

*Critic's Choice Essay***INVASIVE SPECIES TERMINOLOGY****Reprinted from Gaillardia, Winter 2017**

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Terminology associated with invasive species can be extremely confusing and commonly misused. Through my years of teaching an ecology of invasive species class, I have found it easiest to start the students with very clear definitions, allow them time to firmly grasp those definitions and then move the discussion towards the exceptions. Noxious, invasive, nuisance, encroacher, and native-invader are five terms that need to be clearly defined and before further discussions into the important concept of invasive species can take place.

Noxious species are typically referred to as noxious weeds. These species are legally defined by federal, state, and local legislation. Noxious weeds cannot be bought, sold, traded, transported or possessed, and landowners are legally required to implement some sort of control practice (e.g. biological, mechanical, or chemical control) if found on their property. Most noxious weeds have historically been associated with agricultural production, while more recently, species listed as noxious weeds include species we have identified as invasive or nuisance.

The term nuisance is typically used in reference to aquatic nuisance species, or ANS. These species are found to be either aquatic species or species that invade areas close to aquatic systems. Species identified as ANS are also legally defined, typically at the state level through the official state ANS Management Plans. In Oklahoma, an aquatic nuisance

species is one that poses both ecological and economic threats to native aquatic ecosystems. Species identified as ANS cannot be bought, sold, traded, transported or possessed. Within the past 20 years or so the federal government required states to have official ANS management plans to be eligible for federal funds to battle those aquatic nuisance species. These management plans serve as guidance documents to implement educational outreach, research, species monitoring, and prevention of spread.

In the United States, President Clinton's Executive Order 13112 provided the first formal definition of an invasive species: "an alien species which does or is likely to cause economic or environmental harm or harm to animal or human health." While both Presidents George W. Bush and Obama modified this executive order, this federal definition of invasive species remains in place. Based on this definition, used in the discipline of invasion ecology, "invasive species" is a descriptive, situational-dependent term. To be considered invasive, a species must have been introduced by humans (intentionally or accidentally), subsequently established a self-reproducing population (i.e. naturalized), dispersed to secondary locations and established other sustainable populations, and have been shown to cause an impact such as harm to human health, harm to the economy, or harm to the environment. This definition is "situationally dependent" because a species

might meet all of these requirements in one location and not in another, or experts may disagree about the extent of impacts or likelihood of causing harm. The definition is descriptive, because unlike “noxious” and “ANS”, “invasive” species does not require any particular management and unless they are also on noxious weed and/or ANS lists, an invasive species can legally be bought, sold, possessed and traded. Importantly, however, an invasive species on the noxious weed list must also be controlled.

Now, let’s move to the terms which I try to use very carefully in the first conversations I have with someone about invasive species: encroachers and native invaders. To clarify, noxious weeds, aquatic nuisance species and invasive species can be non-native (i.e. alien, exotic) whereas the terms encroaching and native-invader are more specifically used in reference to native species that have become problematic. A common example would be mesquite in the southwestern part of Oklahoma. Shifting management practices have prompted further range (or population) expansion and increased density of mesquite in some areas. Since it is a native species and is at undesirable levels in some areas, the term encroaching could be used as a more acceptable term for those wanting to protect the native species. To my knowledge, mesquite hasn’t been planted commonly by humans, prompting its expansion; rather, management practices (e.g. overgrazing) have been instrumental in its expansion. In contrast, another problematic, native Oklahoma species, Eastern Redcedar, has

been extensively planted by humans in habitats from which it was commonly not found. The success of this tree is not only tied to its extensive planting throughout Oklahoma, but also to the absence of fire in the prairie landscape. For many native plant enthusiasts, it is difficult to apply the term “invasive” to this native tree. That is why, when I first start teaching a group about invasives, I use the terms encroaching and native-invader when referencing Eastern Redcedar. However, it is important to re-emphasize that invasive species are 1) introduced by humans, intentionally or accidentally; 2) capable of establishing and spreading; and 3) cause an impact, such as harm to human health, harm to the economy, and/or harm to the environment. Given the extensive planting of Eastern Redcedar in prairie landscapes; reduction in grassland obligate species in the presence of Eastern Redcedar; reduction in forage production for livestock; increased fire intensity in the presence of Eastern Redcedar, invasion ecologists can easily and correctly apply the term native-invader (or just invader) to Eastern Redcedar.

As I typically say in my classes, “what a tangled web we have” when discussing invasive species. Control of invaders can be an emotional issue, and even which words are used can result in many differences of opinion. Regardless of one’s position on any particular invasive species, we must be careful to correctly use the appropriate terminology in our discussions.

A stylized, cursive logo consisting of the letters O, N, P, and R. The letters are highly decorative and interconnected, with the 'O' and 'R' having large loops and flourishes. The 'N' and 'P' are also stylized and integrated into the overall design.