

A Novel Technique for Removing Beaver Dams Using a Portable Winch System

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ABSTRACT: Dams and associated impoundments created by American beaver (*Castor canadensis*) are viewed as positive or negative depending on stakeholder values, their levels of acceptance, and timing. When levels of flooding at beaver dams exceed acceptance levels, immediate actions are required to reduce damage and protect human safety. In Virginia, USDA/APHIS/Wildlife Services (WS) often provides assistance to reduce flooding caused by beavers, especially where it affects transportation infrastructure. WS specialists choose from a variety of techniques to best address each unique situation. Until recently, moving damming material by hand or with binary explosives were the most common practices to provide immediate relief. However, WS specialists devised a novel technique for dam removal that uses a portable winch, rope, and a variety of terminal end pieces that are specific to different situations. The main component is a gas-powered capstan winch that weighs approximately 35 lbs and has a maximum pulling force of 2200 lbs (1000 kg) at a speed of 40'/min. They use double braided polyester rope (1/2" diameter) which they coil in bags for easy transport and deployment. To remove damming material from plugged culverts, they use a 10' piece of galvanized rigid conduit to push through the debris. The conduit is closed on both ends with threaded caps to prevent debris from entering the conduit. Once the conduit is through the dam, a modified 24" agricultural disc is slid onto the pipe and held in place by the pipe cap. The winch line is connected to the loop with a carabiner and run to the winch. Pulling power can be increased by increments of 2200 lbs. (1000 kg) up to a maximum 11,000 lbs. (5000 kg) with the use of single and double snatch blocks. The winch and blocks can be anchored to a variety of points with polyester tow straps. Once all components are connected, the material is pulled out of the culvert. This setup is also used for pulling out dams that are primarily of mud and dirt, as the disc will dig out large pieces at a time. For traditional beaver dams in streams, the terminal end is a grappling hook. We have found that a 3-prong grappling hook (approximately 30" circumference) welded from 1" rebar with reinforcing works well for most situations. In some situations, dams may be removed by simply pulling out large anchoring material (logs) with a polyester strap at the terminal piece. The entire system can easily be transported by hand, or in a 16' canoe if accessible by water. With this system, water can be released at a controlled rate, decreasing potential for downstream flooding. This portable winch system has proven to be

faster and less expensive to use than binary explosives, and has eliminated the use of binary explosives for dam removal by WS in Virginia.

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