

Pallet Cover



Description

Whether a pallet for bricks or car parts, this humble structure uses that same forklift skid to create instream cover habitat. Hardwood or cedar is the preferred construction material. It is simple to install, easy to move into position and is positioned onto the bed of the channel at the edge of the thalweg. Large rocks are used to hold it in place. This type of cover structure is best suited in cobble streams and rivers.

Purpose

Pallet cover structures are used to introduce overhead cover for adult fish. Typically, they are placed in close proximity to existing spawning areas to provide protective refuge or used to create instream cover where it is currently lacking. They can be used in various sizes of rivers and streams.

Application

The structure is placed at the edges of the main current within pools and runs. It is oriented in a position that allows for a gentle flow through while also inhibiting sediment accumulation. The preferable stream size is greater than 5.0 m in width and rivers greater than 10.0 m wide are also suitable provided that there is no ice scour. This technique has had limited application in Ontario. Prior to installing, the reach of streamflow should be assessed in order to better understand the channel characteristics of bankfull and baseflow, ice formation and spring flooding as well as sediment movement. Pallet cover structures are ideal in B and C channel situations where there is predominately cobble and boulder lining the channel with an average grade of less than 4%. These rock-lined streams and rivers are gently meandering and have defined pools, rapids, riffles and runs. Streams and rivers which move large volumes of sediment, such as E channels, are not appropriate for the placement of pallets since they are typically well entrenched, transporting high volumes of sediment and actively moving laterally. In addition, C channels with gravel and sand in the riffles are also unsuitable.

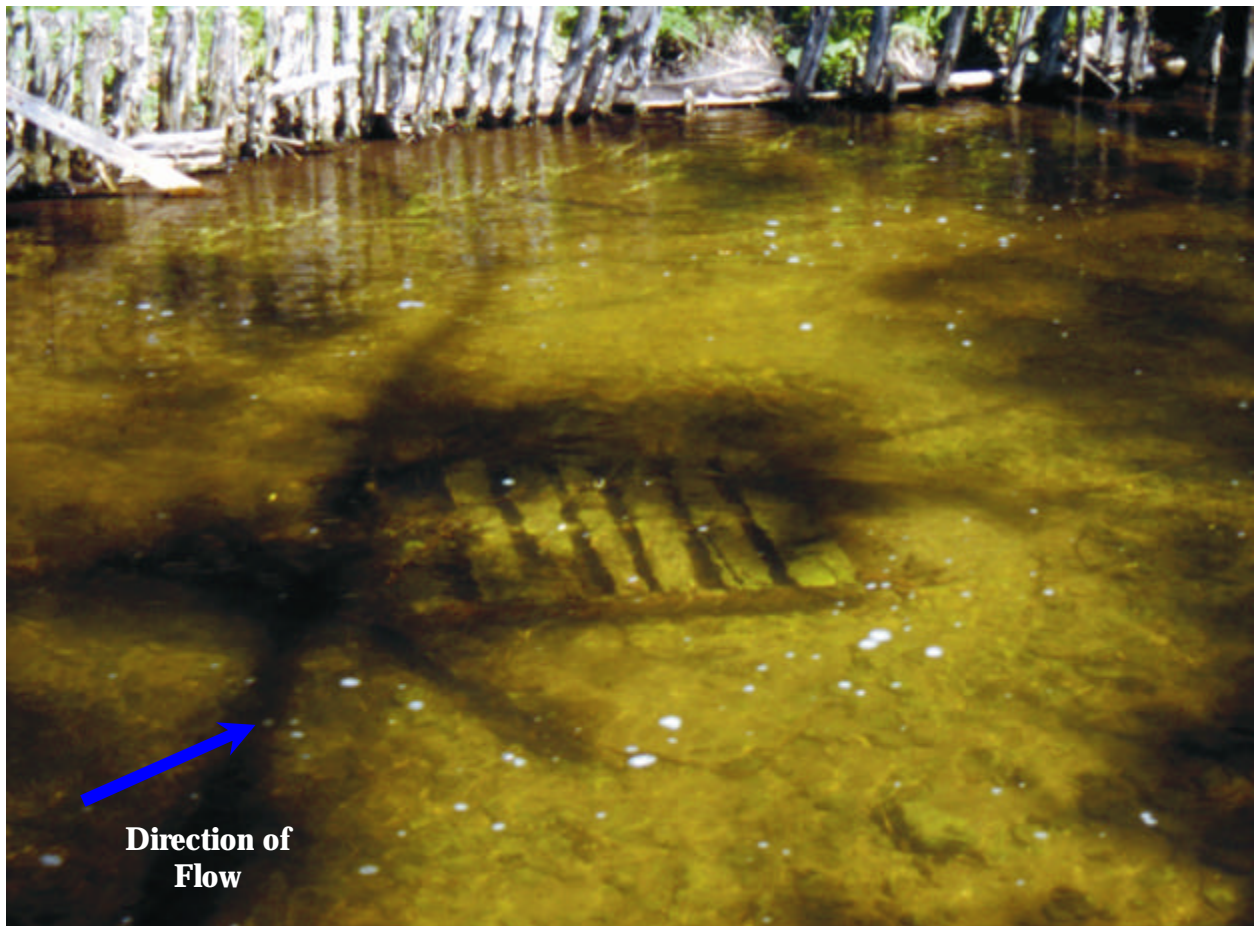
Construction Guidelines

This is a pre-fabricated 1.3 m square structure constructed of hardwood or cedar planks which provide durability and long-life underwater. The planks are separated by three pieces of lumber to create 10 to 15 cm wide gap. Cedar branches, less than 10 cm in diameter, are secured to the top of the pallet in a "W" formation to help brace boulders in place when installed. The branches should be nailed into place with galvanized ardox spikes.

The pools and runs are the target locations with the pallet being placed on the river bed. The structure should be placed at the edge of the main current and the top should be well below the waterline of the low flow channel. Orient the upstream opening at a 15 to 30 degree angle to the

main current.

Pallet cover structures are placed individually or several to a reach depending on the available area and size of stream or river. Small streams 4 - 5 m in width should have individual pallets placed in appropriate pools and runs. Streams and rivers greater than 5 m in width can have two or three pallets placed separately in a run or pool to create more cover. After moving the pallet into the preferred position and orientation, the upstream corner and the downstream corner should be anchored with large boulders to prevent shifting. The unit is then covered with large stones to secure it in place. The "W" form of the secured cedar branches help to hold the stones in position. Additional rock can be placed along the closed sides of the pallet.



If the channel bed is a combination of gravel, hard clay and cobble, "T" bar posts can be used to hold the pallet in place. Make sure these are properly secured with spikes and the ends of the "T" bars are concealed to prevent personal injury or debris accumulation.

Materials

You will need the following materials and equipment for installing pallet cover structures:



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- hardwood or cedar pallet approximately 1.3 m square
- 15 cm long galvanized ardox nails
- 15 to 20 large stones
- 4 cedar branches 1.3 metres long and 10 cm diameter
- hammer

Cost and Maintenance Needs

Pallet cover structures cost less than \$30.00 for materials if the skid is donated. It takes very little time to install. Frequent inspection is suggested within the first full year to ensure proper placement. Annual inspection after this period is recommended. In stable channels, the expected life of the structure is 10 to 15 years.

Integration

Pallet cover structures can be integrated into larger erosion control and habitat enhancement projects such as:

- native material revetments
- live crib walls
- wing deflectors
- sweeps
- log/brush shelters

Demonstrations

This type of habitat structure has been applied in the following demonstration projects:

- Project #118, Rouge River Headwaters Rehabilitation Project
- Project #123, Rocky Saugeen Silt Spill Rehabilitation Project

For More Information

Please refer to the following author and their respective publication located in the bibliography:

O.M.N.R. 1984



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