# Fish Structures

Fish habitat is a critical feature in Illinois' waters. Oftentimes, ponds and small lakes lack the natural habitat that exists within streams and rivers. Strategically adding a variety of natural or artificial structures in your water body can enhance the aquatic food web and result in healthier fish populations and better fishing.

In natural scenarios, vegetation (both living and dead) is the most common form of fish habitat. Aquatic plants and fallen trees serve as food sources and necessary cover for smaller fish. Algae and insects thrive on these structures and are the foundation of a healthy aquatic food web. Additionally, structure can provide places for fish to hide from predators, cooler areas for fish to congregate during the heat of summer, and necessary spawning/nesting habitat. In manmade ponds and lakes, it is likely that there are few natural structures to serve these purposes. These instances require the installation of structure to improve fish forage, cover, and regeneration. Furthermore, adding aquatic fish habitat greatly improves fishing success.

Types of structure include:

1. Natural Structure
    A. Living Vegetation
    B. Brush Reefs
    C. Gravel Beds
2. Artificial Structure
    A. Spider Blocks
    B. PVC Structures
    C. Wood and Concrete Structures

In general, fish structures should be complex with varying surfaces, sizes of materials, shape, and holes. Structures should be heavy enough not to move or should anchored to the waterbody bottom. Long-lasting, non-toxic materials should always be used.

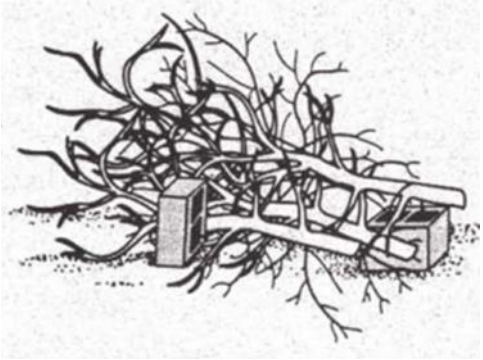
**Natural Structure**:

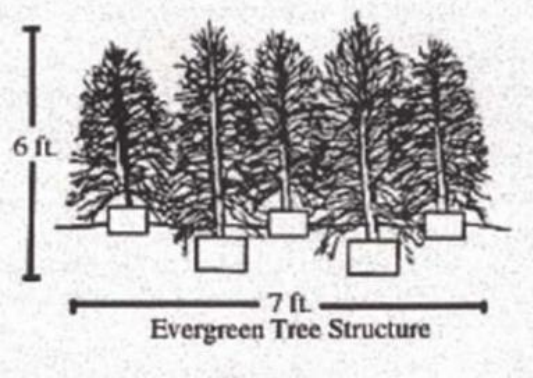
Natural structure can be added in many forms within lakes and ponds. Native aquatic vegetation can be planted, or brush reefs can be bound and anchored to greatly enhance the aquatic habitat. Additionally, gravel beds can be added to enhance nesting/spawning sites

A. **Living Vegetation** – Living vegetation can provide exceptional aquatic habitat. If adding this type of structure be sure to ensure that you are using native plants and understand that fishing is more challenging in and around vegetation. Installation of native plants is easiest in waters 3' or less and plant options include buttonbush, native willow, native cattail, eastern manna grass, American water lotus, pickerelweed and others. Note that many species of native vegetation can grow aggressively and may need to be periodically thinned for access and ease of recreational use.


Buttonbush in a pond. Photo by Ozarkedge Wilflowers.

B. **Brush Reefs** – Brush reefs are best completed by bundling freshly cut hardwood branches to large rocks or concrete blocks and submerging. Christmas trees can be used and are readily available early in the year. They do not last as long as hardwood branches, however. This structure mimics fallen trees and is a favored habitat of largemouth bass. In some instances, reptile basking habitat can be added by exposing larger parts of the brush pile above the water line. In shallow waters, brush piles can serve as egg attachment sites for minnows. Do not bundle sticks too tightly and a wide variety in sizes of voids is desired. Large amounts of surface area in this type of structure increases algae growth, accessibility to food for small fish, and predatory cover. Fishing brush reefs can be more challenging than many of the smooth surfaced artificial structures, however.






C. **Gravel Beds** – Gravel beds can be placed near docks and shorelines to improve spawning habitat, especially for sunfish. Find a flat space to place frames that are 1’ to 4’ wide lined with landscape fabric in shallow (1’-5’) water. Fill with gravel 4” to 6” deep. Larger beds targeting sunfish can be placed near each other while smaller beds targeting bass should be spaced at least 10’ apart but up to 20’ is often preferred.

**Artificial Structure:**

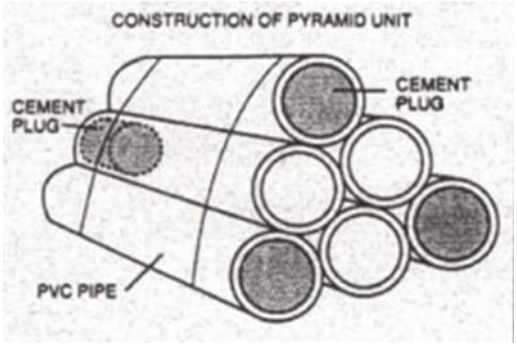
Artificial structure can be added in many ways, often using materials that are easy to obtain or left over from other projects. Most artificial structures are easier to fish and have reduced snagging occurrence due to the usage of hard plastics and smoother surfaces than natural structures. Artificial structures come in the form of “Spider Blocks”, PVC structures, and

wood/concrete structures. Each has their own pros and cons and there are a large variety of premade habitat structures that can be purchased through various retailers.

A. **Spider Blocks** – Spider blocks are a conglomerate of piping rising out from concrete blocks in many directions. These structures mimic natural brush. Oftentimes the piping used is 2" in diameter or smaller. Holes can be cut into the sides of the pipes to allow areas for smaller fish to hide as this method does not generally provide the best cover for small fish. It is recommended that multiple spider blocks be placed in the same area. Pipe length should vary but generally ranges between 3'- 5'. It is recommended that the pipes be cemented into place within the blocks.

Photo: Herb Doumitt/OBPC

B. **PVC Structures** – PVC Structures can come in a variety of shapes, sizes, and methods. Large pipes (> 6" in diameter) can be plugged on one end with cement, stacked in a pyramid, bound and sank for catfish habitat. Smaller PVC can be used to build artificial trees and brush reefs that will last longer than natural vegetation. PVC can be used as the framework for gravel beds and even cubes that hold flexible, corrugated pipes in place. PVC is smooth surfaced and is therefore a great item to fish near and around. The variety of sizes and unions create limitless opportunities for building habitat.





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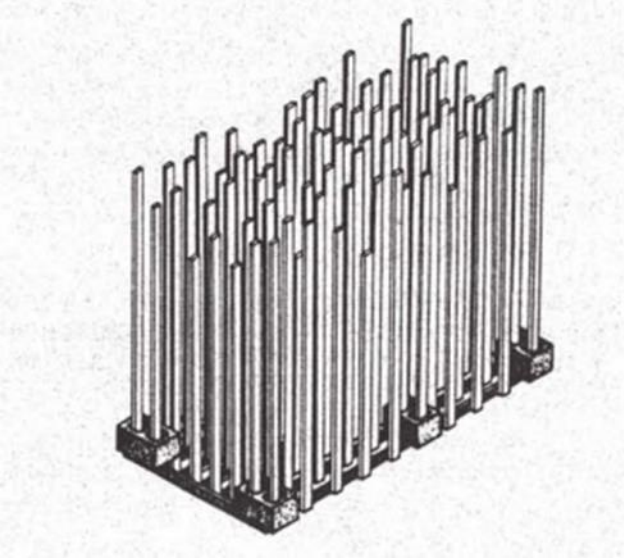
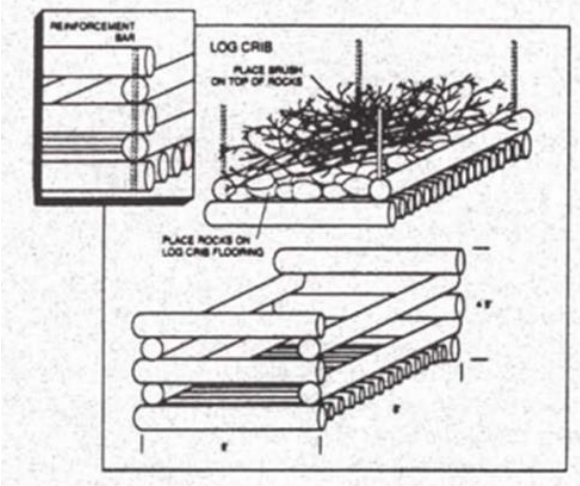
C. **Wood and Concrete Structures** – Wood and concrete structures can be used in a wide variety of ways. Untreated wood can be used in the form of pallets and lumber. Hardwood is always recommended for durability and longevity. Wooden pallets can be bound into triangles and boards can be built into pyramids, stake beds, and cribs that allow for algae growth and cover. Concrete and rubble can be piled and stacked in order to provide high surface area for algae and even cavities for species like catfish. Bass and panfish will also utilize these structures when present.






**Installation Methods**

The amount and location of installed structure will vary greatly depending on the existing structures and the size and depth of your water body. Avoid placing new structures near existing, natural structures in effort to reduce any interference. In small ponds, three groupings of three Christmas trees should be enough additional habitat. Larger lakes have shown more success installing longer lines of physical structure and note that several scattered structures are usually more successful than one larger grouping.

Safety is the number one concern when installing fish habitat structures. They can be installed anytime during the year from a boat or in the coldest of winter months, when ice is sufficient to support the structure and installer weight, structures may be placed and allowed to sink to the bottom during the spring thaw.

**Links**

http://www.epa.state.il.us/water/conservation/lake-notes/fish-cover.pdf