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Management of EBHSV-infected eastern cottontail invasion in Italy using Z-type control method

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The introduction in Italy of eastern cottontail (*Sylvilagus floridanus*) for hunting has influenced the local predator-prey dynamics of red fox (*Vulpes vulpes*) and native European hare (*Lepus europaeus*). No direct competition seems to occur between the two lagomorphs, but invasive cottontails cause hyperpredation of red foxes on native hares and are also carriers of the European brown hare syndrome virus (EBHSV). This talk focuses on a scenario in which EBHSV-infected eastern cottontails are introduced in a region of virus-free European hares. To avoid the extinction of native lagomorphs and to contain the invasive ones, we consider two possible biological control actions using the Z-type control method on a four-population reference system. In particular, we look at indirect control of invasive prey by removing predators and combination of this indirect control with direct control of native prey.

Keywords: Z-type control, invasion management, biodiversity conservation, eastern cottontail, European hare, hyperpredation effect, EBHSV transmission

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