Polistes chinensis antennalis **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Hymenoptera	Vespidae

Common name Asian paper wasp (English)

Synonym *Polistes humilis*
Polistes jadwigae

Similar species *Polistes humilis*

Summary The Asian paper wasp (*Polistes chinensis antennalis*) is native to areas of Japan and China and is currently a widespread introduced species in New Zealand. Research on its impact on native fauna is lacking but as it consumes insects it may potentially threaten native invertebrate species. It may also compete with native fauna for invertebrate and nectar resources.

view this species on IUCN Red List

Species Description
Paper wasps are distinguished from vespulid wasps by their body shape. They have slender 13mm to 25mm reddish brown to black bodies with yellow rings and reddish areas on abdomen. Their wings are reddish or amber brown and they have long legs that especially noticeable in flight when they hang down.
Please see PaDIL (Pests and Diseases Image Library) Wasps: Asian paper wasp \r\n*Polistes chinensis antennalis* Perez for high quality diagnostic and overview images.

Habitat Description
The Asian paper wasp frequently constructs its nest on man-made structures such as houses or other buildings (Clapperton and Lo 1999). It commonly builds its nest in trees or bushes, usually on the branches, but sometimes on stems and leaves. Often nests are hidden inside dense shrubs, making them difficult to locate (Toft and Harris 2004). \r\n
Large populations are more likely to develop in warm, lowland areas of open habitat, such as shrublands, swamps and salt meadows (Clapperton *et al*. 1996). Although the Asian paper wasp prefers to colonise urban habitats it may penetrate dense forests to establish nests near forest clearings (Clapperton, Tilley and Pierce 1996).\r\n
The Asian paper wasp's native range in China and northern Japan includes areas where the winters can be severe; the minimum threshold for egg development, however, is 14.8°C which may be a limiting factor to population growth (Yoshikawa 1962; Valentine and Walker 1991, Miyano 1981, in Clapperton *et al*. 1996).

Reproduction
Over-wintering female wasps (which have been inseminated the preceding autumn) emerge in spring and begin nest cell construction and egg laying (Kasuya 1983; Clapperton and Lo 1999). The first broods to emerge in late spring or early summer are comprised only of females (Clapperton and Dymock 1997). There is no clear division into workers and queens and all females, even small ones, are potentially fertile (Cumber 1951). Egg production in a colony is, however, dominated by one or only a few females (Clapperton and Lo 1999). Males are produced from haploid eggs from early summer onwards and following the onset of production of male workers no more female progeny are produced for the season (Cumber 1951; Clapperton and Dymock 1997; Clapperton and Lo 1999). Male wasps are particularly conspicuous in early autumn when they perform characteristic courtship behaviour (Dymock 2000).

Nutrition
Asian paper wasps prey on invertebrates and collect nectar and honeydew from flowers. Asian paper wasps rely heavily on the larvae and caterpillars of Lepidopteran insects (moths and butterflies) for their protein sources (Rabb and Lawson 1957; Rabb 1960).

General Impacts
The Asian paper wasp may consume a significant amount of invertebrate prey, putting prey species at direct risk of population decline, and indirectly threatening native insectivores by exerting competitive pressures on them (these may include native invertebrates or reptile species) (Clapperton 1999, Kleinpaste 2000, in Toft and Harris 2004). For example, it may prey on larvae of native Lepidoptera species, such as the monarch butterfly (*Danais plexippus*), significantly reducing their population size. The Asia paper wasp may also compete with honeybees and native bird species for available honeydew and nectar resources (Clapperton *et al*. 1996). Secondary flow down effects are also possible from these disruptions to ecosystem processes is possible (ie: the disruption of pollination due to honeybee population decline).\r\n
The Asian paper wasp is a considerable public nuisance, stinging people when it is disturbed and constructing its nest on houses; according to one survey they are held accountable for the greatest number of stings received in Auckland (Dymock *et al*. 1994, in Clapperton *et al*. 1996).

Management Info
Preventative measures: The early detection of establishing populations is important as the next line of defence after initial quarantine procedures. Landcare Research has conducted research into generalised invertebrate surveillance techniques in recognition of the gap in biosecurity surveillance. These include malaise traps, mini-malaise traps, window traps, sticky traps, pitfall traps, UV light traps, flat ant traps, baited ant pottles, spurr wasp traps, ground bottle traps, yellow pan traps and beating. Of these, malaise traps, mini-malaise traps, window traps, sticky traps (for small wasps), UV traps, spurr wasp traps and ground bottle traps were found to be effective at catching wasps. Please follow this link for descriptions of trapping methods: http://www.landcareresearch.co.nz/research/biocons/invertebrates/id_surveillance.asp .
Chemical: There are two ways of reducing a local wasp problem: either finding and destroying all nests in the area, or using poison bait (Landcare Research 2007). Manual destruction of nests over large areas of shrub land is likely to be difficult and labour intensive (Toft and Harris 2004). The advantage of poison bait is that foraging wasps carry the poison back to the nest, meaning it is unnecessary to locate nests or approach those that are very large or difficult to get at (Landcare Research 2007). Unlike *Vespula* wasps, *Polistes* wasps are not attracted to dead bait (such as chicken meat or fish meat). This factor needs to be considered in any control strategy (Toft and Harris 2004). On the other hand, the use of carbohydrate based bait is more likely to have negative impacts on non-target species such as honeybees (important pollinators) or and other native fauna (Spurr 1996, in Toft and Harris 2004). Manual destruction of nests over large areas of shrubland is apparently difficult and labour intensive (Toft and Harris, 2004). \r\n
Both methods will only alleviate the problem for the current season and workers foraging for food will reinvade the area. The area will almost certainly be reinvaded next season by queen wasps, which can fly up to 30 kilometres in their search for suitable nesting sites (Landcare Research 2007). \r\n
\r\nBiological: Biological control has been used in attempts to achieve widespread control of wasps. For more information on biological control of wasps please follow this link: http://www.landcareresearch.co.nz/research/biocons/invertebrates/Wasps/biocontrol.asp .

Pathway
Asian paper wasps may build their nests on shipping containers, ships or fishing vessels, potentially hitching a ride to anywhere on the globe (Dymock 2000).

Principal source:

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ALIEN RANGE

[1] AUSTRALIA
[1] NORFOLK ISLAND
[6] NEW ZEALAND

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Walker, K. 2007. Asian paper wasp (*Polistes chinensis antennalis*) Pest and Diseases Image Library
Summary: PaDIL (Pests and Diseases Image Library) is a Commonwealth Government initiative, developed and built by Museum Victoria s Online Publishing Team, with support provided by DAFF (Department of Agriculture, Fisheries and Forestry) and PHA (Plant Health Australia), a non-profit public company. Project partners also include Museum Victoria, the Western Australian Department of Agriculture and the Queensland University of Technology.
The aim of the project is: 1) Production of high quality images showing primarily exotic targeted organisms of plant health concern to Australia. 2)Assist with plant health diagnostics in all areas, from initial to high level. 3) Capacity building for diagnostics in plant health, including linkage developments between training and research organisations. 4)Create and use educational tools for training undergraduates/postgraduates. 5) Engender public awareness about plant health concerns in Australia. PaDIL is available from : http://www.padil.gov.au/aboutOverview.aspx, this page is available from: http://www.padil.gov.au/viewPestDiagnosticImages.aspx?id=756 [Accessed 10 November 2007]

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