

Countering the issue of Invasive Alien Species

Each invasive alien present deserves individual management plans with respect to the habitat and environmental conditions.

Counter actions can be categorized into prevention, mechanical, chemical, biological, indirect and integrated.

Prevention

As a rule of thumb, prevention is the most cost-effective method against the issue of alien invasive species. Throughout the world, governments have imposed stringent laws and regulations to minimize the entry of invasive species. Common practices under prevention can be custom checks, shipment inspections and quarantine. Awareness of the general public is important for successful implementation of preventive measures.

Mechanical

These methods include use of machines, hand picking, soil tillage, trapping, shooting, etc.

Biological Methods

Biological control includes various methods which is associated around the use of a living organism as a predator with the aim of controlling a particular target alien invasive species.

Control strategies of biological means include:

Introduction (classical biological control) of a herbivore or parasite from the 'pest's' area of origin;

Inoculation - repeated releases (of sterile males, for example) so as to prevent pest build-up;

Inundation - where large numbers of natural enemies are cultured and released during critical periods in the life cycle of the crop or other alien species;

Conservation - where measures are taken to conserve and enhance the numbers of natural enemies already present in an area thus decreasing the mortality of the affected species; and

Augmentation - where natural enemies of a pest are at too low a level and the numbers are augmented by artificial rearing and release.

Chemical Methods

Herbicides/Pesticides: The most widely used method in eradicating unwanted animals and plants.

Anti-Coagulant poisons: Used to eradicate rodents by effectively blocking the vitamin K cycle, inhibiting the ability to produce essential blood-clotting factors.

Immunization: Animals are given immunization doses to combat from potential invasive species. In Ontario, raccoons and skunks are immunized to prevent the rabies virus.

Impeding reproductive ability: The method utilizes hormones to lower the reproductive potential of the species.

Pheromones: uses traps based on chemicals produced by the target species to attract members of the same species.

Pimentel, Zuniga and Morrison (2005) estimates that the 50 000 alien species in the United States cost almost US\$120 billion in environmental damages and losses yearly. Pimentel et al. (2000) gave an estimate of US\$137 billion per year.

Pimentel et al. (2001) looked at over 120 000 alien species of plants, animal and microbes that have invaded Australia, Brazil, India, South Africa, the United Kingdom and the United States causing significant economic losses in the agriculture and forest sectors and negatively affecting ecosystems. They estimated that the total cost in the six countries was US\$314 billion in damages per year - Australia (\$13 billion), Brazil (\$50 billion), India (\$116 billion), South Africa (\$7 billion), the United Kingdom (\$12 billion) and the United States (\$116 billion).

OTA (1993) concluded that about 4 500 exotic species occur in the United States and that about 20 percent of them have caused serious economic and environmental harm. The cumulative loss caused by 79 of these species was estimated at almost US\$97 billion for the period 1906 to 1991.