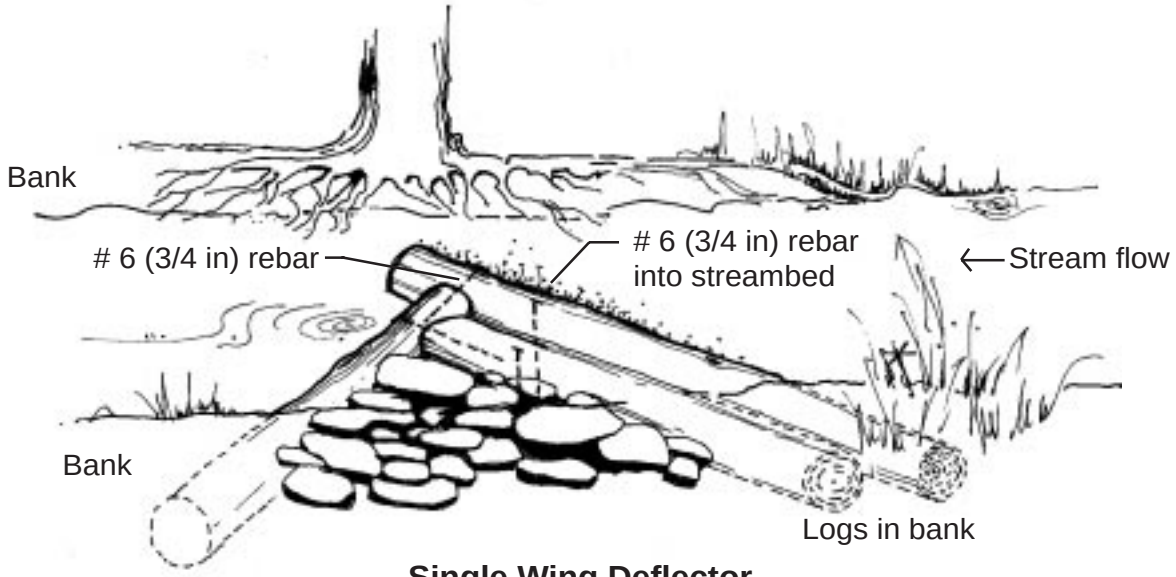
PRIMARY USE: Minimize bank erosion.
ADDITIONAL USES: Provide desirable scouring and sorting of channel materials, pool formation, added flow and habitat diversity, and redirection of currents through flow constriction.

SINGLE WING DEFLECTOR

What is it? Wing deflectors are devices made of a variety of materials that project outward into the channel from one or both stream banks. Wing deflectors are especially effective in wide, shallow, low gradient streams to create pools and cover.

Purpose

Deflectors protect the bank in the immediate area and provide desirable changes to the stream flow patterns. They are relatively easy to construct, inexpensive, easily modified to suit on-site conditions, and are adaptable for use with other treatments. They are significantly cheaper to install than dam-type structures. They are effective in sections of streams where the banks are too low or too wide for dams.



Single Wing Deflector
Perspective View

Limitations

Wing deflectors are generally not appropriate for streams over 30 ft (9 m) wide. Gabion deflectors are susceptible to damage and require frequent repairs.

Materials

Use # 6 (3/4 in) rebar, and various combination of logs at least 14 in (356 mm) diameter (except in the very smallest streams), rocks, boulders, gabions, and wire mesh.

Installation

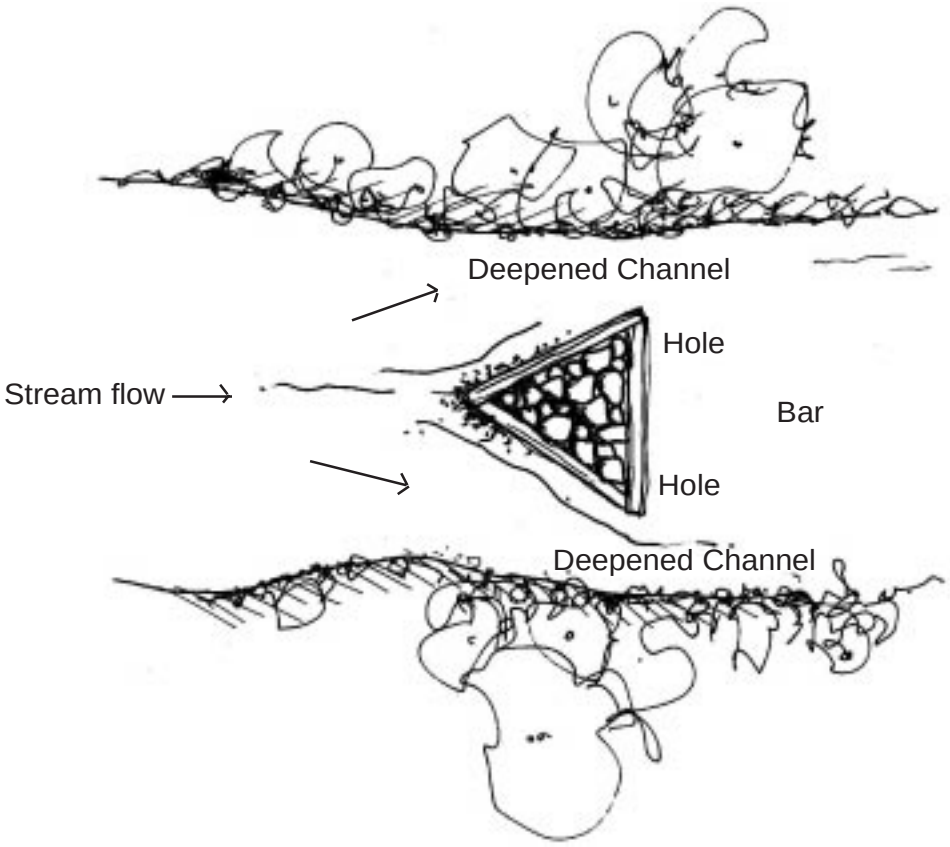
Choose sites with wide riffles or flats where habitat restoration is needed; where there is an opportunity to divert flow to stable segments such as boulders, over- hanging trees or stumps; or where sections of banks on the opposite side have interlocking root systems which will tolerate undercutting without sloughing. Keep the height of the wing in a range from 6 to 18 in (152 to 457 mm) above normal flow, but always less than stream bank height. Scouring will increase with height above normal water. Wing deflectors are keyed to a stable point within the stream bank.

Source: Stream Corridor Restoration Handbook, USDA; The Restoration of Rivers and Streams, Gore, James A.

SINGLE WING DEFLECTOR

Additional Drawings and Considerations:

In plan view they should be triangular shaped. Keep the apex angle in a range from 100 to 120 degrees. Logs are joined by rebar and held in place by extending 4 to 6 ft (1.2 to 1.8 m) of the main log into the stream bank. In streams over 10 ft (3 m) wide, drive rebar through the main log into the stream bottom 3 to 6 ft (0.9 to 1.8 m) from the tip of the structure. Place the main deflector log at approximately 30 to 35 degree angle to the stream bank. In straight reaches, alternating deflectors spaced 5 to 7 channel widths apart can produce a natural sinuous pattern of flow.

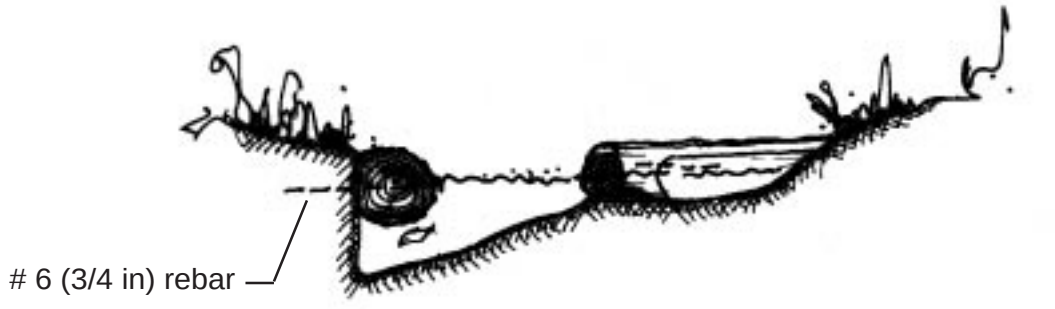


V-Type Deflector
(Log and Boulder)
Plan View

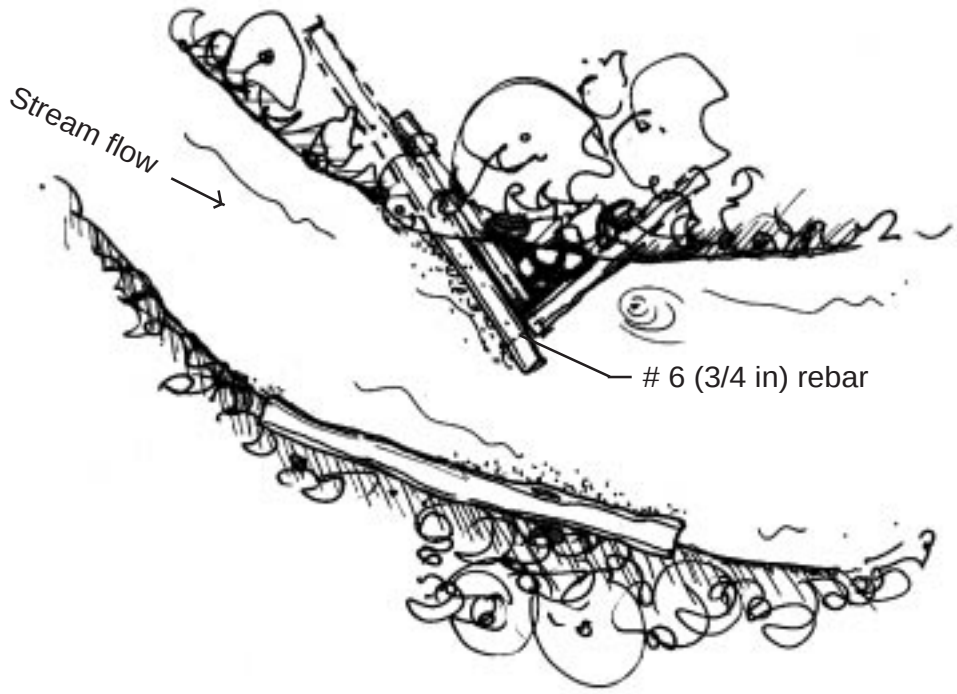
Source: Stream Corridor Restoration Handbook, USDA; The Restoration of Rivers and Streams, Gore, James A.

SINGLE WING DEFLECTOR

Additional Drawings:



Deflector and Cover Log
Section View



Deflector and Cover Log
Plan View

Source: Stream Corridor Restoration Handbook, USDA; The Restoration of Rivers and Streams, Gore, James A.