

Symposium on English holly in Pacific Northwest Forests

Meeting Summary

Compiled by David Stokes

The holly symposium was held at St. Edward State Park on June 6, 2014, with approximately 70 people attending. The program consisted of 11 formal presentations, a panel discussion, informal discussion, and a field trip to see English holly and English holly removal in the forest at St. Edward Park.

Major themes from the presentations:

Holly proliferation and spread:

Multiple studies indicate that holly is proliferating and spreading rapidly in Northwest forests, both locally (Watts, Boyar et al., Nickelson, Yadrick et al., Stokes et al.) and regionally (Gray, Boyar et al.). Mapping of holly at both site (Watts, Boyar et al., Stokes et al., Nickelson) and larger (Boyar et al., Gray) scales has been an effective means of documenting holly spread.

Holly is present in forests in all three west-coast states, but may be most prevalent in western Washington (Gray).

Holly is clearly spreading rapidly in urban and suburban locations (Yadrick et al., Stokes et al.) and also appears to be spreading rapidly in areas farther from urban cores (Gray, Boyar et al., Nickelson, Watts).

It is spreading rapidly by both seed and vegetatively (Stokes et al.), and the invading population is in a life stage of low mortality and rapid size increase (Stokes et al.)

It is spreading in diverse forest types (Watts, Gray), including evergreen (Lopez and Stokes, Nickelson, Boyar et al.) and large diameter forest stands (Gray, Watts, Boyar et al.)

While holly can invade diverse forest environments, forest edges seem particularly prone to invasion (Lopez and Stokes).

Holly is increasing approximately exponentially in at least some locations (Stokes et al.); at the current rapid rate of increase, holly has the potential, within decades, to become a dominant tree species in western Washington forests (Lopez and Stokes)

Holly is capable of dense infestation to the extent of altering the physical structure of the forest (Nickelson).

Holly strongly reduces native plant cover and native plant species diversity under its canopy (Church and Stokes).

Infestations appear to be associated with spread from intentional plantings, including residential ornamental use and holly farms (Stokes et al, Watts, Boyar et al.).

In addition to being grown commercially (Boyar et al., Smith), English holly was the object of intense introduction efforts in the early to mid 1900's by volunteer groups with the goal of making Washington the "Holly State" (Smith).

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Holly is most concentrated at low elevation in Northwest forests (Gray), but has also been found at mid elevations in the western Cascades of Washington (Boyar et al.)

Holly control and management

English holly populations and cover can be greatly reduced through removal efforts (Nickelson, Yadrick et al., Salisbury, Williams and Stokes).

Among three herbicides tested (imazapyr, triclopyr ester, and glyphosate), imazapyr and triclopyr ester are the most effective for killing holly using stem-treatment methods. Glyphosate was significantly less effective and resulted in more stump sprouts and survival than the other two products tested (Salisbury).

Among three stem-treatment methods (frilling, cut-stump, and injection), injection using the EZ-Ject tool and imazapyr capsules is the most effective and time-efficient method, followed by cut-stump or frilling with triclopyr ester (Salisbury).

Uprooting, e.g., with a Weed Wrench, Extractigator, or similar tool, provides fairly effective control (Nickelson, Williams and Stokes) but is limited to smaller plants (Williams and Stokes).

Hack and slash treatment with 50% glyphosate resulted in re-growth of holly below treatment line (Nickelson).

Treatment of all kinds was more likely to lead to death of smaller trees than larger trees (Williams and Stokes).

Injection with imazapyr and frilling with triclopyr ester were equally effective in spring and fall (Salisbury). Injection with glyphosate was less effective. Fall treatment with glyphosate resulted in fewer sprouts than spring treatment (Salisbury). Winter cut-stump treatment with glyphosate resulted in fewer sprouts than spring treatment (Williams and Stokes).

Points raised during panel and informal discussions and field trip

Because of holly's rapid spread and low mortality rate, and the rapid size increase and growth potential characteristic of holly in the age range at which it occurs in PNW forests, there is an urgent need to develop a management plan for this invasive before growth in numbers, extent, and tree size makes it less feasible to manage.

Because holly is appearing in many locations far from major roads or trails, it is likely that casual removal efforts will not succeed in controlling it.

Listing as a noxious weed in Washington may be useful in the effort to control holly, but any such listing initiative must be carefully considered and evidence-based, and appeal to economic considerations. Simply documenting the invasiveness of holly, while useful, is not sufficient. Understanding the impacts of invasive holly and documentation of economic impacts will be important.

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Public education about the invasiveness of holly is needed. Ideas included:

Parks ambassadors for urban and suburban parks to communicate with residents of neighborhoods around parks to encourage them to remove, or not plant, invasive plants such as holly.

Use by parks of materials shown at the Symposium (e.g., photographs of holly infestation at Lake Youngs, time-lapse map sequences showing holly spread in St. Edward Park) to communicate to the public the problem.

Funding for holly control and holly research is needed. As holly seems to be expanding into federal lands, federal funds may be a source of resources.

Determination of the effects of holly on riparian systems may be of particular interest, given the commitment to protecting and restoring salmon and salmon habitat.

The following were identified as topics needing more research:

Effects of English holly on NW forest ecology, including the mechanisms of those effects.

Comparison of forest structure, species composition and diversity in forests with and without holly present, or at different levels of holly dominance.

Economic/resource effects of holly (e.g., on timber production and/or management).

Effects of holly on fire susceptibility of NW forests.

Effects of various timber management practices on holly spread

Invasibility of old-growth NW forests

The elevation range of holly. How high is it? How high will it go? The role of climate change.

Effects of holly on riparian forest systems.

Further testing of removal methods.

Recovery of native forest species after holly removal.