ZONE OF INFESTATION EXPANSION PROPOSAL:

SUDDEN OAK DEATH

Del Norte County

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REQUEST

It is requested that the Director of the Department of Forestry and Fire Protection (Director), with the approval of the Board of Forestry and Fire Protection (Board), pursuant to Public Resources Code (PRC) 4716, expand the existing Zone of Infestation for the pathogen (*Phytophthora ramorum*) causing sudden oak death (SOD) to include areas of susceptible host types in Del Norte County with boundaries defined in this document.

This document is provided in support of this request.

DISCUSSION

Phytophthora ramorum is a non-native, invasive plant pathogen that causes the tree disease called sudden oak death. Although symptoms of the disease, and the mortality it causes, were first noted in areas around the greater San Francisco Bay area in the mid-1990s, the causal pathogen was not identified and named until 2000. Subsequent research established susceptible hosts and the most likely/frequent pathways of disease spread, which allowed for the establishment of quarantine regulations by both federal (USDA Animal and Plant Health Inspection Service) and state (California Department of Food and Agriculture, California Department of Forestry and Fire Protection) agencies. The Department of Forestry and Fire Protection (Cal Fire) regulation took the form of a Zone of Infestation (ZOI) designed to limit the spread of the pathogen from commercial activities taking place on state- and privately-owned forestlands within the state. The original ZOI encompassed seven coastal counties (Marin, Monterey, Napa, San Mateo, Santa Clara, Santa Cruz, and Sonoma) and was expanded three months afterward to include an eighth (Mendocino) and then later that year to include Alameda and Solano. As *P. ramorum* was detected in various counties over the years and officially confirmed by the Department of Food and Agriculture (CDFA), they were added to the ZOI: Humboldt and Contra Costa in 2002, Lake and San Francisco in 2004, and Trinity in 2014. Trinity County's designation as the fifteenth regulated county in California makes it the only one for which boundaries differ between Cal Fire and the other two regulating agencies: USDA APHIS and CDFA regulations encompass the entire county, but the Cal Fire/Board of Forestry ZOI coincides only with the boundaries of the Coast District under the Forest Practice Rules, which covers a small section of the county running along its western border.

From the pathogen's discovery in Humboldt County in 2002 up until the present, a consistent monitoring effort for the pathogen took place in Del Norte County. While the pathogen was killing significant numbers of tanoaks in Curry County, Oregon (immediately to the north of Del Norte County) and also advancing in Humboldt County up through the vicinity of Redwood National Park, Del Norte County remained pathogen-free. Annual monitoring efforts involved monitoring for the pathogen in watercourses throughout the county and aerial detection surveys conducted by the USDA Forest Service. In 2019, a well-established UC Berkeley-led detection effort called the SOD Blitz requested that Cal Fire and UC Cooperative Extension include northern Humboldt and Del Norte Counties in that year's SOD Blitz effort, which involves ground surveys for the pathogen and submission of SOD-like symptoms in bay laurel and tanoak to the lab at UC Berkeley. In late summer 2019, tanoak samples collected in Jedediah Smith State Park and submitted as part of the SOD Blitz effort were confirmed as *P. ramorum*-positive. However, as these samples were collected by a Cal Fire forest pathologist, CDFA and USDA did not consider them official for regulatory purposes, necessitating subsequent visits to the site by

Del Norte County Agriculture Department personnel working as CDFA representatives. None of the subsequent sampling attempts at the infested site, either by the Agriculture Department biologist or by Cal Fire or UC Cooperative Extension, were able to repeat the subsequent find, so Del Norte County remained officially uninfested.

In late summer 2020, Cal Fire and UC Cooperative Extension were apprised of a different site with dead tanoaks, near State Route 197 southeast of the town of Smith River. UC Cooperative Extension sampled tanoak twigs that were determined positive by CDFA, and subsequent visits by official collectors confirmed this finding, meaning that the county has now gone through the process of officially coming into the sudden oak death regulations established by USDA and CDFA. This request represents the initiation of a parallel effort on the part of Cal Fire to bring the county within the Board of Forestry-established sudden oak death Zone of Infestation, consistent with the California Forest Practice Rules. The primary purpose of the Establishment or Expansion of a ZOI with regard to SOD specifically is to prevent, to the greatest extent possible, the human-assisted movement of the pathogen out of the Zone through commercial forest activities. The primary mechanism for this is a requirement for the inclusion of host plants known to occur in the area covered by the harvest document and the inclusion of specific mitigations aimed at preventing pathogen spread.

It is our hope that expansion of the SOD ZOI will help slow the spread of the pathogen to any other areas containing susceptible hosts near known infested areas. One important factor in Del Norte's *P. ramorum* infestation sets it apart from all the other California counties within the Zone: the infestation in Del Norte County is caused by a genetic variant of the same pathogen that causes SOD within California. Up until 2020, all SOD infections in California forest trees were caused by a strain (genotype) of *P. ramorum* designated NA1. "NA" here indicates that this genotype was first detected, and has been historically primarily present, in North America. "1" indicates the mating type of the pathogen: for this species, mating type "1" can only reproduce sexually if it encounters a species of mating type "2". Both NA2 and EU1 (European strain) isolates had previously been found in California nurseries, but NA1 was the dominant type in the forest environment. The 2020 detection of this pathogen in Del Norte County was determined to belong to the EU1 strain. Additionally, DNA analysis at the USDA Agircultural Research Service in Oregon determined that the specific genotypes present at the Del Norte County EU1 site match genotypes collected from forests in Curry County, Oregon and from nurseries in California, making it very difficult to speculate about the origination point of this strain with the limited number of samples to date.

Although they belong to the same species, the NA1 and EU1 strains differ in several important respects. Not all these differences are completely understood. Although the two strains differ somewhat in morphology, the most important differences are regarding aggressiveness on their various host trees and potential rates of spread in forests. Some evidence has emerged that the EU1 strain may be more aggressive on tanoaks and that it may spread faster in forests. Additionally, in British and Irish forests, where it has been established for many years, the EU1 strain appears to cause more noteworthy symptoms on conifers than the NA1 strain does in the West Coast. In America, the NA1 strain has only been found to cause occasional tip dieback in conifers such as coast redwood, Douglas-fir, and grand fir, and then only when a conifer crown is positioned near tanoaks or bay laurels, has fresh, green shoot tissues (e.g., after budbreak), and

an intense rainy period occurs. In contrast, the EU1 strain in the UK has been observed to cause large bleeding cankers and top dieback of small trees on Douglas-fir, Sitka spruce, and western hemlock, all of which are non-native, planted species there.

Concern about this possible increased aggressiveness, faster spread, and damage to conifers prompted a consortium of landowners and agency personnel to implement SOD management activities centered on the State Route 197 infestation. These efforts included herbicides to kill the original 11 infected and symptomatic trees and other tanoaks (very little bay laurel grows in the stand) in a 21-acre area around these trees, followed by removal of the herbicided stems likely to fall onto the roadway and disposal of those stems in a Cal Fire air curtain burner or by burning at a biomass facility. As long-term monitoring of this site and intensive surveys of the surrounding area commence to provide follow-up support, we are requesting the establishment of a ZOI covering the area to provide an important additional tool to help prevent further pathogen spread.

Since the first draft of this request was written, a third genetic variant of *Phytophthora ramorum*—NA2—has been detected in Del Norte County, near the Tolowa dee-'Ni culturally and historically important site known as See-tr'ee-ghin-dvm-dvn, also called Peacock Bar and co-managed with California State Parks. The co-presence of several strains makes it more likely that unusual/novel *P. ramorum* behavior will be observed in future years in Del Norte County.

DESCRIPTION OF PROPOSED ZONE

Phytophthora ramorum is known to cause tree mortality in two broadly defined forest types in the coastal California counties: redwood-dominated forests in the fog belt, and Douglas-fir-dominated forests inland and upslope from the redwood-dominated forests. *P. ramorum* establishes and spreads more easily and rapidly in the first type, but it may have greater impact in the second, because in many coastal forests containing Douglas-fir, tanoak shares canopy dominance, whereas in redwood forests, tanoak is generally a mid-story tree.

Figure 1 shows the distribution of vegetation in Del Norte County depicted as Wildlife Habitat Relationship types. Six types seem to dominate much of the county:

(1) The band of light green along the coast, classified as the **Redwood** type, in which redwood dominates. Sitka spruce, grand fir, Douglas-fir, and western hemlock sometimes share canopy dominance. Tanoak, red alder, salal, California hazelnut, and rhododendron are in the mid- or understory. Most of these plants are susceptible to *P. ramorum* to some degree, although few sustain significant damage.
(2) Patches of brown interspersed throughout near-coastal types: this represents the **Montane riparian** type. Dominant tree species in this type includes black cottonwood, red alder, bigleaf maple, Oregon ash, and various willow species.
(3) Patches of gray interspersed between the Redwood type, mostly representing higher elevations between major drainages: these are classified as the **Montane Hardwood-Conif**er type. In this type, at least one-third of the canopy comprises hardwood species including California black oak, Pacific madrone, tanoak, Oregon white oak, and bigleaf maple, and at least another third comprises conifers including Douglas-fir, incense-cedar, sugar pine, and ponderosa pine.
(4) Small patches of powder blue scattered to the east of the Redwood zone and still interspersed with the gray Montane Hardwood-Conifer type: this represents the

Douglas-fir type, which varies according to moisture regime and soil parent material. On mesic sites with deep soils, Douglas-fir is dominant with tanoak in the understory. On drier sites, Douglas-fir often shares dominance with a suite of other species including tanoak, Pacific madrone, sugar pine, ponderosa pine, California black oak, and canyon live oak. On soils derived from serpentine, it shares dominance with Port Orford-cedar on wetter sites and with incense-cedar, Jeffrey pine, western white pine, and knobcone pine on drier sites.

(5) Broad blocks and bands of teal in the central part of the county: this represents the **Klamath mixed conifer** type. This type is characterized by dominance of a mix of conifers, mostly including white fir, Douglas-fir, ponderosa pine, sugar pine, and incense-cedar. Scattered localities within this type feature a great diversity of conifer species rare in California.

(6) A broad block of pink in north-central Del Norte County. This is a **Mixed Chaparral** type, mostly located on ultramafic or metamorphic parent materials, featuring many species of sclerophyllous shrubs including various scrub oaks, ceanothus species, and manzanita species.

Current understanding of *P. ramorum* biology indicates that the pathogen has the greatest potential to spread quickly and cause high mortality impacts in the the **Redwood**, **Montane Hardwood-Conifer**, and **Douglas-fir** types.

Considerations other than susceptible vegetation of Del Norte County may exist that could influence the optimal location of Zone of Infestation boundaries. These considerations may include patterns of travel, economic impacts to the county or to affected industries, Native American historic territories or other tribal considerations, and, most importantly, climate.

Climate. Del Norte County is the wettest county in California, with an average annual rainfall of 70-140 inches. Figure 2, taken from the PRISM climate group at Oregon State University, shows that high precipitation areas are generally distributed across the entire county with the exception of Point St George near Crescent City, which receives 50-60 inches per year on average. These precipitation levels are well above the minimum required to sustain sudden oak death epidemics; areas of the California coast near San Francisco Bay receive on average less than 60 inches per year and have experienced major mortality episodes. Precipitation values in Del Norte County resemble those in Curry County, Oregon, immediately to the north, where sudden oak death has slowly expanded despite aggressive and sustained attempts at control.

Travel patterns. Much of Del Norte County is mountainous, isolated, and served by unimproved roads. However, hunting and woodcutting bring many people into the near-backcountry areas on the Six Rivers National Forest. Of the two known *P. ramorum* sites, one is on an unimproved dirt-surfaced road (Howland Hill Road) with significant water accumulation and runoff to vegetation during the wet season and very noticeable dust movement onto vegetation in the summer. The other is along State Route 197, one of the four county roadways designated "arterials" by the Del Norte Local Transportation Commission. Both corridors handle heavy traffic loads, Howland Hill Road because of numerous tourist visits and SR 197 because it serves as a cutoff road between Highway 101 and Highway 199 for traffic leaving Curry County, Oregon en route to the Grants Pass/I-5 area in Josephine County, Oregon. Although greater

concern would normally exist on unimproved roadways with mud and water accumulation, it is noteworthy that the European strain of *P. ramorum* first appeared along the well-maintained, paved SR 197.

Economic impacts. Any potential designation of a Zone of Infestation by the Board of Forestry will affect natural resource- and agriculture-dependent industries in Del Norte County. The two most prominent of these are the Easter lily bulb growing industry and the privately owned timber industry. Since sudden oak death was first seen in California, the Del Norte County Agriculture Department has been working to help the lily bulb industry by explaining to out-of-state and out-of-country receivers that lily bulb cultivation and shipping has minimal chance of transmitting *P. ramorum,* both because of clean growing practices and because lily fields are not likely places for *P. ramorum* establishment. The Agriculture Department has obtained necessary compliance agreements/phytosanitary certificates that should enable shipments to the largest customer, Canada, regardless of the county's regulatory status. The timber industry has an active interest in the size and location of any proposed Zone of Infestation because such a designation will impact shipment of forest products out of Del Norte County to the east (Siskiyou County) and north (Josephine and Jackson Counties, Oregon), because harvest documents within the ZOI will require sudden oak death mitigations to be specified, and not least because the ZOI could influence the rate of spread within Del Norte County timberlands (the smaller and more focused the ZOI, presumably the slower the spread to other areas of the county not within the ZOI).

Native American concerns. Both the SOD infestation in Del Norte County and the neighboring infestations in Curry County, OR fall within the territory of the Tolowa dee-'Ni Nation. Cal Fire and UCCE have kept in close touch with the tribe since the first detections in the county. Tribal concerns understandably center around culturally important vegetation such as tanoak and bay laurel that could be affected by the pathogen, as well as safeguarding the integrity of important cultural sites with known *P. ramorum* presence. The tribe has contributed significant staff time to assisting with pathogen surveys and delineation of infested areas, and it is a committed partner to future efforts for fundraising and management work in support of pathogen suppression.

PRIMARY HOST VEGETATION AND DAMAGE

Although well over 100 host plants are known for *P. ramorum,* and a large number of these are common plants in coastal county forests, only a limited number are important to address here, either because they play important roles in disease transmission or because they sustain significant damage from the pathogen. This discussion will focus on hardwood hosts, conifers, and shrubs.

Hardwood hosts. The two most important hardwood hosts of *P. ramorum* in West Coast forests are California bay laurel (*Umbellularia californica*) and tanoak (*Notholithocarpus densiflorus*). Bay laurel (a.k.a. pepperwood or Oregon myrtlewood) is considered the tree species most important to pathogen spread; *P. ramorum* infects leaves and produces extremely high numbers of infective spores on them during wet weather, although the infection does not cause significant whole-tree damage. Tanoak, on the other hand, is susceptible to fatal bole infections as well as producing large numbers of spores on infected twigs and leaf petioles. Interestingly, in Oregon infections, bay does not appear to act as an important spreading host as it does in California. Del

Norte County may resemble Oregon more than California in this respect: out of hundreds of bay leaves sampled over the past two decades in Del Norte County, only one or two have been positive for *P. ramorum* infection. The other confirmed positives have come from tanoak, swordfern (*Polystichum munitum*), or red huckleberry (*Vaccinium parvifolium*). Other hardwoods in Del Norte County that can be susceptible to fatal infections include California black oak (*Quercus kelloggii*) and canyon live oak (*Quercus chrysolepis*), but these species typically sustain much lower mortality rates than tanoak, which has been known to experience nearly 100% mortality in the wettest areas. In a given infested area, the pathogen usually infects and kills the largest tanoaks at the fastest rates. When the pathogen kills a tanoak, it only kills from the root crown upward, leaving the basal burl to produce new sprouts. The long-term fate of these sprouts (i.e., whether a typical *P. ramorum*-killed tanoak produces sprouts that can survive to reproductive maturity) is unknown.

Conifer hosts. Until recently, California conifers were not considered important in the context of sudden oak death: redwood, Douglas-fir, and grand fir sustain infections of succulent (green) growing shoots, but these infections usually dry up and fall off quickly without producing any lasting effect on the tree. However, the appearance of the EU1 strain may change our understanding. In the United Kingdom, this strain has been observed to cause bleeding cankers and top dieback of Douglas-fir, Sitka spruce, and western hemlock, all species common in Del Norte County. We do not yet know the potential for the EU1 strain to be aggressive on coast redwood.

Shrub hosts. Although many shrub hosts in Del Norte County forests can host *P. ramorum,* they all experience limited symptoms and damage. Possible exceptions are Pacific rhododendron (*Rhododendron macrophyllum*), which has been observed in Curry County to experience significant branch dieback when infected by this pathogen, and red huckleberry, from which we isolated the EU1 strain of *P. ramorum* at the SR 197 site. Additionally, many species of manzanita have been observed to experience extensive dieback and even death when infected by *P. ramorum* in California.

EXISTING DEL NORTE COUNTY CONTROL EFFORT

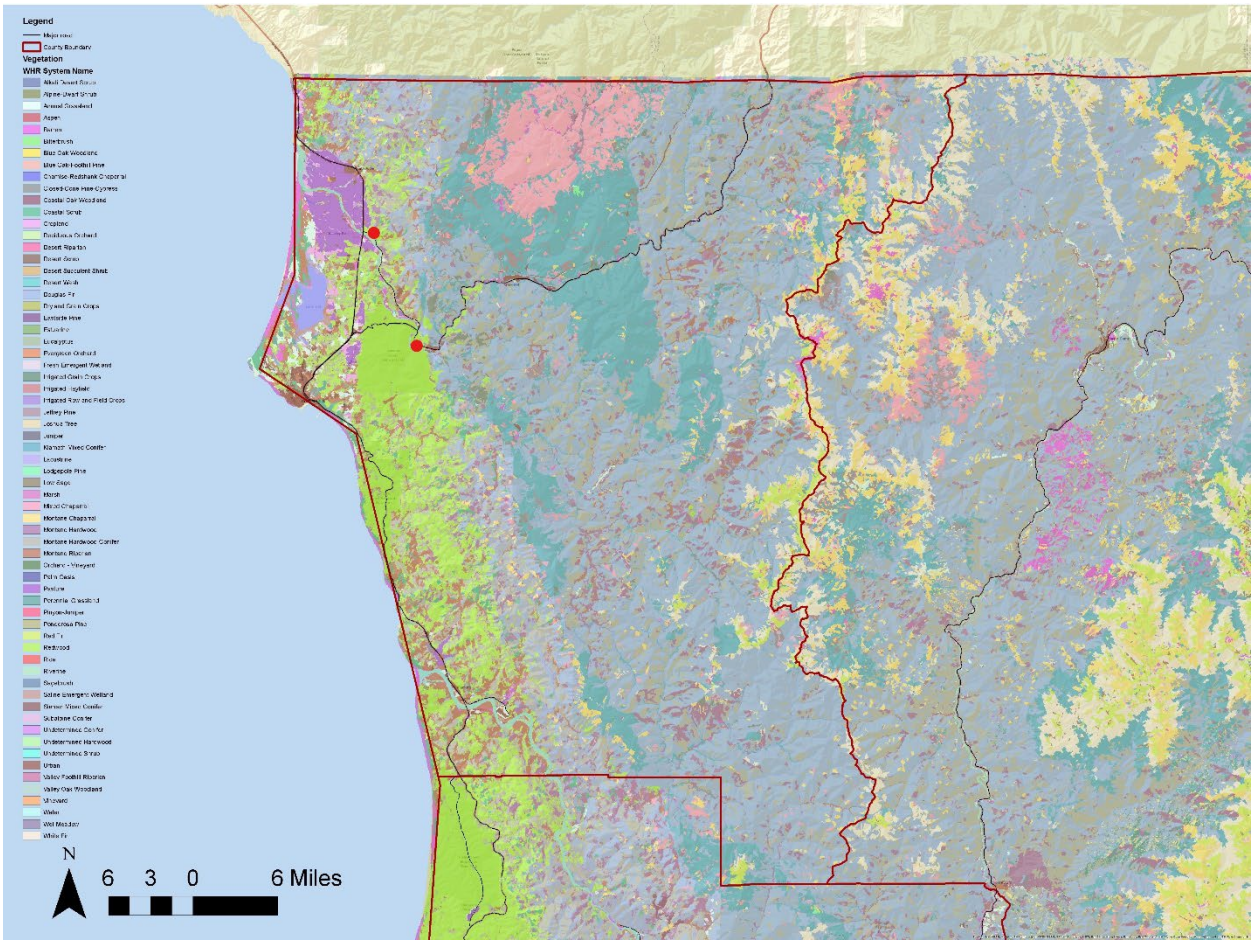
Upon the detection of *P. ramorum* along SR 197 in late summer 2020, a slow-the-spread effort was initiated that focused on removing/killing infected host trees and all host trees (tanoaks and bays) within as large a buffer area as possible. The effort was led by UC Cooperative Extension, Cal Fire, and the two affected landowners, and it involved numerous other cooperators, including the County of Del Norte. In mid-November, tanoak and bays were treated with herbicides within a 21-acre block extending along SR 197 from the highway up the slope to a regenerating clearcut that serves as a potential barrier to pathogen spread. Only two mature bay trees existed within the treatment area, supporting the idea that in Del Norte County, tanoaks are the primary host driving disease spread. Trees with the potential to reach SR 197 upon dying and falling were removed by Cal Trans and the woody residues incinerated in either a Cal Fire air curtain burner or a biomass facility in nearby Humboldt County.

REQUESTED ZONE OF INFESTATION BOUNDARIES

In light of continued expansion of this pathogen in Del Norte County, the requested Zone of Infestation encompasses the entirety of the County. This would match existing quarantine boundaries already enacted by USDA APHIS and CDFA.

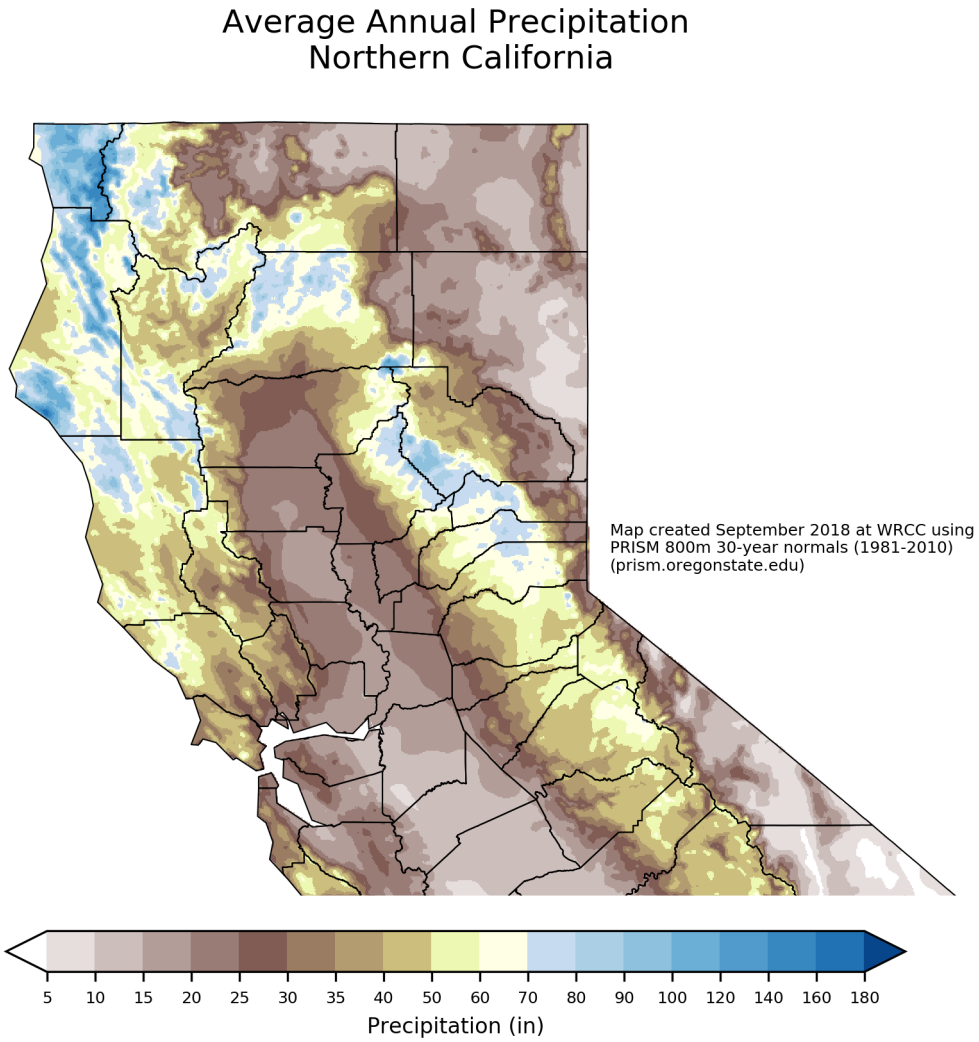
Appendix A: Vegetation Map

WHR vegetation classification of Del Norte County, with known *P. ramorum* locations marked by red dots.



Appendix B: Del Norte County Precipitation

PRISM Group (Oregon State University) 30-year (1960-1991) average of precipitation in northern California including Del Norte County.



Appendix C: APHIS List[1] of Regulated Hosts and Plants Proven or Associated with *Phytophthora ramorum*

July 2020

Plants Proven to be Hosts of *Phytophthora ramorum*

Scientific Name	Common Name(s)	Notes
*Acer macrophyllum**	Bigleaf maple	
Acer pseudoplatanus	Planetree maple	
*Adiantum aleuticum**	Western maidenhair fern	
*Adiantum jordanii**	California maidenhair fern	
*Aesculus californica**	California buckeye	
Aesculus hippocastanum	Horse chestnut	
*Arbutus menziesii**	Madrone	
*Arctostaphylos manzanita**	Manzanita	
*Calluna vulgaris**	Scotch heather	
Camellia spp.*	Camellia - all species, hybrids and cultivars	
*Castanea sativa**	Sweet chestnut	
*Cinnamomum camphora**	Camphor tree	
Fagus sylvatica	European beech	
*Frangula californica (≡Rhamnus californica)**	California coffeeberry	
Frangula purshiana (≡*Rhamnus purshiana*)*	Cascara	
Fraxinus excelsior	European ash	
*Gaultheria procumbens**	Eastern teaberry	
*Griselinia littoralis**	Griselinia	
*Hamamelis virginiana**	Witch hazel	
*Heteromeles arbutifolia**	Toyon	
Kalmia spp.*	Mountain laurel - all species, hybrids and cultivars	
*Laurus nobilis**	Bay laurel	

Lithocarpus densiflorus (Notholithocarpus densiflorus[2])	Tanoak	
*Lonicera hispidula**	California honeysuckle	
*Maianthemum racemosum (=Smilacina racemosa)**	False Solomon's seal	

Scientific Name	**Common Name(s)**	**Notes**
*Michelia doltsopa** *(Magnolia doltsopa[2])*	Michelia	
*Parrotia persica**	Persian ironwood	
*Photinia fraseri**	Red tip photinia	
Pieris spp.*	Andromeda, Pieris - all species, hybrids and cultivars	
Pseudotsuga menziesii var. *Menziesii**	Douglas fir	Also includes all other varieties and cultivars of nursery grown *P. menziesii*
Quercus agrifolia	Coast live oak	
Quercus cerris	European turkey oak	
Quercus chrysolepis	Canyon live oak	
Quercus falcata	Southern red oak	
*Quercus ilex**	Holm oak	
Quercus kelloggii	California black oak	
Quercus parvula var. *shrevei*	Shreve's oak	Also includes all other varieties and cultivars of nursery grown *Q. parvula*
Rhododendron spp.*	Rhododendron (including azalea) – all species, hybrids and cultivars	
*Rosa gymnocarpa**	Wood rose	
*Salix caprea**	Goat willow	

*Sequoia sempervirens**	Coast redwood	
*Syringa vulgaris**	Lilac	
*Taxus baccata**	European yew	
*Trientalis latifolia**	Western starflower	
*Umbellularia californica**	California bay laurel, pepperwood, Oregon myrtle	
*Vaccinium ovatum**	Evergreen huckleberry	
Viburnum spp.*	Viburnum – all species, hybrids and cultivars	

***Unprocessed wood and wood products, including firewood, logs, lumber, and bark chips or mulch of species listed above and marked with an asterisk (*) are not regulated.

Plants Associated with *Phytophthora ramorum*

(These are regulated only as nursery stock)

Scientific Name	**Common Name, Date & Source of Report**	**Notes**
Abies concolor	White fir – Oct 05 (1)	
Abies grandis	Grand fir – June 03 (1)	
Abies magnifica	Red fir – Jan 06 (7)	
Acer circinatum	Vine maple – Feb 06 (5)	
Acer davidii	Striped bark maple – Jan 06 (9)	
Acer laevigatum	Evergreen Maple – Aug 05 (3)	
Arbutus unedo	Strawberry tree – Dec 02 (7)	
Arctostaphylos columbiana	Manzanita – Feb 06 (5)	
Arctostaphylos uva-ursi	Kinnikinnick, bearberry – Jan 07 (10)	
Ardisia japonica	Ardisia – Jan 06 (9)	
Calycanthus occidentalis	Spicebush – May 05 (5)	
Castanopsis orthacantha	Castanopsis - Aug 06 (3)	
Ceanothus thyrsiflorus	Blueblossom – April 06 (5)	
Clintonia andrewsiana	Andrew's clintonia bead lily – May 04 (5)	

Cornus kousa x Cornus capitata	Cornus Norman Haddon – Aug 06 (3)	
Corylus cornuta	California hazelnut – Dec 02 (5)	
Distylium myricoides	Myrtle-leafed Distylium – Jul 06 (9)	
Drimys winteri	Winter's bark – July 04 (3)	
Dryopteris arguta	California wood fern – May 04 (5)	
Eucalyptus haemastoma	Scribbly gum – Aug 06 (3)	
Euonymus kiautschovicus	Spreading euonymus–Jan 06 (9)	
Fraxinus latifolia	Oregon ash – Aug 05 (5)	
Gaultheria shallon	Salal, Oregon wintergreen – Jan 06 (9)	
Hamamelis x intermedia (H. mollis & H. japonica)	Hybrid witchhazel – Jan 06 (9)	
Hamamelis mollis	Chinese witchhazel – Jan 05 (3)	
Ilex cornuta	Buford holly, Chinese holly – April, 09 (11)	
Ilex purpurea	Oriental holly – Jul 06 (9)	
Illicium parviflorum	Yellow anise (13)	
Larix kaempferi	Japanese larch- Aug 2009 (3) July 2010 (12)	

Leucothoe axillaris	Fetterbush, dog hobble – Jan 06 (9)	
Leucothoe fontanesiana	Drooping leucothoe - Oct 03 (3)	
Loropetalum chinense	Loropetalum – Jul 06 (9)	
Magnolia denudata	Lily tree- Dec 2010 (3)	
Magnolia grandiflora	Southern magnolia – Jan 06 (9)	
Magnolia x loebneri	Loebner magnolia – Jan 05 (3)	
Magnolia x soulangeana	Saucer magnolia – Jan 05 (3)	
Magnolia stellata	Star magnolia – Jan 05 (3)	
Mahonia nervosa (Berberis nervosa[2])	Creeping Oregon grape - May 2010 (10)	
Manglietia insignis (Magnolia insignis[2])	Red lotus tree – Aug 06 (9)	

Michelia maudiae (Magnolia maudiae [2]*)*	Michelia	
Michelia wilsonii (Magnolia ernestii[2]*)*	Michelia	
Molinadendron sinaloense	August 2011 (1)	
Nerium oleander	Oleander – June 06 (1)	
Nothofagus obliqua	Roble beech – Dec 04 (3)	
Osmanthus decorus (≡Phillyrea decora; ≡P. vilmoriniana)	Osmanthus – Jan 06 (9)	
Osmanthus delavayi	Delavay Osmanthus, Delavay tea olive – Jan 07 (10)	
Osmanthus fragrans	Sweet olive – June 06 (1)	
Osmanthus heterophyllus	Holly olive – June 06 (1)	
Osmorhiza berteroi	Sweet Cicely – Aug 05 (5)	
Parakmeria lotungensis (Magnolia lotungensis[2]*)*	Eastern joy lotus tree – Jul 06 (9)	
Pittosporum undulatum	Victorian box – Dec 02 (6)	
Prunus laurocerasus	English laurel, cherry laurel – Jan 07 (10)	
Prunus lusitanica	Portuguese laurel cherry – Jan 06 (9)	
Pyracantha koidzumii	Formosa firethorn – Apr 04 (9)	
Quercus acuta	Japanese evergreen oak – May 06 (3)	
Quercus petraea	Sessile oak – Aug 05 (3)	
Quercus rubra	Northern red oak – Nov 03 (8)	
Rosa (specific cultivars) Royal Bonica (tagged: "MEImodac") Pink Meidiland (tagged:	Hybrid roses – Jan 06 (9)	
"MEIpoque") Pink Sevillana (tagged: "MEIgeroka")		
Rosa rugosa	Rugosa rose – Jan 06 (9)	
Rubus spectabilis	Salmonberry – Dec 02 (4)	
Schima wallichii	Chinese guger tree, needlewood – Nov 06 (3)	

Taxus brevifolia	Pacific yew – May 03 (5)	
Taxus x media	Yew – June 05 (8)	
Torreya californica	California nutmeg – Aug 05 (5)	
Toxicodendron diversilobum	Poison oak – Dec 02 (4)	
Trachelospermum jasminoides	Star jasmine, Confederate jasmine- May (2); June (1), 2010	
Vancouveria planipetala	Redwood ivy – Aug05 (5)	
Veronica spicata (=Pseudolysimachion spicatum)	Spiked speedwell-June 2010 (1)	

[1] *This list is based on 7 CFR §301.92-2 - Restricted, regulated, and associated articles; lists of proven hosts and associated plant taxa for Phytophthora ramorum.*

[2] *Plants that have new nomenclature names, but to keep this list consistent with 7 CFR §301.92-2, we temporarily place the new names in parenthesis until changes are made in the CFR.*

(From parentheses numbers above) – Sources of reports of detections and identifications

1
California Department of Food and Agriculture, Sacramento, CA

2
Oregon Department of Agriculture. Salem, OR

3
Department for Environment, Food and Rural Affairs, UK; (February, 2010) Food and Environment Research Agency (FERA)

4
Everett Hanson, Oregon State University, Corvallis, OR

5
David Rizzo, University of California, Davis, CA

6
Matteo Garbelotto, University of California, Berkeley, CA

7
Gary Chastagner, Washington State University, Puyallup, WA

8
Plant Protection Service, Wageningen, Netherlands

9
Canadian Food Inspection Agency, Ottawa, Ontario, Canada

10
Washington State Department of Agriculture, Olympia, WA

11
Molecular Diagnostics Laboratory, Beltsville, MD

12
Department of Agriculture, Fisheries and Food, Ireland

13
Alabama Department of Agriculture and Plant Industry

Rationale for Lists:

Host Plants Regulated for *Phytophthora ramorum:*
Naturally infected associated plants are deemed host plants regulated for *P. ramorum* upon completion, documentation, review, and acceptance of traditional Koch's postulates.

Plants Associated with *Phytophthora ramorum*:
Plants associated with *P. ramorum* are naturally infected plants from which *P. ramorum* has been cultured and/or detected using PCR (Polymerase Chain Reaction). Traditional Koch's postulates have not yet been completed nor documented and reviewed for each of these associated plants. These reports must be documented and reviewed by PPQ before they will be listed.

Regulation at the genus level:
Plants included in either of the above lists may be regulated at the genus level. This will ensure appropriate and effective inspection in quarantine areas, regulated establishments (e.g. nurseries), and regulated articles to mitigate the spread of *P. ramorum*. Examples of this include when the number of individual species, hybrids, or cultivars listed or to be listed are determined to hinder appropriate and effective inspection or regulation; or when sufficient numbers of member species of a genus are known susceptible to the disease causing organism, all members of that genus have a demonstrable risk of spreading that disease. Thus, to prevent the spread of disease, all members of that genus will be treated the same.

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