

2004 2003 2002 2001 2000 1998 1995



Trace-forwards and positive detections across U.S. July 2004



Legend
 ★ Positive site
 ● All trace forward sites

1/03
P. ramorum is isolated from grand fir (*Abies grandis*) Christmas trees at a Santa Clara County, CA Christmas tree plantation.

Camellia is identified a *P. ramorum* host in a UK nursery.

5/03
P. ramorum is detected in four CA nurseries, including a location approximately 100 miles east of the closest known infested area.

6/03
P. ramorum is detected for the first time in Washington State, on rhododendron container plants at a nursery in King County and the European strain (EU1) is detected at a nursery near Vancouver, BC, Canada.

10/03
 Phosphonate fungicide is approved by the California Department of Pesticide Regulation to treat individual oak and tanoak trees at high-risk of contracting *P. ramorum*.

11 – 12/03
P. ramorum is found infecting beech, several oak species, and horse chestnut trees in the Netherlands and UK; in all cases, the infected trees are located near *P. ramorum*-infected rhododendrons.

Another new *Phytophthora* species (later named *P. kernoviae*) is identified by UK Forest Research while looking for *P. ramorum* in natural settings in Cornwall.

2/02
 The U.S. (USDA APHIS) issues an interim federal quarantine for interstate movement of *P. ramorum* host material.

4/02
 England reports *P. ramorum* on *Viburnum tinus* in a nursery.

5/02
 The UK issues a *P. ramorum* quarantine, followed by Australia (9/02); and the EU (11/02). UC researchers confirm coast redwood and Douglas-fir are susceptible to *P. ramorum* by isolating the pathogen from needles and branches.



1/01
 The new *Phytophthora* associated with dying oaks is recovered from rhododendron container plants in a Santa Cruz, CA nursery.

Oregon issues the first emergency quarantine against the new pathogen, a ban on host plants and other plant products from California.

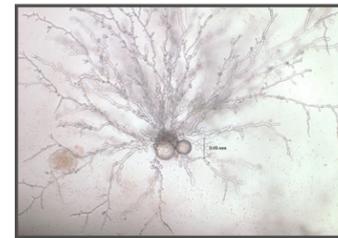
02/01
 Huckleberry (*Vaccinium ovatum*) is confirmed as a host of the new *Phytophthora*.

3/01
 Canada issues the first international quarantine on California plants to prevent movement of the new *Phytophthora*.

5/01
 The new *Phytophthora* is recovered from California bay laurel and Pacific madrone.

7/01
 The new *Phytophthora* is discovered on 40 acres in Curry County, OR. The area is placed under quarantine and eradication initiated.

10/01
 The new *Phytophthora* is formally named "*Phytophthora ramorum*" in: S. Werres and others. 2001. *Phytophthora ramorum* sp. nov., a new pathogen on Rhododendron and Viburnum. Mycological Research 105(10): 1155-1165.



7/00
 David Rizzo and Matteo Garbelotto, University of California, identify the cause of Sudden Oak Death to be a previously unknown *Phytophthora* species.

11/00
 Clive Brasier, UK Forest Research recognizes that an unnamed *Phytophthora* from rhododendron in Germany and the Netherlands, isolated in 1993/94, appears to be identical to the new *Phytophthora* from dying oaks in California.



1998
 Coast live oaks are reported dying in large numbers in Marin and Santa Cruz Counties, CA.



1995
 Large numbers of tanoaks are observed dying in Marin and Santa Cruz Counties, CA.

Sudden Oak Death: 1995 to 2013

2007 2008 2009 2010 2011 2012 2013

3/07
 The European (EU1) *P. ramorum* lineage is reported for the first time in California, isolated from a retail nursery in Humboldt County.

4/07
 The National *P. ramorum* Early Detection Survey for Forests recovers positive waterways in Washington state and Mississippi. Further sampling in Mississippi recovers the pathogen on riparian willow plants.

6/08
 The Big Sur Basin Complex fire burns in areas with elevated fuels due to SOD mortality.



6/09
 Residential landscapes in WA and South Carolina are found positive due to Rhododendrons purchased from WA nurseries. South Carolina implements state regulations regarding the importation of *P. ramorum* host plants into SC from CA, OR, and WA nurseries.

7/09
 Salal (*Gaultheria shallon*) plants are found *P. ramorum*-positive around the perimeter of a Pierce County, WA retail nursery. The infested salal plants in the natural landscape are infected with the NA2 lineage.

11/09
 Japanese larch, western hemlock, and birch are reported as new *P. ramorum* hosts by the UK, with Japanese larch foliage strongly supporting *P. ramorum* sporulation.



4/11
 Approximately 2 million Japanese larch (*Larix kaempferi*) trees are felled in the UK in response to the *P. ramorum* outbreak.

9/11
 A *P. ramorum*-positive site 6 miles north of the quarantine boundary is found in Curry Co., OR. The infested tanoak trees are near Cape Sebastian State Park, over 12 miles from the nearest known infestation.

7/12
 A fourth, genetically distinct lineage of *P. ramorum* (EU2) is discovered in the UK on Japanese larch.

12/12
 The National *P. ramorum* Early Detection Survey of Forests identifies three new positive waterways in Georgia, Texas, and Washington, bringing to 15 the total number of known positive sites outside of the established disease range in CA and OR.

1/13
 The USDA Forest Service, Forest Health Protection aerial survey identifies over 300,000 trees recently killed by *P. ramorum* along the California coast in 2012. *P. ramorum* remains the number one cause of tree mortality in coastal California with millions of trees killed over the past decade.



3/13
 Expansion and intensification of disease in Oregon increases the quarantine area to 264 sq. mi. The quarantine area includes the "Generally Infested Area" where *P. ramorum* treatment is no longer required.



11/13
 The number of *P. ramorum* host plants grows to 138 as USDA APHIS adds *Gaultheria procumbens* to the regulated host list.

Photo credits
 California Oak Mortality Task Force (1995)
 Marin Co. Fire Dept. (1998)
 U.C. Davis (2000)
 U.C. Cooperative Extension - nursery (2001)
 U.C. Davis - bay leaves (2001)
 USDA APHIS (2004)
 Howard Kuljian, Humboldt State University (2008)
 UK Forestry Commission (2009)
 USDA FS - both (2013)

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