

The Problem of Impassable Road Culverts in Virginia

Stream fish need connected habitats in order to complete their life cycles. However, in spite of existing federal and state fish-passage policies, many road culverts continue to block fish passage, needlessly reducing the abundance and diversity of Virginia's stream fish. A large body of research shows the importance of movement and connectivity to populations of stream fish (and other aquatic wildlife such as turtles and salamanders, e.g., Anderson et al. 2014). For example, Nislow et al. (2011) found that stream sections upstream of impassable culverts in the upper Greenbrier River drainage (WV) had fewer than half the number of fish species and less than half the total fish abundance than downstream of the culverts. Unfortunately, culverts are extremely common because: 1) The road network is so dense, and; 2) Culverts are considered more cost effective than bridges.

The few studies available from Virginia and West Virginia have found that the majority of culverts are impassable to fish, especially in mountainous areas. For example, Coffman et al. (2005) surveyed 104 crossings in the George Washington and Jefferson national forests (VA) and classified 37% of the crossings as impassable to strong swimmers (e.g., adult trout), 71% as impassable to moderate swimmers (e.g., minnows and young trout), and 80% as impassable to weak swimmers (e.g., darters and sculpins). Poplar-Jeffers et al. (2009) found that 69% of state-owned culverts in the upper Cheat River basin (WV) were completely impassable to brook trout and another 34% were only partially passable.

Stream crossings can be designed to allow for the safe passage of fish, as is required by COE and DOT regulations, but many of Virginia's existing road culverts are impassable. In the face of other less tractable stressors to stream fish, such as widespread habitat loss, pollution, non-native species, and climate change, fixing high-priority impassable culverts is the single most cost-effective way to quickly bolster the resilience of Virginia's stream fish populations.

References Cited

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