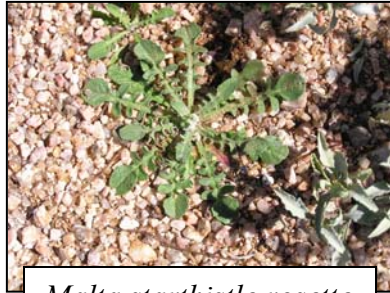


Malta Starthistle (*Centaurea melitensis*)

Malta starthistle is a close relative of yellow starthistle (*Centaurea solstitialis*). This plant is an annual or biennial and reproduces from seed. The plant forms a rosette during the first growing season. The leaves of the rosette are deeply lobed and the surfaces are covered with stiff, thick hairs and resinous dots. The mature plants of Malta starthistle have stiff, upright stems that are openly branched from near the base. The plants have vertical ribs along the stems that are extensions of the leaves. These extensions are sometimes referred to as “wings”. The wings on Malta starthistle are approximately 0.1 inch wide. The flowers of Malta starthistle occur singly or are groups of 2 or 3 at the ends of the stems.



Malta starthistle rosette

Almost always one flower can be found very near the base of the plant, at the point of the lowest branch. Vigorous plants can develop flowers in the leaf axils. Spines on the phyllaries are about ¼” long, brown to purple tinged and are branched near the midpoint. The spines are flattened in cross section. Malta starthistle has a single taproot. Sources for new infestations may be contaminated seed, vehicles traveling from infested areas, or, most commonly, weedy hay.



On the Tonto National Forest, Malta starthistle is found mainly at elevations below 4000'. The right-of-way along Highway 188 has dense infestations of this plant, that run for miles, from the Beeline Highway to past Cholla Recreation Site. It is also found in scattered locations in the Sonoran desert vegetation type, particularly where there have been horses and hay, and in open areas where the soil has been disturbed. Recreation sites along the Verde River below Horseshoe Dam have also been infested with this plant. This photo shows an infestation at the upper parking area at Phon D. Sutton Recreation Site on the Salt River.

Malta starthistle is also found in Apache, Pinal, Graham, Pima and Cochise counties, and in small, isolated populations on the Coconino National Forest.

Malta starthistle is a native of Southern Europe, where it grows in dry places and disturbed ground. Malta starthistle can impact range carrying capacity of livestock allotments, and decrease the quality and quantity of wildlife habitat. It has been known to poison livestock, if eaten in large quantities. It is currently beginning to encroach on habitat of Arizona cliffrose (*Purshia subintegra*), an endangered species that grows in the vicinity of Horseshoe Reservoir. Replacement of native perennial grass species by Malta starthistle or other members of the genus *Centaurea* contribute to soil erosion. The finely divided root structure of perennial grasses secures the topsoil and prevents erosion from wind and water. Malta starthistle's taproot does little to protect the soil. Recreation and scenic values of natural areas can be impacted by the presence of Malta starthistle – the spines of the seedheads adhere to clothing, skin, and fur.

Control:

Integrated pest management systems are most effective, combining the suppression of Malta starthistle with the enhancement of perennial grass species. Grazing always give starthistle an ecological advantage over grasses, so 12-18 months of rest from grazing may be required after

treatment. Prevention and detection of new populations, as well as eradication and containment of existing populations all need to be addressed to achieve control over Malta starthistle.

Cultural Control:

Prevent Malta starthistle from becoming established. Do not drive through areas that are infested with Malta starthistle. Check and clean all footwear, livestock, and vehicles for attached starthistle plant parts when leaving infested areas. Purchase hay that is certified as weed-free, and use certified weed-free straw mulch for erosion control projects.

Mechanical Control:

Hand pulling or grubbing Malta starthistle is most effective for small infestations. Pull plants after they have bolted and before their flowers have opened. Repeat every 2-4 weeks during the growing season, removing as much of the root as possible. Cultivation, where feasible, will control Malta starthistle within two years. Tilling must be done 5 or 6 times a year, two weeks apart, starting in April. Remember that seeds may stay dormant in the soil for at least ten years. Mowing is not recommended, as plants can produce side branches with more flowers.

Burning:

A study in California found that the yellow starthistle seed-bank can be reduced by burning the area at least 3 years in a row, prior to seed dispersal. The Tonto National Forest has begun a burning program along Highway 188, in an initial effort to control the spread of Malta starthistle. Eventually this treatment will be combined with use of herbicides by Arizona Department of Transportation, for improved control.

Herbicides and biological control methods also exist, but are not being used on the Tonto National Forest at this time.

Note: No single control method, or any one-year treatment program, will ever achieve effective control of an area infested with biennial thistles. The fast growth, high seed viability, and long seed dormancy of these plants require long-term integrated management programs and planning to contain and reduce biennial thistle infestations.

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