Pathogen Accumulation on Invasive Species *Acacia Decurrens* Willd. in Gunung Merapi National Park

Abstract

By:

Andreas Ade Kristian[1]

Sri Rahayu[2]

Widiyatno[2]

Acacia decurrens was reported as an invasive species in several locations in Indonesia, e.g. Gunung Merapi National Park (GMNP). GMNP located in the volcanic area that prone to and often affected by any volcanic activities. That condition stimulates the *A. decurrens* to be a dominant species there. The homogenous *A. decurrens* threaten the ecosystem of GMNP as a protected area since the invasive species would experience a pathogen accumulation over time. Thus, study of pathogen accumulation on invasive species in the protected area is very important for its managements. This study aims to assess the health status of *A. decurrens,* assess the development of the major damage types, and determine the relationship of pathogen accumulation on *A. decurrens* stands in GMNP following the 2010 eruption. The data were collected through a USDA Forest Health Monitoring (FHM) plots in the southern slope of Merapi Volcano in five observations since October 2016 until October 2018. The damages on *A. decurrens* were observed and later calculated using modified Chester formula. The result shows that canker, gummosis and borer holes were the major damage types with the stem as the most susceptible tree parts. The damages incidences were varied from rare to widespread while the damage severity were mostly low. Between the two years observations, the tree mortality was increased from 5% to 20%. Moreover, the canker and the tree mortality shows a positive relationship. Overall, the pathogen that accumulates on *A. decurrens* have a tendency to suppress its invasion in GMNP.

Keywords: *Acacia*, biological invasion, pathogen accumulation, Merapi, protected area

[1]Student of Faculty of Forestry, Universitas Gadjah Mada

[2]Lecturer in Faculty of Forestry, Universitas Gadjah Mada

Akumulasi Patogen pada Spesies Invasif *Acacia Decurrens* Willd. di Taman Nasional Gunung Merapi

Abstrak

Oleh:

Andreas Ade Kristian[1]

Sri Rahayu[2]

Widiyatno[2]

Acacia decurrens merupakan salah satu jenis invasif di beberapa lokasi di Indonesia, salah satunya di Taman Nasional Gunung Merapi (TNGM). Kondisi TNGM yang berada di kawasan gunung berapi menyebabkan kawasan tersebut sering terdampak erupsi. Hal tersebut dapat menstimulasi dominasi *A. decurrens* pada wilayah tersebut. Kondisi homogen *A. decurrens* mengancam ekosistem TNGM sebagai kawasan konservasi karena jenis invasif akan mengalami akumulasi patogen seiring berjalannya waktu. Sehingga studi mengenai akumulasi patogen pada jenis invasif di kawasan konservasi sangat penting bagi usaha pengelolaannya. Studi ini bertujuan untuk menilai status kesehatan *A. decurrens*, menilai perkembangan jenis kerusakan dominan, dan mengetahui hubungan antara akumulasi patogen pada tegakan *A. decurrens* di TNGM pasca erupsi tahun 2010. Data diperoleh melalui plot USDA *Forest Health Monitoring* (FHM) di lereng selatan Gunung Merapi pada lima kali pengamatan sejak Oktober 2016 hingga Oktober 2018. Kerusakan pada *A. decurrens* diamati dan setelah itu dihitung menggunakan modifikasi rumus Chester. Hasil studi menunjukkan bahwa canker, gummosis, dan lubang gerekan sebagai kerusakan yang dominan dengan batang menjadi bagian pohon yang paling rentan kerusakan. Luas kerusakan bervariasi antara jarang hingga menyebar luas, sedangkan intensitas kerusakan mayoritas rendah. Selama dua tahun pengamatan, persentase kematian pohon meningkat dari 5% menjadi 20%. Kemudian, canker dan tingkat kematian pohon menunjukan hubungan yang positif. Secara keseluruhan, patogen yang terakumulasi pada *A. decurrens* memiliki kecenderungan untuk menekan proses invasi jenis tersebut di TNGM.

Kata kunci: *Acacia*, invasi biologis, akumulasi patogen, Merapi, kawasan konservasi

[1]Mahasiswa Fakultas Kehutanan Universitas Gadjah Mada

[2]Staf pengajar di Fakultas Kehutanan Universitas Gadjah Mada