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The presence of rodents and burrowing animals such as beavers, ground squirrels, prairie dogs on levees is a historic and ongoing problem that poses a threat to levee integrity due to increased seepage penetration into the levee causing voids and levee stability issues. Recent studies show an increase in the population of beavers, nutria and other rodents in central Europe over the last 15 years. In many instances, this leads to serious stability concerns and levee failures along rivers in the floodplain areas. However, most of these mammals are protected species. This work is aimed at showing positive experiences in cooperation with universities, research institutes and environmental agencies regarding measures to permanently safeguard the banks using composite erosion control systems with polymer coated steel wire mesh (as flexible reinforcement component) and geosynthetic (to promote vegetation growth). The steel mesh component works as an effective long-term barrier against the intrusion of mammals, discouraging them from digging inside the core of the levee. An analysis of the infested areas led to define the characteristics of these interventions (length, shape, escape ways, population areas, etc.).
The study will present several additional benefits when using polymer steel nets along levee, such as 1) strong and durable erosion protection in overflow areas, 2) accelerated vegetation growth (increasing stability), 3) surface protection against ice impacts (in northern regions), 4) ease of installation, maintenance, 5) ability to conform to irregular shapes along the levee slope. This work will present the positive outcome of case studies along the levees in Germany, Austria and in Italy.
Keywords: rodent, borrowing animals, beavers, nutria, polymer coated steel net, levee, dykes, erosion control.