



**Policy No:** 18-01

**Policy Title:** Protect and Restore Watershed and River Connectivity

**Policy Statement:** TUC believes that Culverts that impede fish or stream flow functions should be either replaced or mitigated in order to Protect and Restore Watershed and River Connectivity

**Principles Applied:** Connectivity is defined as the transfer of energy, materials, and organisms between specific locations on a river and floodplain. Maintaining or improving connectivity ensures the physical health of watersheds, their rivers, species and communities. Specific principles to achieve this policy statement include:

- Watershed connectivity should be re-established where it naturally occurred except where issues of invasive or non-native species need to be addressed;
- Where connectivity is appropriate it should accommodate all native fish species within the system;
- Culvert design and installation should ensure that natural processes such as floodflow and bedload movement can be conveyed by the culverts so as to minimize disruption to natural systems and damage to existing built infrastructure;
- When considering a crossing, full span open bottom structures should always be considered the first option, as they are much less disruptive to physical and biological processes than closed bottom structures;
- Poorly or non-functioning culverts should be replaced but where not feasible, retrofitting to allow fish passage, flows and bedload should be considered a temporary solution until a properly designed structure can be built.

**Policy Rationale and Considerations:** Connectivity is important for all aquatic species, not just migratory species. Linear corridors such as roads and rail lines often cross rivers and streams, requiring placement of a structure to convey water under the linear corridor. In many cases, culverts are used, especially in headwater areas, as a relatively inexpensive way to convey water under the corridor. Many of these culverts are poorly designed or installed leading to major disruptions in the movement of animals, water, sediment and nutrients, thereby creating disconnects in the flow of these factors. Disconnected aquatic systems impact fish at every life stage, and in many areas across Canada, diminish their ability to find important habitat, and reduce the health, viability or survival of affected populations. Historical connectivity must be ensured in order to allow fish populations to properly function, and connect with habitats important to different components of their life histories and life stages.

**Objectives of Policy Statement:** Where it is ecologically feasible and will not introduce non-native organisms, reconnection of river corridors from headwaters to mouth is critical to restoring resiliency in Canadian river systems. The focus is on connectivity primarily influenced by human activities. Trout Unlimited Canada (TUC) and its chapters will strive to identify connectivity problems, and work with municipal and provincial agencies and other organizations to implement the best solution(s) to ensure fish passage, and convey water and sediments in order to create more functional systems.

**Implications to Organization:** TUC has recognized this issue and developed a national program, Reconnecting Canada, as a way to highlight culvert connectivity issues and provide tools to help re-establish connectivity in Canadian watersheds. Meaningful actions focus on connectivity issues at a range of spatial scales and engage staff, chapters and members as well as partners. TUC will consider a range of approaches to resolve connectivity issues within any program, including: policy development, watershed planning, advocacy for better crossing structures and design, project consultation, and information development and distribution. Staff resources will focus on development of tools to identify problem culverts and acquiring seed funding to help resolve problem culverts. Chapters and partners play an important role in helping to identify major culvert issues and helping to mitigate them.

**Delivery:** TUC has developed a national program focusing on culvert mitigation or replacement. The national role should focus on continued development of programs identifying connectivity issues, implementing and supporting optimal projects, science acquisition to inform management, policy, program and educational materials development and technical support for local and watershed planning activities. Local chapters and partners aid in identifying connectivity issues, and can either lead or contribute to implementation through volunteer activities in support of projects.

**Supporting Information:** More information can be found in TUC's Best Management Practices document.

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