

GORSE THE INVADER

by Julia Larke

How sweet furze became gorse the invader is a story of humans and the land, where settlers carried valued plant seeds to their new homes with unintended results. The evergreen shrub, gorse (*Ulex europaeus*), was introduced by 19th century immigrants to the New World, Australia, New Zealand and elsewhere and it soon escaped cultivation. Today, it is one of the top 100 worst invasive species worldwide according to the World Conservation Union (ICUN).

(www.issg.org/database/species/ecology.asp?si=69&fr=1&sts=)



Ulex europaeus, gorse, Jughandle State Reserve south, near Caspar, CA © 2005 Michael Potts.

Also called furze and whin (and many other names), gorse is native to central and western Europe where it is often a dominant species in fire-adapted heathland plant communities. Harsh climate, poor soils, native insects, as well as grazing and burning practices combine to contain gorse. For example, in Wales: "A good battering by the winter gales keeps the gorse in check and leaves the soil suitably thin and salt-stung for the special plants of these rocky slopes". (www.eco-city.co.uk/ecotrail/ecotrail_sitecontent.asp?siteid=21&langid=1)

Gorse is valued in its native lands as a 'living fence' where it is planted in hedges to control livestock. It is a legume that is used as fodder, as fuel, and as a spiny nurse plant to protect young trees. It improves low fertility soils and is a soil stabilizer. Soap is made from its ashes and it is a dye plant. The flowers make a pickle and they are used to flavor beer and whiskey and to make gorse wine. Gorse provides pollen for insects (it's bee pollinated) and protective habitat for wildlife. (<http://www.druidry.org/obod/trees/furze.html>) (www.the-tree.org.uk/BritishTrees/MrsGrieve/mggorse.htm)

In the mid-1800's gorse was taken to New Zealand and Australia for sheep forage and hedgerows and by 1900 was declared a noxious weed in these countries. It has naturalized in temperate mostly coastal areas throughout the world (including Chile and Sri Lanka), where it is an unmanageable invasive costing millions of dollars each year to combat.

Gorse was introduced to the eastern US in the early 1800's but it never became extremely invasive. However, on the West coast, where it was introduced in the mid-1800's as a hedge plant and as forage, environmental conditions were such that gorse successfully colonized areas in Oregon, California, Washington, and Hawaii. Recently, it has invaded British Columbia where ten percent of Vancouver Island is now infested with gorse and broom.

(www.fs.fed.us/database/feis/plants/shrub/uleepur/all.html)

In California, gorse occurs in coastal counties from Santa Cruz to Del Norte and in the foothills of the northern Sierra Nevada. In Mendocino County, gorse has an unrelenting grip on the lands in and around the town of Caspar.

"The legend of gorse's arrival in Caspar has several versions, but in every one, gorse escapes from its keepers and takes over acres of previously lovely rangeland and bluff. Some diligent stewards have kept gorse at bay, but they will tell you that the cost of freedom from gorse is constant vigilance!"

(Caspar News 2003 <http://casparcommons.org>)

Gorse currently infests hundreds of acres within and bordering Caspar with much of this land owned by the State of California and managed by State agencies who are struggling to successfully control the spread of gorse on Jughandle State Reserve and on the Caspar Headlands.

According to Marc Hoshovsky¹ "Gorse is a successful invasive plant because it grows on a variety of soil types, fixes nitrogen, and may impoverish soil of phosphorus. It produces copious amounts of heat-tolerant seeds with long-term viability, and regenerates rapidly from seeds and stumps after disturbances such as brush clearing or fires...seeds may remain dormant yet viable in the soil up to thirty years, with reports of up to seventy years". http://www.cal-ipc.org/ip/management/plant_profiles/Ulex_europaeus.php.

Hoshovsky¹ notes that "Gorse may be slow in becoming established and spreading, but where it gains a hold, there are few other plants that will so completely dominate an area. Besides being a significant fire hazard, it can successfully outcompete native plants."

This plant outcompetes humans! Land managers throughout the world have battled gorse the invader for over 100 years with limited success. There is a lot of information available on what has been tried, what seems to work, what not to do.



Scanned stem of gorse, x .7

Stuart Tregoning, whose family settled in Caspar during the 1860's has experience with various gorse management strategies, including the use of fire and herbicides. (Patty Madigan interview June 1999 – <http://casparcommons.org/Press/News9906.htm>)

In Stuart's opinion: "The only way to get rid of it is to remove it mechanically. There is no simple approach that doesn't involve a lot of work. My neighbor Ralph Eagle and I developed a mechanical system of mowing and tilling that, within a few years, encourages the grass to dominate... In another interview with Stuart and Caspar resident Caroline Schooley, also a long-time gorse fighter, they reiterate: "What really works...is cutting, plowing, and perseverance" (Jerry Juhl interview Nov. 1999 - <http://casparcommons.org/Press/News0305.htm>).

Currently, the California Department of Parks and Recreation is removing some of the gorse infestation at Jughandle State Reserve. Gorse thickets have been bulldozed into piles for burning later in the season when there will be less danger of fire spreading.

Gorse is exceedingly flammable because volatile oils are concentrated in the spiny foliage and branches. The story of the Bandon Fire of 1936 in Oregon inspires uneasiness because of its resemblance to the town of Caspar. An Irish immigrant introduced his favorite furze hedge to Bandon in 1873 and 63 years later the plant infested the town to such a degree that firefighters were unable to save the town when a nearby wildfire ignited the gorse. Gorse is blamed as the primary fuel source in the devastating fire that killed 10 people.



This is what it takes to remove gorse thickets. Jughandle State Reserve just north of Caspar, CA. Photo by Peter Warner, CA Dept. Parks & Recreation © 2007.



One of many gorse piles on Jughandle Reserve headlands. Peter Warner, CA Dept. Parks & Recreation © 2007.

From the Oregon History Project: "Remembering his childhood visits to Bandon in the early 1930s, historian Thomas McClintock wrote that gorse filled the spaces between the town's scattered buildings...Bandon resident D.H. Woomer told a *Coos Bay Times* reporter shortly after the fire: "That Irish hedge was the worst thing—when the fire hit it right across from my house, the flames shot up high into the air. It was just as though there had been gasoline poured on the fire". Ironically, just a week before the fire Frank P. McWhorter, the state plant pathologist, had warned Bandon's residents of the fire hazards posed by the gorse." www.ohs.org/education/oregonhistory/historical_records/dspDocument.cfm?doc_ID=9326D333-960F-57C1-C7CB9A48D590224F

In a recent meeting of the Mendocino Board of Supervisors Public Resources Committee, September 10, 2007, there was discussion of the Bandon Fire by Guil Dye, Caspar homeowner, during a review of the gorse issue in the coastal region.

From the minutes of the meeting: Dave Bengston, Agricultural Commissioner, reported that gorse is now starting a stage of rapid growth on the Mendocino Coast in Jughandle State Reserve. He said it has spread over nearly 1,000 acres and continues to spread, taking over state park lands, and negatively impacting agriculture and tourism.

Tara Athan, Coordinator of the Mendocino Coast Weed Management Area noted that gorse burns at such extreme temperatures that crews are unable to conduct controlled burns, and that fire actually strengthens and revitalizes gorse.

Julie Rogers, of the Mendocino County Fire Safe Council, advised that passing ordinances that recognize gorse as a public nuisance and fire hazard are strong tools for legitimizing it for attention in FEMA and other funding agencies. She also noted that the seeds of gorse are viable for 30 years. Recommendations were that Mendocino County adopt a Weed Ordinance, similar to Marin County's Weed Policy, to discourage sale, landscape use, and willful spreading of gorse.

Mr. Bengston also commented on the use of seed weevils and spider mites, noting that their impact was marginal, given that there are approximately 2,000 seeds per square foot.

The gorse seed weevil (*Exapion ulicis*) and gorse spider mite (*Tetranychus lintearius*) were introduced as biological controls into the United States, the weevil in 1953 from France and the spider mite in 1994. Neither of these species were USDA approved biocontrol insects according to Hoshovsky¹.

In addition to the seed weevil and spider mite, in Hawaii, a moth, a gall-forming weevil, a thrip and a rust fungus have been introduced to control gorse. Seven biocontrol species have been introduced into New Zealand. (<http://www.hawaiiag.org/hdoa/newsrelease/00-01.htm>) (<http://www.treesearch.fs.fed.us/pubs/28505>) (www.marlborough.govt.nz/enviromonitoring/plants.cfm)

Goat grazing is effective in checking gorse although goats are best used to graze young regrowth after the removal of mature thickets. At least two years of grazing is required to significantly reduce gorse (Hoshovsky¹).

Gorse is difficult to kill with a single application of herbicide and spraying alone is not a solution for control according to Hoshovsky¹ and others. Combination methods are recommended, first mechanically removing plants followed by herbicide applications ("cut and paint" use of glyphosate) or grazing.

Management efforts must be ongoing in scope in order to be successful, due to the longevity of buried seeds. In addition, gorse seed can travel extended distances on contaminated machinery. Significant long-distance dispersal in Australia occurred when seeds were carried on vehicles and machinery and in topsoil and fill. (<http://www.weeds.org.au/WoNS/gorse/> ... See Chapter 1)



Gorse spider mite (*Tetranychus lintearius*) at Jughandle Reserve headlands off Jefferson Lane © Julia Larke 2007.

How can the spread of gorse be prevented?

- Early detection and prompt eradication of gorse in newly infested areas.
- Sites prone to gorse infestation should be planted with preferred vegetation without delay after disturbance.
- Inform others about the danger that gorse poses to plant communities and to human communities.

www.cal-ipc.org/ip/management/plant_profiles/Ulex_europaeus.php
www.for.gov.bc.ca/hfp/publications/00177/gorse.htm

Caspar residents have established a Gorse Campaign link on the CasparCommons website where they post gorse resources, including fire prevention resolutions, invasive species information and gorse removal techniques (<http://www.casparcommons.org>).

Gorse was recently found in Ukiah and plants are growing on property near Point Arena. If you know of additional populations please contact Tara Athan, Mendocino Coast Weed Management Area, (707) 485-1198 or (tara_athan@safe-mail.net). Preventing the spread of gorse outside the Caspar area is currently one of the Mendocino Coast WMA's top priorities.

Source: (also see citations in text)

¹Hoshovsky, M. 2000. *Ulex europaeus* L. profile. Pp. 317-321 in Bossard, C., Randall, J. & M. Hoshovsky, eds. *Invasive Plants of California Wildlands*. University of California Press, Berkeley, CA. http://www.cal-ipc.org/ip/management/plant_profiles/Ulex_europaeus.php.

Additional information:

Integrated Vegetation Management:

<http://www.efn.org/~ipmpa/Noxgorse.html>

Mendocino Coast Weed Management Area:

<http://www.alt2is.com/mcwma/>

Contact Peter Warner: pwarn@parks.ca.gov

Young, S. 2003. *Exploring alternative methods for vegetation control and maintenance along roadsides*. Caltrans Report, Hopland Research Center, CA. http://www.dot.ca.gov/newtech/researchreports/reports/2003/alternative_vegetation_control_final_report.pdf