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Plumbing for ecology: Can flow devices on beaver ponds reduce conflicts and costs?

Despite dramatic declines in the number and extent of wetlands at a global scale, human-beaver interactions result in the regular and repeated draining of beaver ponds, and the loss of the ecosystem services they support. Non-lethal and more adaptive approaches to beaver management, however, might prove to reduce conflicts while still maintaining beaver habitats and human infrastructure. From 2011 to 2013, we installed 12 pond levelers at sites within a moderately sized protected area (97 km2) that experienced chronically flooded trails and facilities due to beaver activities. During this time, we collected data to assess the efficacy of the devices, and to produce a cost-benefit analysis that compared traditional (e.g., dam and colony removal) and alternative (e.g., pond levelers) management approaches. We also monitored the devices for an additional 4 years, thus allowing an analysis of the devices over a 7-year period. The installation of these devices resulted in base savings of over $161,000 (when only dollar for dollar comparisons were made), and net present value (NPV) benefits of over $5,000,000, depending on modeled scenarios. Additionally, we assessed beaver-management costs and approaches at a provincial scale (~662,000 km2). The most common methods used were dam removal and lethal approaches. Only two municipalities used some form of pond-leveling device in a limited capacity. Current ecological challenges provide opportunities to test and incorporate alternative approaches to human-wildlife management that reflect a public demand for adaptive wildlife management