happen to the salmon population over several generations if only the smaller salmon are able to breed?

Fishery staff who depend on the salmon for their economic **survival** are concerned about how the Salmon River Otter Rescue Center's enclosure will affect the salmon population. They think that after several generations go by, the **surviving** salmon will all be small, because the fence will select the large-size trait out of the salmon population. The salmon **species** in that area may evolve into a smaller fish on average. Some want the otter enclosure removed.

Local environmentalists agree that the way the otter enclosure is built is likely to cause problems for the salmon (and for people and animals who depend on the salmon). But the environmentalists are also concerned about the otters. Human development near the river has taken away much of the otters' natural habitat, making it harder for otters to **survive** in the area. Therefore, the environmentalists support the work that the Salmon River Otter Rescue Center is doing for injured and orphaned otters, as a way of helping out a **species** threatened by habitat loss.

Help Solve the Problem

Below is a diagram showing the Salmon River Otter Rescue Center’s accidental blockage of the larger fish in the salmon spawning run. In the space provided, sketch a remodeling suggestion that would allow the Salmon River Otter Rescue Center to give its otters access to the river without blocking the large salmon’s access to the spawning grounds.

