New Problematic and Unusual Weed Introductions Affecting Southern California

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There are a number of important invasive species that severely impact wildlands, rangelands, coast dunes and prairies, and riparian areas of Southern California. Among these include poison-hemlock (*Conium maculatum*), fennel (*Foeniculum vulgare*), Malta starthistle or tocalote (*Centaurea melitensis*), artichoke thistle (*Cynara cardunculus*), shortpod mustard (*Hirschfeldia incana*), saltcedar (*Tamarix ramosissima*), and perennial grasses such as giant reed (*Arundo donax*), pampasgrass (*Cortaderia selloana*), and crimson fountaingrass (*Pennisetum setaceum*). These species, for the most part, are very common and easily recognizable. However, there a many other species that are either locally problematic or have the potential to greatly expand their ranges in the southern regions of the state. Some of these are listed in Table 1. For more information on each of these plants, see DiTomaso and Healy (2007).

Table 1. More obscure invasive species or problematic roadside species in southern California and their ranking on the statewide California Invasive Plant Council's (Cal-IPC) inventory.

Species	Common name	Family	Cal-IPC (2006) list
Dicots			
Mesembryanthemum crystallinum	Crystalline iceplant	Aizoaceae	Moderate Alert
Brassica tournefortii	Saharan or African mustard	Brassicaceae	High
Euphorbia terracina	Carnation spurge	Euphorbiaceae	Moderate Alert
Ricinus communis	Castor bean	Euphorbiaceae	Limited
Monocots			
Phoenix canariensis	Canary Island date palm	Arecaceae	Limited
Washingtonia robusta	Mexican fan palm	Arecaceae	Moderate Alert
Asphodelus fistulosus	Onionweed	Liliaceae	Moderate Alert
Phragmites australis	Common reed	Poaceae	Unable to score because of native congenerics

Crystalline iceplant

South African native that is a trailing annual, biennial or even sometimes a short-lived perennial. The plant has two distinctly different leaf types. The young leaves are heart-shaped and much larger than the ovate or spatula-shaped mature leaves. Crystalline iceplant foliage is covered with glistening water-filled papillae. The flowers are white but turn pink with age. The capsules open when moistened. This species is common on coastal bluffs and other disturbed sites in coastal California, Catalina and the Channel Islands. It appears to be expanding its range and can form dense spreading mats in coastal dunes. When it ages and senesces the increased organic matter can lead to the establishment of other non-native weeds that typically are not adapted to native undisturbed dunes and bluffs.

Saharan or African mustard

Saharan mustard is a winter annual. Despite the common name, it is considered native to the Mediterranean region. In recent years, it has spread rapidly in the Sonoran Desert, including the Imperial Valley. This was very evident in the wet spring of 2006 when Saharan mustard became a dominant species in many communities. It can spread from roadsides into washes, drainages, desert shrubland, and sensitive dune areas. In desert communities it forms a continuous fuel source that can increase the fire frequency, cause large scale conflagrations and lead to type conversion of desert scrub to grassland. In some areas, it threatens to aggressively out compete rare desert plant species. Seeds of the plant can disperse much like tumbleweeds, when dried plant stems break at ground level and tumble under windy conditions. The plant is well adapted to desert climates and its seeds can become sticky with mucilage when moistened with water. This allows the seed to hold water longer and to survive following germination. Control of Saharan mustard is similar to many other mustards. The ALS (acetolactate synthase) inhibiting herbicides such as chlorsulfuron, metsulfuron, sulfometuron and imazapic can effectively control the plant.

Carnation spurge

A relatively uncommon perennial weed in southern California. Carnation spurge is native to southern Europe and the Mediterranean and was introduced to the state in the mid-1980s. Because of its recent introduction, it is not included in the most current California floras. It appears to be spreading rapidly and can form dense patches that increase after fire. The species is very common on the coastal bluffs near Malibu, but can also be found in grasslands, dunes, salt marshes, riparian areas, and oak woodlands in other regions of Los Angeles County. Although it prefers disturbed sites, carnation spurge can also invade relatively undisturbed habitat. The sap has been reported to be toxic, and may cause dermatitis. Control of the weed can be achieved with treatments of triclopyr, chlorsulfuron or glyphosate.

Castor bean

Castor bean has a long history as both a medicinal and toxic plant. It is native to tropical Africa and Eurasia and can be a herbaceous perennial or even a small tree to 10 feet tall. Although some varieties are cultivated as ornamentals or even for their seed oil, the species has

escaped cultivation in many locations in the central and south coast of California and has become a common roadside, railway and wildland invasive. The plant is well adapted to dry areas. The seed caruncle absorbs water which enhances germination under conditions that would otherwise be too dry for most competing vegetation. The toxicity of the plant is well recognized and can kill both animals and humans. The toxic, a proteolytic enzyme known as ricin, is primarily concentrated in the seeds, although the foliage can also contain the poison. Ingestion of about 4-8 seeds by an adult can be lethal and even fewer can kill a child. Castor oil, which is also derived from seeds, does not contain the water-soluble toxin. Ricin is considered one of the most toxic substances produced by plants and can kill a human when injected into the blood system at 0.0001 mg/kg of body weight (Kingsbury 1964). The compound has been used by the former Russian KGB to commit murder by injecting ricin into victims using an umbrella with a hypodermis needle attached at the tip. Handling castor bean foliage can also cause a severe contact dermatitis and the disagreeable odor of the plant accounts for its avoidance by foraging animals. Livestock poisonings can occur when feed is contaminated with castor bean seeds. Control of castor bean has been reported with glyphosate or growth regulator herbicides.

Canary Island date palm and Mexican fan palm

Both these palms are commonly cultivated as landscape ornamentals. However, they have regularly escaped into urban areas, orchards, and natural riparian stream and river corridors where they are typically found as young plants. Although they occur many regions of the state, they are much more common in southern California. They have particularly become a problem in natural riparian stream and river corridors near residential areas, orchard crops, and as seedlings that volunteer in landscaped areas. As is indicated by the common name, Canary Island date palm is native to the Canary Islands and Mexican fan palm is native to central Mexico, but not the northern mountain deserts. Birds routinely feed on the fruit and can disperse the seed with their droppings. For this reason, infestations are common under taller vegetation or telephone wires and other tall structures. In addition, the seeds are large and readily carried by winter rains from landscaped areas down storm drains into nearby creeks and rivers. Control is difficult because of the thick waxy cuticle on the leaves. This prevents herbicide absorption. However, imazapyr has been shown to be an effective management option for smaller plants.

Onionweed

Onionweed is an annual to short-lived perennial with thick tuber-like stem bases. It is native to southern Europe and was introduced to the United States as a garden ornamental. Although the common name contains the word onion, it does not have the characteristic odor or taste of onion or garlic when crushed. It can also be found in pastures and rangelands in Australia, where it is avoided by livestock. In Australia, onionweed is a government-listed noxious weed. In California, it is rapidly spreading along southern and central coast where is can form dense populations that exclude grasses and other desirable forage species. Control of the species is considered very difficult. Australian have reported 2,4-D to be somewhat effective, but in California a 5% solution of glyphosate has been used in control efforts.

Common reed

Common reed is more often referred to as *Phragmites*. Although its current scientific name is *Phragmites australis*, it is commonly listed in the literature as *Phragmites communis*. The species is a widespread native perennial grass of the United States, including California, where it is a desirable component of natural aquatic ecosystems such as marshes, and borders of lakes, ponds, and rivers. An invasive ecotype from Europe was first introduced to the eastern United States about 150 years ago and has spread rapidly throughout the country, but particularly in the eastern states. Genetic studies show it to be more aggressive than the native biotypes and is capable of spreading into new areas and plant communities. It is considerably more salt tolerance than the native ecotype and, as a result, has invaded more saline areas of the coast. In the eastern United States, it is replacing the native *Spartina* communities and it may do the same in the west coast. It is very difficult to distinguish the European from the native North American biotypes. The main distinguishing characteristic is the length of the ligule, which is very small in both biotypes. For some people, it is even difficult to distinguish common reed from giant reed (*Arundo donax*). Unlike giant reed, common reed produces viable seed.

Literature Cited

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