

Sustainable Rangelands Roundtable -- Indicator #18

Area of Infestation and Presence/Absence of Invasive and Non-Native Plant Species of Concern

What is the indicator?

Invasive species have been defined as “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health” (Exec. Order #13112, 1999). These species have been shown to negatively impact native biodiversity, ecosystem functions/processes, animal and plant health and human economies (Carey, 2003).

Why is it important?

The presence of these noxious or invasive species within rangeland systems is an indicator of past or current weaknesses of the system and a degradation of the functions and processes associated with “healthy” ecosystems. Invasive species, typically, have high growth rates and reproductive potential with dispersal mechanisms that allow them to readily move across a landscape. As the extent of these invasions expand across the landscape, changes within functions and/or processes may result in an irreversible decline in the overall productivity of the rangeland system. Pimentel et al. (1999) estimated that major environmental damages or losses in the USA, attributed to invasive species add up to over \$138 billion per year and that 42% of current Threatened/Endangered species are at risk primarily because of non-indigenous species.

What does the indicator show?

Depending on data availability and the desired scale of user, the “Invasive Species” indicator is designed to track the presence/absence and the area of infestation of invasive or non-native species of interest on rangelands over time. The information gained from monitoring the indicator will provide information for land managers in development of strategies to combat these invasive and noxious weeds.

Illustration of indicator through two invasive species:

The following provides an illustration using two species; however, ultimately, the indicator will be based upon datasets providing information for all species classified as invasive.

Limitations, Data Gaps and Related Issues:

At this time, there are no centralized databases that provide extensive information for all invasive species throughout the United States. Many individual states or regional collaborations collect data and maintain databases on specific species, especially plants (see the illustrations). Databases are maintained by organizations such as NRCS (National Resource Conservation Service), NatureServe, HEAR (Hawaii Ecosystems at Risk). International efforts are supported by organizations such as GISP (Global Invasive Species Program), IUCN, IABIN and NABIN. Efforts at making the existing databases interoperable have led to limited success. However, efforts being led by FICMNEW, the Federal Interagency Committee for the Management of Noxious and Exotic Weeds, (comprising agencies from within USDA, USDOT, USDOD, USDOE, USEPA) are working towards the development of more thorough and centrally located data that would be a significant source of information in the application of the indicator. NISC (National Invasive Species Council) maintains the invasivespecies.gov website that serves as a centralized location for information on invasive species. Further actions should be made to expedite the development of a national database for invasive species.

Figure 1

Maps Depicting the Distribution and Abundance of Leafy Spurge (*Euphorbia esula*) and Yellow Starthistle (*Centaurea solstitialis*) in the Western United States.

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