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Data Article

Mortality due to Japanese oak wilt disease and surrounding forest compositions

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ABSTRACT

Japanese oak wilt (*Raffaelea quercivora*) is a vector-borne disease transmitted by the flying ambrosia beetle, *Platypus quercivorus*, and causes mass mortality in the fagaceous species of Japan. The data described in this article are available in Mendeley Data, DOI: 10.17632/xwj98nb39r.1 [1] and include the mortality status of 1089 *Quercus crispula* and 846 *Quercus serrata* trees and surrounding forest conditions. The findings using this dataset were published in M. Oguro, S. Imahiro, S. Saito, T. Nakashizuka, Relative importance of multiple scale factors to oak tree mortality due to Japanese oak wilt disease, For. Ecol. Manag. (2015) doi:10.1016/j.foreco.2015.07.016 [2].

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Specifications table

Subject area	Ecology
More specific subject area	Forest pathology
Type of data	Text file

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How data was acquired	Field observation and geoprocesing of existing data.
Data format	Raw
Experimental factors	N/A
Experimental features	N/A
Data source location	Tsuruoka, Yamagata, Japan. Locations of field observation are included in the dataset.
Data accessibility	Data are provided in Mendeley Data, DOI: http://dx.doi.org/10.17632/xwj98nb39r.1

Value of the data

- This data provides field-observed viability status of 1935 trees and surrounding stand conditions.
 - This data also includes landscape factors with two spatial scales.
 - This data is useful for analyzing relationships between forest conditions and disease occurrence. Such information is crucial for effective disease management.
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1. Data

The data described in this article are available in Mendeley Data, DOI: 10.17632/xwj98nb39r.1

These data are: (1) viability status (dead/alive), (2) basal area, (3) species compositions of stands around the tree, and (4) landscape metrics around the tree for individuals of *Quercus crispula* and *Quercus serrata*. These data are shown in “data.csv”. For detailed explanation of each column in the files, please see Table 1.

2. Experimental design, materials and methods

2.1. Field observations at the stand level

From June to early July of 2009, we traveled all forest roads that could be accessed by car in the former Asahi Village, Kushibiki Town, and Nurumi Town areas of Tsuruoka City (Fig. 1). These forest roads were selected to cover the variation in land-use types and vegetation, and because of their accessibility. Land-use types found in the study region include secondary forest dominated by *Q. crispula*, beech forest, coniferous plantations of *Cryptomeria japonica*, *Pinus densiflora*, and *Larix kaempferi*, rice fields, and residential areas.

Every 200 m along the forest roads, we searched for the nearest *Q. crispula* or *Q. serrata* individual and recorded its location using a Global Positioning System (GPS) device. Locations of each study plot were noted in “gps_points.csv”. We established a circular plot with a 10 m radius around each tree, and identified all trees with a diameter at breast height (DBH) of > 10 cm within that area. *Q. crispula* stems with a diameter of < 10 cm are rarely attacked by *Platypus quercivorus* [3]. The DBH of each tree in each plot was measured, and trees were grouped into three classes according to size: 10–30 cm, 30–50 cm, and > 50 cm. For all *Q. crispula* and *Q. serrata* individuals in the plot, we also recorded viability status (dead or alive). Overall, a total of 365 plots were surveyed, containing a total of 4482 trees, including 1089 *Q. crispula* and 846 *Q. serrata* trees. This raw observation data was included in “trees.csv”.

Because previous studies [4,5] showed that the size of an individual tree is positively related to the occurrence of dieback, the basal areas (BA) of individual trees were calculated using their DBH measurements. The stand-level density of host trees is known to influence the occurrence of Japanese oak wilt [5,6]. In addition, the existence of non-host trees could potentially affect disease occurrence [7,8]. Therefore, the BAs and number of individuals were summed for each of three host species (*Q. crispula*, *Q. serrata*, and *F. crenata*), and each of the three groups of non-host species (*C. japonica*, other broad-leaved and coniferous species).

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