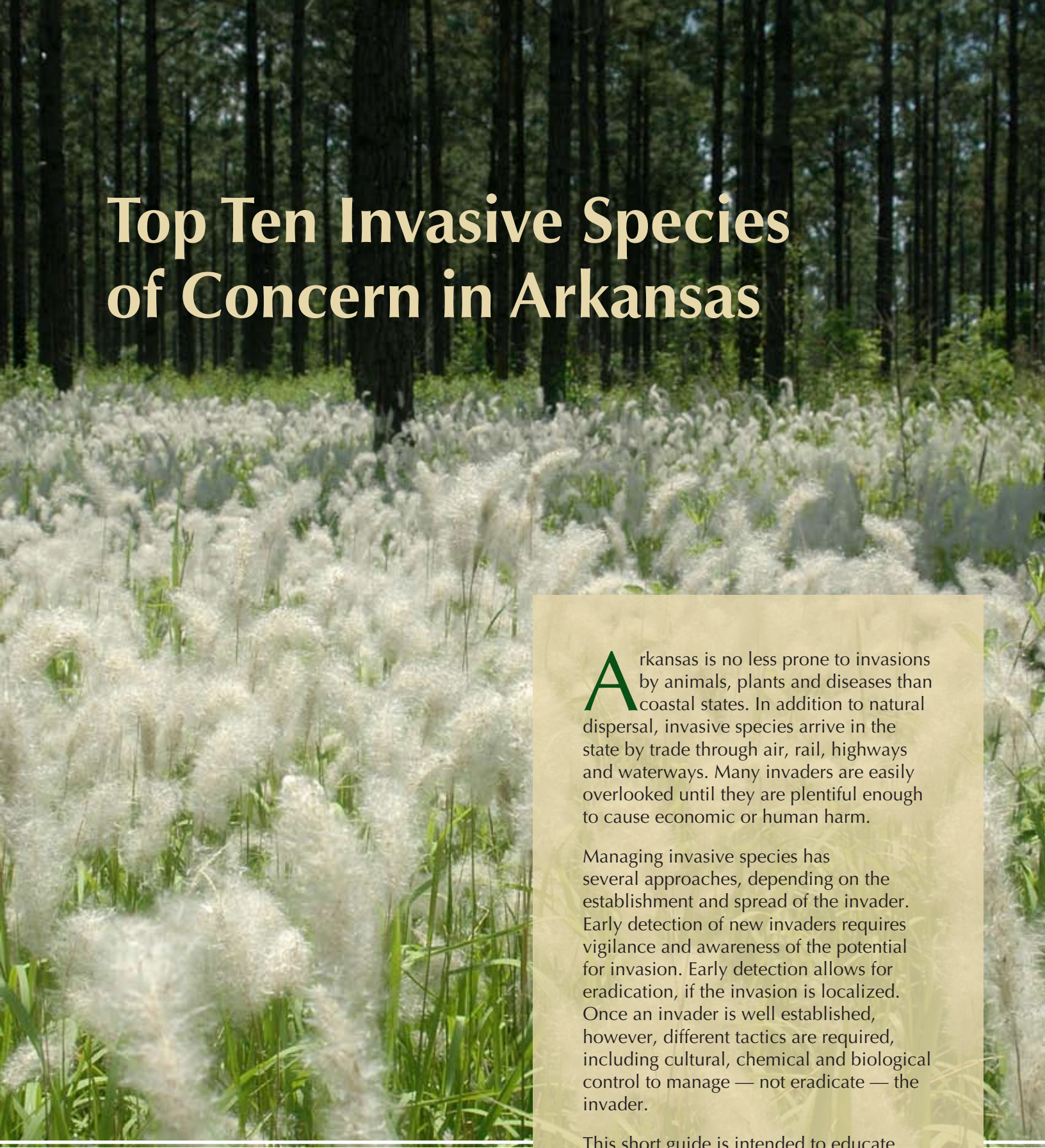

Top Ten Invasive Species of Concern in Arkansas

Arkansas is no less prone to invasions by animals, plants and diseases than coastal states. In addition to natural dispersal, invasive species arrive in the state by trade through air, rail, highways and waterways. Many invaders are easily overlooked until they are plentiful enough to cause economic or human harm.

Managing invasive species has several approaches, depending on the establishment and spread of the invader. Early detection of new invaders requires vigilance and awareness of the potential for invasion. Early detection allows for eradication, if the invasion is localized. Once an invader is well established, however, different tactics are required, including cultural, chemical and biological control to manage — not eradicate — the invader.

This short guide is intended to educate environmental specialists and everyday citizens about some of the invasive species of concern that are anticipated to arrive in — and affect — Arkansas.

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DIVISION OF AGRICULTURE

STATE PLANT BOARD
Arkansas Agriculture

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Cogongrass
(Imperatica cylindrica)

Cogongrass likely entered the U.S. at an Alabama port in the early 1900s as packing material. Like kudzu, the grass was used as a forage before its invasiveness was realized.

The weed occurs from South Carolina to Texas, and infests more than one million acres of Florida, Alabama and Mississippi.

The weed is spread through rhizome fragments in soil or on farming equipment; movement of soil, plant parts and seed on emergency equipment from Louisiana after Hurricane Katrina may have spread the weed inland.

Cogongrass grows fast and outcompetes native plants. It can reach 5-6 feet tall and forms perennial colonies. Root mass can exceed 17 tons per acre.

Herbicides may control the weed, but often multiple treatments are required.

Invasive Weeds of Concern: Cogongrass and Tropical Soda Apple

Tropical Soda Apple
(Solanum viarum)

Tropical soda apple is a perennial shrub that grows to 6 feet tall and wide, with broad leaves resembling oaks. The plant is armed with long, straight barbs up to 3/4-inch long. Tropical soda apple is recognized by the fruit, which resemble small watermelons only 3/4 – 1-1/2 inches in diameter. Mature fruits are yellow.

Tropical soda apple is native to South America and was introduced accidentally into the U.S., possibly within the stomach of cattle. It was first found in Florida in 1988. Tropical soda apple was declared a noxious weed in Arkansas in 2007.

Concerns about tropical soda apple are invasions of pastures, fields, and parks. However, the weed can invade open forests and natural areas. Tropical soda apple forms thick stands that make land unusable by livestock, large wildlife or humans.

Sudden Oak Death (SOD)

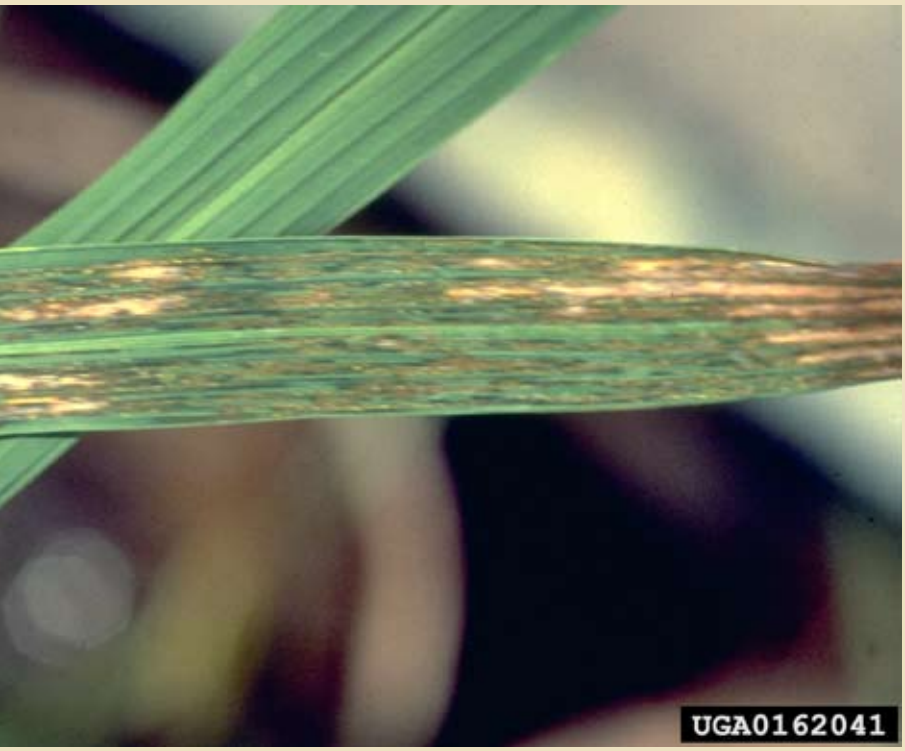
Sudden Oak Death is caused by *Phytophthora ramorum*, a fungus-like microorganism. This disease was identified in 1993 in Europe on rhododendrons. It was found in California in 2000 on oaks and recently in the Eastern U.S.

Spread of SOD in the nursery trade occurs through movement of infected plants. Contaminated soil or splashed water can also disperse it. Confirming SOD requires laboratory assays.

At least 90 species of trees and woody ornamentals are hosts for SOD. The disease produces rapid decline in oaks; death may occur within months to years later. Symptoms include bleeding cankers on the lower trunk. Other symptoms include leaf spots with dark margins and stem cankers.

Infected ornamentals may be a source for forest infections. Control of SOD is focused on early detection and eradication of infected plants. National surveys are identifying and alleviating high-risk sources.

Plant Diseases of Concern: Sudden Oak Death and Bacterial Leaf Streak



Bacterial Leaf Streak of Rice

Bacterial leaf streak (BLS) is a leaf disease of rice in Asia, Africa and Australia.

Symptoms are restricted to leaf blades and include thin, water-soaked interveinal streaks that eventually enlarge, turn brown and join. During wet periods, yellowish bacterial ooze forms on the streaks.

Symptoms are usually first noticed from tillering to booting. Older plants become more resistant.

BLS is favored by warm, wet conditions and excessive nitrogen and is spread by blowing rain, irrigation water and mechanical means in the field. Geographically, it is spread by seed, infested plant parts or other contaminated items. Hosts include rice and grasses such as *Leersia*, *Zizania*, *Paspalum*, *Leptochloa* and *Zoysia*. Losses to 30% have been reported from India under extremely favorable conditions, but are usually less. Control is by the use of clean seed and resistant cultivars.

Hydrellia wirthi

Hydrellia wirthi is a fly that attacks rice seedlings, leaving them stunted or even killed. The fly (below) is about 5 mm long and requires specialists for identification. The symptoms (right) of the damage caused by the fly are readily identified.

It has been found as near as Texas and Louisiana.

Similar Names — Different Problems

Hydrilla *Hydrilla*

Hydrilla is an aquatic weed that was first discovered in Lake Ouachita in 2001. Originally, hydrilla was not thought to be able to survive as far north as Arkansas, but the weed is now found in many waters in the state. Found at or just below the water surface, it can grow in mats that can extend up to 10 meters deep. Hydrilla can be spread by boats and through cut pieces of foliage.

Hydrilla is the target of a biological control program through use of a tiny Asian fly. The larvae of the fly feed only on hydrilla. This project is beginning to show positive effects in several of our lakes.

Sirex Wood Wasp

(Sirex noctilio)

The exotic wood wasp, *Sirex noctilio*, was first detected in New York in 2004. Surveys throughout the northeastern U.S. and Canada have found the wasp in New York, Pennsylvania and Ontario.

This species of *Sirex* is a threat to even-aged stands of pine or to stressed pines. Most North American pines will likely be susceptible to *Sirex* damage.

Where the wasp has invaded other parts of the world, it has caused significant losses, including to Loblolly Pine.

Silvicultural treatments focused on increasing tree health through thinning have helped make the trees better able to defend against invasion. A host-specific parasitic nematode has been tested for biological control of the wasp.

Insect Invaders of Fields and Forests

Old World Bollworm

The Old World Bollworm, *Helicoverpa armigera*, is found throughout Europe and Asia. Its host range includes a wide array of ornamental plants and flowers, but it also attacks and can cause losses in several crops, such as tomato, corn and cotton.

Because this insect looks very similar to the native *Helicoverpa zea* (corn earworm), care must be taken for correct identification. All stages — eggs, larvae, pupa and adults — appear similar to *H. zea*.

If Old World Bollworm arrives in the New World, its arrival will most likely be through international trade in ornamental plants or cut flowers. Sampling in agricultural areas throughout Arkansas is ongoing to detect this insect.

Channeled Apple Snail

(Pomacea canaliculata)

The channeled apple snail was found established in the southern U.S. in 2000. The snail is native to lakes and swamps in South America, where it feeds on a variety of plants, including rice. This snail poses a serious threat to rice and natural wetlands.

They survive dry conditions by burying in moist soil. Although they can tolerate near-freezing temperatures, egg laying starts at water temperatures of 65 degrees F. Egg clusters of 200-300 strawberry-colored eggs are laid every two to three weeks, always above water.

Snails reach maturity in two to three months, and mature snails are over 2 inches in diameter.

These snails were once sold by the aquarium trade, including in Arkansas. Do not release aquaria-kept snails! There are no chemicals that will selectively eliminate these invasive snails. Notify the Arkansas State Plant Board or USDA/APHIS-PPQ if you see red or pink egg masses above the water surface.

Invertebrate Invaders: Channeled Apple Snail and Rice Nematode

Rice Nematode

Ufra disease of rice, caused by the rice nematode (*Ditylenchus angustus*), is mainly associated with deep-water rice in Asia and Africa. Yield losses of 20-30% are common, but can approach 100%.

The nematode is microscopic; disease symptoms are visible on rice panicles. Panicles infected at an early stage may remain in the leaf sheath and become twisted. In later infections, emerging panicles are distorted, and much of the panicle may be sterile. *D. angustus* can remain viable for six months in rice stubble and debris. As the rice plant develops, nematodes infect terminal buds of seedlings and move up the growing plant. During heading, the nematode is found mainly on the stem above the nodes, on the peduncles and inside the glumes.

New Concerns on the Horizon

Emerald ash borer

Asian long-horned beetle

Nepalese browntop *(Microstegium)*

Spotted knapweed

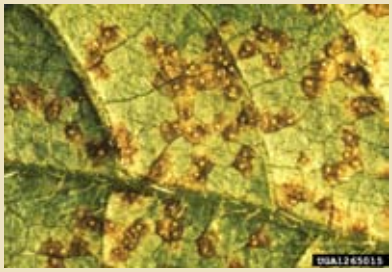
Mile-a-minute weed

Japanese knotweed

Purple loosestrife

Teasel

Soybean aphid



Soybean rust

Many species of concern to Arkansas agriculture and natural areas already occur in Arkansas and are known to cause problems, but are not yet targets of control measures. Others are poised to invade from nearby states or may have already invaded Arkansas.

Insects:
- Emerald ash borer
- Asian long-horned beetle
- Formosan subterranean termite

Weeds:
- Spotted and diffuse knapweeds
- Teasel
- Mile-a-minute weed
- Japanese knotweed
- Nepalese browntop (*Microstegium*)
- Purple loosestrife
- Chinese tallow tree

Crop pests and diseases:
- Rice Panicle Mite
- Soybean aphid
- Soybean rust

Formosan subterranean termite

Chinese tallow tree

The Cooperative Agricultural Pest Survey (CAPS) is a combined effort by federal and state agricultural organizations to conduct surveillance, detection and monitoring of agricultural plant pests and biological control agents. Survey targets include insects and mites, nematodes, weeds, plant pathogens, mollusks and other invertebrates.

The Arkansas CAPS Advisory Team helps plan and advise statewide activities. The Advisory Team includes representatives from USDA-APHIS, Arkansas State Plant Board, Arkansas Heritage and Forestry Commissions, Nature Conservancy, U.S. Army Corps of Engineers and the University of Arkansas Division of Agriculture.

For more information, contact USDA-APHIS-PPQ (Little Rock) at 501-324-5258 or the State Plant Board at 501-225-1598.

Giant Hogweed

Zebra Mussels

Alligatorweed

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