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**Title:** Environmental and Economic Costs Associated with Non-Indigenous Species in the United States

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**Abstract:**

This paper examines the effect of invasive, non-indigenous species in the United States by evaluating the environmental and economic costs associated with controlling this problem. There are approximately 50,000 foreign species in the United States (although the number is still growing at the time of this report) that account for more than \$138 billion per year and put 42% of Threatened or Endangered native species at further risk. Worldwide, a staggering 80% of native species are at risk from direct competition or predation from invasive species. While foreign species such as corn, wheat, rice, and other food crops have obvious economic benefits to the United States, other species are quite harmful, although the extent of environmental and economic damages is difficult to estimate. This article attempts to quantify the environmental and economic impacts of invasive species on agriculture, forestry, and public health as much as possible. Much of the data presented places an economic value on a particular commodity or native species and the estimated amount of damage an exotic species inflicts on that value represents the losses. Other data consists of direct costs of controlling the invasion.

In the case of aquatic invasive species, there are some direct and indirect costs mentioned in this paper. In the case of non-indigenous species aquatic weed control, approximately \$100 million is spent annually in the United States as these plants alter fish and other aquatic animal species, choke waterways, alter nutrient cycles, and reduce recreational use of rivers and lakes. Florida, for example, spends about \$14.5 million per year on hydrilla control but infestations in just two Florida lakes have caused an estimated \$10 million in annual losses in recreational revenue. There are 138 total non-indigenous fish species that have been introduced in the United States that directly threaten 44 native fish species and negatively affect another 27 native fish species. Although non-native fish do contribute positively to the economy through sportfishing, their estimated damages are estimated at more than \$1 billion annually. Zebra mussels are another excellent example of an aggressive native species, as they have invaded most of the aquatic ecosystems in the Eastern U.S. and expected to spread to most ecosystems across the nation by 2020. Not only do they reduce the amount of food and oxygen available, but they also will completely cover native mussels, clams, and snails and reach impressive levels of density, causing damage to pipes and water filtration. The estimated annual damages for control and damage to facilities is \$5 billion by 2000.

The study concludes that total economic damages associated with non-indigenous species effects and the efforts to control them total approximately \$138 billion per year. Although aquatic species only make up a small portion of this total, it is still astronomical and an obvious concern. In addition, being unable to quantify damages caused by some of the most damaging exotic species causing several extinctions of native species makes this estimate seem somewhat conservative. This paper utilizes an extensive array of sources to come up with this conclusion, which makes their findings even more alarming in their validity.