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## Noxious weeds a disaster looking for a place to happen in Arizona

### Introduction

There is a very serious problem creeping into our state that has the potential to adversely affect each and every Arizonan. This problem is particularly sinister because by the time it becomes widely noticeable, it will probably be too late to do much about it. Whether you are a camper, hunter, fisherman, farmer, rancher, recreationist, birder, wilderness advocate, environmentalist, or even if you have no interest in outdoor activities of any kind, *noxious weeds* threaten the quality of natural resources on both public and private lands, and will potentially cost Arizonans millions of tax dollars — unless we do something, *now*.

### What is a weed? What is a noxious weed?

The definition of a **weed** depends entirely on one's perspective. Here, a weed is defined as “a plant that interferes with the management objectives of a given area of land at a given point of time.”

Weeds “earn” the name “**noxious**” pursuant to state and federal laws. Plants are generally considered to be noxious if they are exotics (non-native), and negatively impact agriculture, navigation, fish, wildlife, or public health.

### How did noxious weeds get to North America?

Most weeds originally were spread from the Middle East to Europe, colonizing ground disturbed by agriculture, grazing, and urban development. When European colonists journeyed overseas, they inadvertently transported weeds with them in their grain seed, livestock feed, and ship ballasts. From the New World's ports, weeds hitched rides inland with pioneers, set seed in America's farm fields and rangelands, and began to spread like a slow-moving wildfire.

### How Rapidly and Extensively Have Noxious Weeds Spread?

Once established, noxious weeds spread **exponentially**. Exponential growth is characterized by an initial period of growth that is slow and unapparent, which is followed by a period of tremendous growth. For

instance, the Bureau of Land Management (BLM) estimates that **noxious weeds are consuming 4600 acres per day on western public lands!!** That's about 4600 football fields **every day**. Some specific examples:

1. **SPOTTED KNAPWEED** (*Centaurea masculosa*) currently infests over **7.2 million acres** in 9 states and 2 Canadian provinces.
2. **DIFFUSE KNAPWEED** (*Centaurea diffusa*) has consumed over **3.2 million acres** in 10 states and 2 Canadian provinces.
3. **RUSSIAN KNAPWEED** (*Acroptilon repens*) has invaded over **1.4 million acres** in 10 states and 2 Canadian provinces.
4. **YELLOW STARHISTLE** (*Centaurea solstitialis*) has engulfed over **9.4 million acres** in 10 states and 2 Canadian provinces.
5. **LEAFY SPURGE** (*Euphorbia esula*) had infested over **2.5 million acres** in 30 states as of 1979.
6. **CHEATGRASS** (*Bromus tectorum*) has overrun over **101 million U. S. acres** and is listed as the dominant plant in the Intermountain West.

### How did noxious weeds spread so rapidly?

The primary reason noxious weeds became so competitive upon reaching North America is because they left behind natural predators that evolved with them in Eurasia such as insects, disease, and the native animals that ate them. Without the normal checks and balances associated with their natural environment, plants that posed few problems in Eurasia became aggressive noxious weeds in North America.

In addition to having few natural predators, many noxious weeds have means by which they adapt and spread rapidly in new environments. For example, production of massive seed numbers with long seed viability, extensive root systems, seeds easily spread by wind or water, thorns, and excretion of compounds that inhibit growth of other plants, are some of the mechanisms that allow noxious weeds to outcompete native vegetation. Some examples include:

1. **PURPLE LOOSESTRIFE** (*Lythrum salicaria L.*), **SPOTTED KNAPWEED**, **MUSK THISTLE** (*Carduus nutans*), **DALMATION TOADFLAX** (*Linaria genistifolia* ssp.), produce enormous numbers of **seeds** that can remain **viable for up to 20 years**.

2. **LEAFY SPURGE**, **CANADA THISTLE** (*Cirsium arvense*), **DALMATION TOADFLAX**, and **CAMELTHORN** (*Alhagi camelorum*) have extensive **root systems** which makes control difficult.
3. Thistles develop **thorns** that protect them from grazing animals.
4. Most knapweeds produce **chemicals** that **inhibit growth** of surrounding vegetation.

### How do noxious weeds continue to spread?

Unfortunately, noxious weeds continue to spread, in large part, because people are often oblivious to the consequences of their actions.

1. Weed seeds can be spread to new areas by attaching to vehicles, clothing, camping gear, and pack animals.
2. Weed seeds contained in livestock feed (e.g., hay and grain) can be spread along trails.
3. Weed seeds eaten by livestock can remain viable while passing through their digestive tract, and later be deposited with a fresh batch of fertilizer (i.e., dung) in non-infested areas.
4. People may unknowingly spread noxious weeds by picking and taking them home for flower arrangements which are later discarded in non-infested areas.
5. Some seed companies sell noxious weed seeds for use as ornamentals (e.g., purple loosestrife).
6. Some flower shops sell noxious weeds as garnish in flower arrangements (e.g., white top).
7. Some pet shops sell noxious weeds for use in aquariums (e.g., hydrilla).

### Why should you care about the spread of noxious weeds?

Noxious weeds can be costly to *all* Arizonans. They can adversely affect our agriculture, economics, environment, wildlife, recreation, and health.

## **Agriculture**

Noxious weeds can drastically reduce crop production by stealing soil and nutrients from agricultural crops, and forage from domestic livestock.

1. The United States lost \$7.4 billion in average annual crop yield because of noxious weeds in 1984.
2. Noxious weeds also outcompete native plants and reduce the amount of forage available to grazing livestock (e.g., In Montana, researchers estimate 33 million acres will be infested with spotted knapweed by the year 2009, resulting in annual forage losses of around \$155 million).

## **Economics**

Whether you realize it or not, noxious weeds have direct and indirect economic consequences.

1. The Arizona Department of Transportation (ADOT) currently spends around \$80,000 annually to control noxious weeds along highways. ADOT spending for noxious weed control has increased by about \$10,000 since 1986 and will continue to increase if we neglect the problem. These estimates do not include costs associated with repairing highway damage caused by noxious weeds. For instance, camelthorn can grow through up to a foot of asphalt costing taxpayers thousands of dollars to repair infested highways.
2. The presence of noxious weeds can cause property values to plummet and indirectly affect proprietors of gasoline stores, hotels, eateries, in addition to the adverse effects on farmers and ranchers.

## **Environment**

Once noxious weeds become established, they crowd out native vegetation, and in severe cases, are the only plants left growing.

1. Downy brome and spotted knapweed have displaced native grasses throughout the Intermountain West.
2. Dyer's woad (*Isatis tinctoria L.*) and yellow starthistle have ousted native plants throughout Utah and California, respectively.
3. Noxious weeds may invade habitats occupied by rare and endangered plant species and modify such habitats so that these species can no longer survive.

4. Soil stability, water quantity, and water quality suffer when native plants that have fibrous root systems are replaced by noxious weeds with deep tap roots.

## **Fish and Wildlife**

Noxious weeds adversely affect fish and wildlife diversity by:

1. Increasing water runoff and soil erosion which induces higher sediment loads in streams, rivers, and lakes and negatively impacts fisheries.
2. Devastating stream and lakeside habitats (e.g., purple loosestrife outcompetes cattails, eliminating habitat for both aquatic mammals and birds).
3. Reducing native vegetation on which upland game and non-game species depend for both food and cover.

## **Recreation**

Noxious weeds threaten recreation values by:

1. Invading suitable areas to dock boats, picnic, or camp, adversely affecting boating and fishing enthusiasts.
2. Invading nature trails traversed by campers, hikers, and mountain bikers (e.g., thistle and nettle).
3. Spreading throughout native plant communities in wilderness areas, detracting from wilderness adventures.
4. Outcompeting native wildflowers, eliminating photographic and viewing opportunities.

## **Human Health**

Noxious weeds adversely affect human health by:

1. Producing enormous amounts of pollen which can cause serious allergy problems.
2. Producing chemicals (e.g., latex) that can cause severe skin and eye irritations (e.g., leafy spurge).

## Summary

Hopefully, this brochure has convinced you that noxious weeds are everybody's problem, and that we all should have a common interest in finding ways to do something about them. Thankfully, not all of the noxious weed species mentioned in this brochure are in Arizona. However, without action noxious weeds will likely invade lands in Arizona without regard for ownership. We cannot afford to wait and see what happens before taking action — the cost is simply too high. You can and must help now if we are to get a handle on this problem. To learn more about specific noxious weeds that may be in your area, contact Dr. Larry D. Howery, Assistant Rangeland Extension Specialist, (520) 621-7277.

## References

Beck, K. G. 1993. How do weeds affect us all? In: An explosion in slow motion: noxious weeds and invasive alien plants on grazing lands. 8th Forum. Washington D. C.

Boucher, B. J. 1994. Endangered plants can't fight back. In: Noxious weeds: changing the face of southwestern Colorado. San Juan National Forest Association.

BLM/USFS. Undated Pamphlet. Noxious weeds a growing concern: you can stop their spread.

Cramer, G. C. Analysis of the implementation of noxious weed policy on Bureau of Land Management and Forest Service lands in Arizona. Ph.D. Dissertation. University of Arizona. 86pp.

Goold, C. 1994. The high cost of weeds. In: Noxious weeds: changing the face of southwestern Colorado. San Juan National Forest Association.

Whitson, T. D. 1992. Weeds of the west. University of Wyoming.

Wright, K. 1994. A natural history of weeds. In: Noxious weeds: changing the face of southwestern Colorado. San Juan National Forest Association.

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