Hylastes ater **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Coleoptera	Curculionidae

Common name exotic bark beetle (English), bark beetle (English), black pine bark beetle (English)

Synonym
Hylastes angusticollis , Eggers
Hylastes pinicola , Bedel
Hylesinus chloropus , Duftschmidt
Ipsocossonus anomalus , Oke 1934

Similar species

Summary *Hylastes ater* is considered a pest in many regions due to the damage that it causes to trees, specifically pine species. Although this species is native to Europe, it has recently been declared a pest there. In addition, the introduction of the species into other countries, usually by accidental means, has become an issue primarily due to the damage it causes to the species, *Pinus radiata*, which affects aspects of the economy as well as ecosystems. *H. ater* is a widespread species that could continue to cause problems if not properly inspected and managed.

view this species on IUCN Red List

Species Description
Hylastes ater adults are cylindrical in form and are slate gray or shiny black in color. They have reddish-brown antennae and legs (CFIA, 2008). The elytra are coarsely punctate-striate, whereas the prothorax is finely punctate except for a conspicuous impunctate median ridge. The frons is marked with dense punctures (Walker, 2008). *H. ater* range in size from 3.5 to 5.5 mm long and 1.4 mm wide when they are adults. Viewed from above, *H. ater* has a small portion of head that projects beyond the pronotum. The head is projected downward and is prolonged into a short rostrum (CFIA, 2008). Eggs are pearly white in color, less than 1 mm long and about 0.4 mm wide with rounded ends and nearly parallel sides. The larvae are white, c-shaped, legless grubs with an amber colored head capsule. Pupae are also white, mummy-like, and they have some adult features which include wings that are folded behind the abdomen (Pasek, 2000). Newly emerged beetles are uniformly reddish-brown in color, but as they mature their color darkens. The elytra is the last to darken (Walker, 2008). In addition, adults are strong fliers (Pasek, 2000).
Please follow this link for diagnostic images of Black pine bark beetle *Hylastes ater* (Paykull) (Coleoptera: Curculionidae: Scolytinae: Hylesinini: Hylastina) (Walker 2008)

Notes
It is rare that *Hylastes ater* actually kills trees, but it is considered to be a secondary pest because of its power to vector plant-pathogenic and lumber-degrading fungi (Mausel, Gara, Lanfranco,*et al*, 2007). In addition, experiments have shown that young, healthy seedlings survive attacks by *H. ater* (Zondag, 1982).

Lifecycle Stages
In total, about 100 eggs are laid in their own individual niches along the walls of the egg gallery. Larval galleries start out at right angles to the egg galleries, but over time they become random and eventually obliterate both the early larval galleries and those made by the parents (CFIA, 2008). Larvae development typically takes approximately 8 to 10 weeks (Leahy, Oliver, Leather *et al*, 2007). However, larvae may take up to 18 months to develop into maturity (Glare, Reay, Nelson *et al*, 2008). When the brood matures, there are groups of about 40, but could get up to 120 beetles that may be present in broad irregularly shaped communal galleries that are underneath the bark (CFIA, 2008). There are four stages of growth, which the larvae passes through in becoming an adult. The last stage lasts the longest amount of time, however, the rate of growth tends to depend on seasonal temperatures. Once the larvae is fully grown, they pupate. This pupal stage lasts about 6-14 days (SCION, 2001).

Uses
Although *Hylastes ater* is considered a pest in most of the regions in which it inhabits, it could be considered useful in certain regions. Exotic tree plantations have been established in regions for their economic and ecological benefits. Among these trees, *Pinus radiata* is one exotic species commonly planted, specifically in tropical regions and regions in the Southern Hemisphere. Aside from benefits, this species can also develop into a serious invasive weed that can damage native ecosystems. *Pinus radiata* is a preferable host to *H. ater* in these areas and thus, this species of beetle, being a seedling-invading pest as well as a vector of pathogens, could reduce the invasiveness of *Pinus radiata* as well as other exotic tree species (Wingfield, Slippers, Roux *et al*, 2001).

Habitat Description
Hylastes ater primarily inhabit stumps and roots of felled pine trees or logs if they remain on site, and this species keeps close contact to the soil (Reay, Thwaites & Farrell, 2005). Experiments have shown that *H. ater* clearly prefer pine species when no choice could be made between alternative hosts. Although this species prefers species of pine as a host, results from experiments conducted in New Zealand on *Pinus radiata* plantations suggest that no adaptation is required by *H. ater* to convert to a non-native host (Leahy, Oliver, Leather *et al*, 2007). Host volatiles aid in the selection of the host. It has actually been shown that volatiles are the most powerful orientation cues for *H. ater* (Reay & Walsh, 2002a).

Reproduction
Breeding occurs primarily in the inner bark of roots, stumps, and base of trees that are either dead or dying. The brood galleries consist of a short entrance tunnel that leads to an oblique nuptial chamber. Females are responsible for the boring of a uniramous gallery, which is typically between 8 and 13 cm in length. This gallery is usually parallel with grain of the wood. Males are responsible for the clearing of the debris from the central egg gallery. The egg galleries reach the surface of the sapwood (CFIA, 2008). Adults have been observed copulating before the emergence of eggs, and sometimes the female leaves her first brood gallery to start another one, which indicates that mating had occurred in these instances before initiating the nest (SCION, 2001).

Nutrition
Adults feed on young bark of freshly-planted seedlings after emergence. *Hylastes ater* feeds from the collar downwards of the root and always underneath the bark (Leahy, Oliver, Leather *et al*, 2007). Immature beetles feed on the inner bark of pine, spruce, true firs, Douglas-fir, and larch seedlings (CFIA, 2008)

General Impacts
Hylastes ater is considered a pest in most areas that it inhabits. It is an important threat to the biosecurity of all forested countries (Brokerhoff, Jones, Kimberly *et al*, 2006). The reasons for its threatening status are due to the sapstain and other damaging fungi that it can vector (Glare, Reay, Nelson *et al*, 2008). *H. ater* vectors microorganisms that block the host's defenses, which causes a reduction of cellulose and pectin or produces large masses of fungal hyphai. It is easy for staining fungus to enter through the galleries that are created by *H. ater* (Lanfranco, Peredo & Ide, 2004). Most damage to hosts is actually caused by the female *H. ater* during ovarial maturation when they feed on root collars and tap roots of healthy pine seedlings (Mausel, Gara, Lanfranco *et al*, 2007). As a result of the damage they cause to hosts, ecosystems are negatively affected due to the sometimes fatal effects of *H. ater*, which in turn causes harm to economies that rely on the exportation of lumber (Lanfranco, Peredo & Ide, 2004). Another secondary effect includes human health issues. Human health may be affected by the use of pesticides, fumigants and preservatives needed to treat wood articles where this species has become established. *H. ater* has a high reproductive potential and is capable of dispersing more than several kilometers per year through either by means of its own movement or by abiotic factors, but also by human-assisted transport caused by growing international trade and tourism (Pasek, 2000).

Management Info
Early detection of new establishments of *Hylastes ater* is the most important step towards management (Brokerhoff, Jones, Kimberly, Suckling & Donaldson, 2006). Once the species has been discovered, there are different methods of eradication that have been practiced.
Chemical: Raw terpentine and ethanol have been recommended for use in trapping programs for *H. ater* (Reay & Walsh, 2002a). In addition, the pesticide, carbosulfan, was tested on *Pinus radiata* seedlings in New Zealand to see if it would affect the amount of damage caused by *H. ater*, and the results concluded that this pesticide provided significant protection to the pine seedlings from *H. ater* (Reay & Walsh, 2002b). Dipping bare rooted seedlings in slurry containing a pesticide even before planting may reduce the mortality of seedlings (Pasek, 2000).
Physical: Some known predators of *H. ater* are species of Rhizophagus beetles, and they are a possiblity for introduction and establishment for natural means of eradication of *H. ater* (SCION, 2001).

Pathway
Exportation of lumber has caused the spread of *Hylastes ater* (Lanfranco, Peredo & Ide, 2004).

Principal source:

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Ing. Milos Knizek, Ph.D. Forestry and Game Management Research Institute, Czechia

Pubblication date: 2010-09-06

ALIEN RANGE

[1] AUSTRALIA
[1] CHILE
[1] NEW ZEALAND
[1] UNITED STATES
[1] CANADA
[1] JAPAN
[1] SOUTH AFRICA

BIBLIOGRAPHY
30 references found for **Hylastes ater**

Managment information

Brockerhoff, Eckehard G.; Jones, Diane C.; Kimberley, Mark O.; Suckling, D. Max; Donaldson, Terry., 2006. Nationwide survey for invasive wood-boring and bark beetles (Coleoptera) using traps baited with pheromones and kairomones. Forest Ecology & Management. 228(1-3). JUN 15 2006. 234-240.
Dick, Margaret., 1994. Pine pitch canker-the threat to New Zealand. New Zealand Forestry. 42(4). Feb., 1998. 30-34.
Glare, Travis R.; Reay, Stephen D.; Nelson, Tracey L.; Moore, Roger., 2008. *Beauveria caledonica* is a naturally occurring pathogen of forest beetles. Mycological Research. 112(Part 3). MAR 2008. 352-360.
Summary: Abstract only
Lanfranco, D.; Ide, S.; Peredo, H. 2004. An analysis of health risk reduction in Chilean primary forest products for export. Forestry (Oxford). 77(3). Summer 2004. 193-203.
Pasek, Judith E., 2000. Pest Reports EXFOR Database. *Hylastes ater*
Summary: Available from: http://spfnic.fs.fed.us/exfor/data/pestreports.cfm?pestidval=21&langdisplay=english [Accessed 6 September, 2010]
Reay, S. D. & P. J. Walsh., 2002b. A Carbosulfan Insecticide to Protect Pine seedlings from *Hylastes ater* (Coleoptera: Scolytidae) Damage. New Zealand Plant Protection 55:80-84 (2002)
Reay S.D; Thwaites J.M; Farrell R.L; Walsh P.J., 2001. The Role of the Bark Beetle, *Hylastes ater* (Coleoptera: Scolytidae), as a Sapstain Fungi Vector to *Pinus radiata* Seedlings: A Crisis for the New Zealand Forestry Industry? Integrated Pest Management Reviews, Volume 6, Numbers 3-4, 2001 , pp. 283-291(9)
Summary: Available from: [Accessed 27 August 2008]
Reay, Stephen D. & Patrick J. Walsh., 2002a. Relative attractiveness of some volatiies to the introduced pine bark beetles, *Hylastes ater* and *Hylurgus ligniperda* (Curculionidae: Scolytinae). New Zealand Entomologist 25: 51-56 (2002)
Reay, Stephen D. & Patrick J. Walsh., 2002c. The incidence of seedling attack and mortality by *Hylastes ater* (Coleoptera: Scolytidae) in second rotation *Pinus radiata* forests in the Central North Island, New Zealand. Professional Papers. New Zealand Journal of Forestry 2002
SCION, 2001. Black pine bark beetle *Hylastes ater* (Paykull) (Coleoptera: Scolytidae). Forest and Timber Insects in New Zealand No. 29
Summary: Available from: http://www.nzffa.org.nz/pests/Pests/Hylastes_ater/Hylastes_aterEnt29.html [Accessed 27 August 2008]
Stephen, F. M & J. C. Gregoire., undated. Introduction and Establishment of Exotic Bark Beetles. Papers -Exotic Forest Pests Online Symposium
Summary: Available from: http://www.apsnet.org/online/proceedings/exoticpest/Papers/stephen.htm [Accessed 27 August 2008]
Voolma, Kaljo; Mandelshtam, Mikhail J.; Shcherbakov, Alexander N.; Yakovlev, Eugene B.; Ounap, Heino; Suda, Ilmar; Popovichev, Boris G.; Sharapa, Tatiana V.; Galasjeva, Tamara V.; Khairetdinov, Roman R.; Lipatkin, Vladimir A.; Mozolevskaya, Ekaterina C., 2004. Distribution and spread of bark beetles (Coleoptera: Scolytidae) around the Gulf of Finland: a comparative study with notes on rare species of Estonia, Finland and North-Western Russia. Entomologica Fennica. 15(4). December 22, 2004. 198-210.
Walker, K., 2008. Black pine bark beetle (*Hylastes ater*) Pest and Diseases Image Library.
Summary: Available from: http://www.padil.gov.au/viewPestDiagnosticImages.aspx?id=488 [Accessed 27 August 2008]
Wingfield, Micheal J., Slippers, Bernard, Roux, Jolanda, Wingfield, Brenda D. , 2001. Worldwide Movement of Exotic Forest Fungi, Especially in the Tropics and the Southern Hemisphere. [Article] BioScience. 51(2) Feb., 2001. 134-140.
Summary: Available from http://www.bioone.org/perlserv/?request=get-document&doi=10.1641%2F0006-3568(2001)051[0134%3AWMOEFF]2.0.CO%3B2 (Accessed 16 September 2008)
Zhang, Z; C. W. Van Epenhuijsen; D. Brash., 2004. Phosphine as a Fumigant to Control *Hylastes ater* and *Arhopalus ferus*, Pests of Export Logs. New Zealand Plant Protection 57:257-259 (2004)
Zhang, Z. Use of sulfuryl fluoride as an alternative fumigant to methyl bromide in export log fumigation. New Zealand Plant Protection. 59 2006. 223-227
Summary: Abstract only: As the deadline for phasing out the use of methyl bromide as a fumigant approaches, alternative fumigants are being evaluated. Sulfuryl fluoride has emerged as a promising alternative and is gaining increasing acceptance in Europe. This study showed that sulfuryl fluoride was an effective fumigant for the control of *Arhopalus tristis* adults at the lowest concentration tested (15 g/m(3)), while 120 g/m(3) was required for full control of A. tristis eggs. Sulfuryl fluoride also gave total control of *Hylastes ater* adults and larvae at 15 g/m(3). Sulfuryl fluoride showed potential to control the eight fungi tested in this study, with a concentration level of at least 30 g/m(3) required for full control of the eight fungi tested.
Zondag, R., 1982. Insects of the exotic forests of the central North Island. New Zealand Entomologist, 1982, Vol. 7, No. 3.
Summary: Available from: http://www.ento.org.nz/nzentomologist/free_issues/NZEnto07_3_1982/Volume%207-3-276-280.pdf [Accessed 27 August 2008]

General information

Canadian Food Inspection Agency (CFIA), 2008. *Hylastes ater* (Paykull) - Black pine bark beetle
Summary: Available from: http://www.inspection.gc.ca/english/plaveg/pestrava/hylate/tech/hylatee.shtml [Accessed 27 August 2008]
CSIRO, 2004. Entomology: *Hylastes ater* (Paykull)
Summary: Distribution map: Australia
Available from: http://www.ento.csiro.au/aicn/name_s/b_2019.htm [Accessed 27 August 2008]
Global Biodiversity Information Facility (GBIF), 2008. *Hylastes ater* Erichson, 1836
Summary: Available from: http://www.gbif.net/species/14627242/ [Accessed 15 June 2010]
Leahy, Miles J. A.; Oliver, Thomas H.; Leather, Simon R. 2007. Feeding behaviour of the black pine beetle, *Hylastes ater* (Coleoptera: Scolytidae). Preview Agricultural & Forest Entomology, May2007, Vol. 9 Issue 2, p115-124, 10p, 1 chart, 1 diagram, 8 graphs; DOI: 10.1111/j.1461-9563.2007.00328.x; (AN 24541801)
Mausel, David L.; Gara, Robert I.; Lanfranco, Dolly; Ruiz, Cecilia; Ide, Sandra; Azat, Rodrigo., 2007. The introduced bark beetles *Hylurgus ligniperda* and *Hylastes ater* (Coleoptera : Scolytidae) in Chile: seasonal flight and effect of *Pinus radiata* log placement on colonization. Canadian Journal of Forest Research. 37(1). JAN 2007. 156-169.

Reay, S.D., Brownbridge, M., Cummings, N.J., Nelson, T.L., Souffre, B., Lignon, C., and Glare, T.R., 2008. Isolation and characterization of *Beauveria* spp. Associated with exotic bark beetles in New Zealand *Pinus radiata* plantation forests. [Article] ScienceDirect. 46(3) May 2008. 484-494.

Reay, S. D; Thwaites, J. M; Farrell, R. L., 2005. A survey of *Ophiostoma* species vectored by *Hylastes ater* to pine seedlings in New Zealand. Forest Pathology, Volume 35, Number 2, April 2005 , pp. 105-113(9)

Reay, Stephan D.; Thwaites, Joanne M.; Farrell, Roberta L.; Glare, Travis R., 2006. The lack of persistence of Ophiostomataceae fungi in *Pinus radiata* 3 years after damage by the bark beetle *Hylastes ater*, and the subsequent colonisation by *Sphareopsis sapinea*. Forest Ecology & Management. 233(1). SEP 1 2006. 149-152.

Summary: Abstract only

Reay, Stephen D; Walsh, Patrick J., 2001. Observations of the flight activity of*Hylastes ater* and *Hylurgus ligniperda* (Curculionidae: Scolytinae) in *Pinus radiata* forests in the central North Island, New Zealand. [Article] New Zealand Entomologist. 24 21 December, 2001. 79-85.

Reay, Stephen D., Walsh, Patrick J., Ram, Arvina, and Farrell, Roberta L., 2002. The invasion of *Pinus radiata* seedlings by sapstain fungi, following attack by the Black Pine Bark Beetle, *Hylastes ater* (Coleoptera: Scolytidae)

Ruiz-Portero, Carmen; Barranco, Pablo; Cabello, Tomas., 2004. Pine scolytids in the Sierra de los Filabres, Almeria (Spain) (Coleoptera, Scolytidae). Boletin de la S.E.A..(34). APR 04. 119-122.

Summary: Abstract only: Thirteen scolytid species are listed based on the samples collected from pines located in the Sierra de los Filabres mountain range (Almer&#65533;a, southern Spain), 6 of them are believed to be first records for the province. The study is based both on the direct capture of the specimens from branches or trunks and with the use of sticky bait traps set on trunks. Analyses are made of their abundance and phenology, and on their relationships with the tree hosts and on the altitude.

Voolma, Kaljo, Suda, Ilmar, Ounap, Heino., 1998. New records of bark beetles (Coleoptera, Scolytidae) from Estonia. Proceedings of the Estonian Academy of Sciences Biology Ecology. 47(1). March, 1998. 73-78.

Zhou, X. D., de Beer, Z. W., Ahumada, R., Wingfield, B. D., Wingfield, M. J.., 2004. *Ophiostoma* and *Ceratocystiopsis* spp. associated with two pine-infesting bark beetles in Chile. Fungal Diversity. 15 February 2004. 261-274.