Keywords: High Risk, Naturalized, Tree, Allergenic pollen, Wind dispersal, Coppices

Family: ***Cupressaceae***

Taxon: ***Cupressus sempervirens***

Synonym: *Cupressus horizontalis Mill.*
Cupressus sempervirens var. horizontalis (Mi
Cupressus sempervirens var. stricta Aiton

Common Name: Italian cypress
Mediterranean cypress

Questionaire : current 20090513 **Assessor:** Patti Clifford **Designation:** H(HPWRA)
Status: Assessor Approved **Data Entry Person:** Patti Clifford **WRA Score 9**

101	**Is the species highly domesticated?**	**y=-3, n=0**	**n**
102	**Has the species become naturalized where grown?**	**y=1, n=-1**	
103	**Does the species have weedy races?**	**y=1, n=-1**	
201	**Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"**	**(0-low; 1-intermediate; 2-high) (See Appendix 2)**	**High**
202	**Quality of climate match data**	**(0-low; 1-intermediate; 2-high) (See Appendix 2)**	**High**
203	**Broad climate suitability (environmental versatility)**	**y=1, n=0**	**y**
204	**Native or naturalized in regions with tropical or subtropical climates**	**y=1, n=0**	**y**
205	**Does the species have a history of repeated introductions outside its natural range?**	**y=-2, ?=-1, n=0**	**y**
301	**Naturalized beyond native range**	**y = 1*multiplier (see Appendix 2), n= question 205**	**y**
302	**Garden/amenity/disturbance weed**	**n=0, y = 1*multiplier (see Appendix 2)**	**n**
303	**Agricultural/forestry/horticultural weed**	**n=0, y = 2*multiplier (see Appendix 2)**	**n**
304	**Environmental weed**	**n=0, y = 2*multiplier (see Appendix 2)**	**n**
305	**Congeneric weed**	**n=0, y = 1*multiplier (see Appendix 2)**	**y**
401	**Produces spines, thorns or burrs**	**y=1, n=0**	**n**
402	**Allelopathic**	**y=1, n=0**	
403	**Parasitic**	**y=1, n=0**	**n**
404	**Unpalatable to grazing animals**	**y=1, n=-1**	
405	**Toxic to animals**	**y=1, n=0**	**n**
406	**Host for recognized pests and pathogens**	**y=1, n=0**	
407	**Causes allergies or is otherwise toxic to humans**	**y=1, n=0**	**y**
408	**Creates a fire hazard in natural ecosystems**	**y=1, n=0**	**n**
409	**Is a shade tolerant plant at some stage of its life cycle**	**y=1, n=0**	**n**
410	**Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)**	**y=1, n=0**	**y**

411	**Climbing or smothering growth habit**	**y=1, n=0**	**n**
412	**Forms dense thickets**	**y=1, n=0**	**n**
501	**Aquatic**	**y=5, n=0**	**n**
502	**Grass**	**y=1, n=0**	**n**
503	**Nitrogen fixing woody plant**	**y=1, n=0**	**n**
504	**Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)**	**y=1, n=0**	**n**
601	**Evidence of substantial reproductive failure in native habitat**	**y=1, n=0**	**n**
602	**Produces viable seed**	**y=1, n=-1**	**y**
603	**Hybridizes naturally**	**y=1, n=-1**	
604	**Self-compatible or apomictic**	**y=1, n=-1**	
605	**Requires specialist pollinators**	**y=-1, n=0**	**n**
606	**Reproduction by vegetative fragmentation**	**y=1, n=-1**	**n**
607	**Minimum generative time (years)**	**1 year = 1, 2 or 3 years = 0, 4+ years = -1**	**2**
701	**Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)**	**y=1, n=-1**	**n**
702	**Propagules dispersed intentionally by people**	**y=1, n=-1**	**y**
703	**Propagules likely to disperse as a produce contaminant**	**y=1, n=-1**	**n**
704	**Propagules adapted to wind dispersal**	**y=1, n=-1**	**y**
705	**Propagules water dispersed**	**y=1, n=-1**	
706	**Propagules bird dispersed**	**y=1, n=-1**	
707	**Propagules dispersed by other animals (externally)**	**y=1, n=-1**	**n**
708	**Propagules survive passage through the gut**	**y=1, n=-1**	
801	**Prolific seed production (>1000/m2)**	**y=1, n=-1**	
802	**Evidence that a persistent propagule bank is formed (>1 yr)**	**y=1, n=-1**	**y**
803	**Well controlled by herbicides**	**y=-1, n=1**	
804	**Tolerates, or benefits from, mutilation, cultivation, or fire**	**y=1, n=-1**	**y**
805	**Effective natural enemies present locally (e.g. introduced biocontrol agents)**	**y=-1, n=1**	

Designation: H(HPWRA) **WRA Score** **9**

Supporting Data:

101	2012. WRA Specialist. Personal Communication.	[Is the species highly domesticated? No] No evidence of domestication that reduces invasive traits.
102	2012. WRA Specialist. Personal Communication.	[Has the species become naturalized where grown? NA]
103	2012. WRA Specialist. Personal Communication.	[Does the species have weedy races? NA]
201	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"? 2 - high] Native distribution: Libya; Cyprus; Iran; Israel; Jordan; Lebanon; Syria; Turkey; Greece - Crete.
202	2012. USDA ARS National Genetic Resources Program. Germplasm Resources Information Network - (GRIN). http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl	[Quality of climate match data? 2 - high] Native distribution: Libya; Cyprus; Iran; Israel; Jordan; Lebanon; Syria; Turkey; Greece - Crete.
203	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Broad climate suitability (environmental versatility)? Yes] Native distribution between 38 degrees N and 30 degrees South. Climatic amplitude (estimates) - Altitude range: 0 - 1750 m - Mean annual rainfall: 600 - 900 mm - Rainfall regime: winter - Dry season duration: 0 - 3 months - Mean annual temperature: 15 - 20ºC - Mean maximum temperature of hottest month: 25 - 40ºC - Mean minimum temperature of coldest month: -15 - -3ºC - Absolute minimum temperature: > -25ºC
203	2005. Gilman, E.F./Watson, D.G.. Cupressus sempervirens: Italian cypress Publication # ENH384. Environmental Horticulture, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida., https://edis.ifas.ufl.	[Broad climate suitability (environmental versatility)? Yes] USDA Hardiness Zones: 7B through 11.
204	2012. WRA Specialist. Personal Communication.	[Native or naturalized in regions with tropical or subtropical climates? Yes] Native distribution: Libya; Cyprus; Iran; Israel; Jordan; Lebanon; Syria; Turkey; Greece - Crete
205	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Does the species have a history of repeated introductions outside its natural range? Yes] Planted in the following countries: Albania; Croatia; Cyprus; Former Yugoslavia; France; Corsica; Greece; Ireland; Italy; Malta; Portugal; Southern Russia; San Marino; Serbia; Slovenia; Spain; Iran; Israel; Lebanon; Syria; Turkey; Algeria; Kenya; Libya; Morocco; South Africa; Tunisia; United States - California; Argentina; Colombia; Australia; New Zealand
301	2000. Danin, A.. The inclusion of adventive plants in the second edition of Flora Palaestina. Willdenowia. 30: 305-314.http://www.bgbm.org/willdenowia/w-pdf/w30-2Danin.pdf	[Naturalized beyond native range? Yes] Cupressus sempervirens has naturalized in Palestine in areas near roads. It was introduced as an ornamental.
301	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Naturalized beyond native range? Yes] Cupressus sempervirens has become naturalized in many Mediterranean countries, especially Greece, Italy, France, Portugal and Spain, where extensive plantations have been established for afforestation, windbreaks and ornamental purposes.
302	2012. WRA Specialist. Personal Communication.	[Garden/amenity/disturbance weed? No] No evidence of invasiveness in these systems.
303	2012. WRA Specialist. Personal Communication.	[Agricultural/forestry/horticultural weed? No] No evidence of negative impacts to these commercial systems.
304	2012. WRA Specialist. Personal Communication.	[Environmental weed? No] No evidence of negative impacts to natural ecosystems.
305	1993. Gilman, E.F./Watson, D.G.. Cupressus arizonica var. arizonica - Arizona cypress - Fact Sheet ST - 222. United States Forest Service, http://hort.ifas.ufl.edu/database/documents/pdf/tree_fact_sheets/cuparia.pdf	[Congeneric weed? Yes] Cupressus arizonica var. arizonica seeds itself into the landscape. [naturalized?]

305	2012. California Invasive Plant Council. Cupressus macrocarpa (Monterey cypress). http://www.cal-ipc.org/ip/management/plant_profiles/Cupressus_macrocarpa.php	[Congeneric weed? Yes] Cupressus macrocarpa, native to the Monterey Coast, California is considered moderately invasive in other areas of California, where it has spread from windbreaks or hedgerows into the surrounding landscape.
401	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Produces spines, thorns or burrs? No] "Tree to 150' tall; branchlets slightly flattened, displayed in single plane along primary branch."
402	2012. WRA Specialist. Personal Communication.	[Allelopathic? Unknown]
403	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Parasitic? No] Cupressaceae.
404	2004. Dormann, C.F./King, R.. Comparing the palatability of native and non-native Mediterranean plants. Ecologia Mediterranea. 30: 39-46.http://www.eumon.ufz.de/data/Dormann2004EcolMedit25876317.pdf	[Unpalatable to grazing animals?] According to research on the palatability of native and non-native plants in the Mediterranean, Cupressus sempervirens is unpalatable to snails.
405	2012. National Center for Biotechnology Information. PubMed. http://www.ncbi.nlm.nih.gov/sites/entrez	[Toxic to animals? No] No evidence.
405	2012. Specialized Information Services, U.S. National Library of Medicine. TOXNET toxicology data network [online database]. National Institutes of Health, http://toxnet.nlm.nih.gov/	[Toxic to animals? No] No evidence.
406	1991. Marsh, R.E.. Landscape Plants, Forest Tress, and Crops Most Resistant to Mammal Damage: an Overview.	[Host for recognized pests and pathogens?] Cupressus sempervirens was recognized as a species that harbors roof rats (Rattus rattus).
406	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Host for recognized pests and pathogens?]The most important disease of C. sempervirens is the coryneum or cypress canker, caused by the fungus Seiridium cardinale. Pests recorded Insects: Cinara cupressi sensu lato (Cypress aphid) Megastigmus atlanticus (atlas cypress seed chalcid) Megastigmus wachtli (cypress seed chalcid) Orsillus maculatus Palmar festiva Phloeosinus armatus Phloeosinus aubei Phloeosinus thujae Pseudococcyx tessulatana Mites: Trisetacus juniperinus (juniper gall mite) Fungus diseases: Armillaria mellea (armillaria root rot) Diaporthe eres (apple leaf, branch and fruit fungus) Diplodia pinea f. sp. cupressi Heterobasidion annosum sensu stricto Lepteutypa cupressi (stem canker: Cupressus spp.) Pestalotiopsis funerea (leaf spot of mango) Seiridium cardinale (cypress canker) Sphaeropsis sapinea (Sphaeropsis blight)
407	2007. D'Amato, G./Cecchi, L./Bonini, S./Nunes, C./Annesi-Maesano, I./Behrendt, H./Liccardi, G./Popov, T./van Ccauwenberge, P.. Allergenic pollen and pollen allergy in Europe. Allergy. 62: 976-990.http://www.progettolibra.it/ferrara08/materiale_ferrara08/G	[Causes allergies or is otherwise toxic to humans? Yes] Cupressus sempervirens releases an enormous amount of anemophilous (wind borne) pollen. Cupressaceae pollen is recognized as a source of increasing pollinosis in Mediterranean countries.

407	2011. Sposato, B./Scalese, M.. Prevalence and real clinical impact of Cupressus sempervirens and Juniperus communis sensitisations in Tuscan "Maremma", Italy. Allergol Immunopathol (Madr). http://www.ncbi.nlm.nih.gov/pubmed/21982402	[Causes allergies or is otherwise toxic to humans? Yes] Allergenic reaction to Cupressus sempervirens and Juniperus communis was tested on 811 outpatients in Tuscan, Italy. Forty four percent of the patients tested positive for allergenic response. Studies indicate that Cupressus rather than Juniperus may be more responsible for the allergenic reactions.
408	2010. Bredemeier, M.. Forest management and the water cycle: an ecosystem-based approach. Springer, http://books.google.com/books?id=1cgxi3wcndIC&pg=PA258&lpg=PA258&dq=cupressus+sempervirens+%2B+%22seedbank%22&source=bl&ots=tjxznDjuvv&sig=vM2ZVcUJhvIunkx	[Creates a fire hazard in natural ecosystems? No] Cupressus sempervirens var. pyramidalis has the ability to either withstand, slow down or even prevent the spread of forest fires. The utilization of this species in forestry may assist forests in limiting impacts of fires predicted by climate change. [species variety]
409	2005. Gilman, E.F./Watson, D.G.. Cupressus sempervirens: Italian cypress Publication # ENH384. Environmental Horticulture, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida., https://edis.ifas.ufl.	[Is a shade tolerant plant at some stage of its life cycle? No] Full sun.
409	2012. Plants for a Future. Plants for a Future Database - Cupressus sempervirens. http://www.pfaf.org/user/Plant.aspx?LatinName=Cupressus+sempervirens	[Is a shade tolerant plant at some stage of its life cycle? No] Cannot grow in the shade.
410	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Yes] Soil descriptors: - Soil texture: heavy - Soil drainage: free - Soil reaction: acid; neutral; alkaline - Special soil tolerances: shallow - Soil types: arid soils; calcareous soils; clay soils
410	2005. Gilman, E.F./Watson, D.G.. Cupressus sempervirens: Italian cypress Publication # ENH384. Environmental Horticulture, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida., https://edis.ifas.ufl.	[Tolerates a wide range of soil conditions (or limestone conditions if not a volcanic island)? Yes] Soil tolerances: clay; sand; loam; alkaline; acidic; well-drained
411	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Climbing or smothering growth habit? No] Tree to 150' tall.
412	2012. WRA Specialist. Personal Communication.	[Forms dense thickets? No] No evidence. [widely cultivated species]
501	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Aquatic? No] Terrestrial; tree.
502	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Grass? No] Cupressaceae; tree.
503	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Nitrogen fixing woody plant? No] Cupressaceae.
504	2005. Staples, G.W./Herbst, D.R.. A Tropical Garden Flora - Plants Cultivated in the Hawaiian Islands and Other Tropical Places. Bishop Museum Press, Honolulu, HI	[Geophyte (herbaceous with underground storage organs -- bulbs, corms, or tubers)? No] Tree; woody.
601	2012. WRA Specialist. Personal Communication.	[Evidence of substantial reproductive failure in native habitat? No] No evidence.
602	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Produces viable seed? Yes] Seed germination occurs in 20-30 days.

603	2012. WRA Specialist. Personal Communication.	[Hybridizes naturally? Unknown]
604	2012. WRA Specialist. Personal Communication.	[Self-compatible or apomictic? Unknown]
605	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Requires specialist pollinators? No] Pollination is anemophilous (wind).
606	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Reproduction by vegetative fragmentation? No] Vegetative propagation is by cuttings; grafting.
607	1995. Lev-Yadun. Living serotinous cones in Cupressus sempervirens. International Journal of Plant Sciences. 156: 50-54.	[Minimum generative time (years)? 2] Cones are produced in Cupressus sempervirens in the second year.
701	2012. WRA Specialist. Personal Communication.	[Propagules likely to be dispersed unintentionally (plants growing in heavily trafficked areas)? No] No evidence of accidental dispersal. [widely grown species]
702	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Propagules dispersed intentionally by people? Yes] Planted in the following countries: Albania; Croatia; Cyprus; Former Yugoslavia; France; Corsica; Greece; Ireland; Italy; Malta; Portugal; Southern Russia; San Marino; Serbia; Slovenia; Spain; Iran; Israel; Lebanon; Syria; Turkey; Algeria; Kenya; Libya; Morocco; South Africa; Tunisia; United States - California; Argentina; Colombia; Australia; New Zealand
703	2012. WRA Specialist. Personal Communication.	[Propagules likely to disperse as a produce contaminant? No] No evidence.
704	2012. Fordham, A.J./Spraker, L.J.. Propagation manual of selected gymnosperms. http://arnoldia.arboretum.harvard.edu/pdf/articles/1017.pdf	[Propagules adapted to wind dispersal? Yes] Female cones open their second season and consist of six to twelve scales, each having numerous winged seeds.
705	2012. WRA Specialist. Personal Communication.	[Propagules water dispersed? Unknown]
706	2012. WRA Specialist. Personal Communication.	[Propagules bird dispersed? Unknown]
707	2012. Fordham, A.J./Spraker, L.J.. Propagation manual of selected gymnosperms. http://arnoldia.arboretum.harvard.edu/pdf/articles/1017.pdf	[Propagules dispersed by other animals (externally)? No] Winged seeds. [no means of external attachment]
708	2012. WRA Specialist. Personal Communication.	[Propagules survive passage through the gut? Unknown]
801	2012. WRA Specialist. Personal Communication.	[Prolific seed production (>1000/m2)? Unknown]
802	1995. Lev-Yadun. Living serotinous cones in Cupressus sempervirens. International Journal of Plant Sciences. 156: 50-54.	[Evidence that a persistent propagule bank is formed (>1 yr) Yes] In this study on the serotinous cones of Cupressus sempervirens in Israel, cones were closed for 5+ years before releasing viable seeds.
802	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Evidence that a persistent propagule bank is formed (>1 yr)?] Seed storage is orthodox.
803	2012. WRA Specialist. Personal Communication.	[Well controlled by herbicides? Unknown]
804	2000. Atherden, M.. Human Impact on the Vegetation of Southern Greece and Problems of Palynological Interpretation: A Case Study from Crete In: Landscape and Land Use in Postglacial Greece. Sheffield Academic Press Ltd., Sheffield http://books.google.com/	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] In Greece, Cupressus sempervirens demonstrates the ability to coppice from stumps. [wood-cutting impact]
804	2005. CAB International. Forestry Compendium. CAB International, Wallingford, UK	[Tolerates, or benefits from, mutilation, cultivation, or fire? Yes] Suitable for coppicing.
805	2012. WRA Specialist. Personal Communication.	[Effective natural enemies present locally (e.g. introduced biocontrol agents)? Unknown]

Risk Traits Summary

High Risk:

- Native to subtropical region
- Naturalized where grown
- Broad environmental versatility
- Congeneric weed
- Highly allergenic pollen
- Tolerates wide range of soil conditions
- Wind dispersed seed
- Develops persistent propagule bank
- Coppices

Low Risk:

- Not weed elsewhere
- No spines, burrs, thorns (easier management)
- Does not promote fire
- Not shade tolerant (unlikely to invade native forest)
- Not a nitrogen fixer