Invasive Ant Threat

INFORMATION SHEET Number 12 • *Monomorium minimum* Risk: Medium

Monomorium minimum (Buckley)

Taxonomic Catergoy

Family:	Formicidae
Subfamily:	Myrmicinae
Tribe:	Solenopsidini
Genus:	*Monomorium*
Species:	*minimum*

Common name(s): little black ant (Smith 1965).

Original name: *Myrmica* (*Monomorium*) *minima* Buckley

Synonyms or changes in combination or taxonomy: *Monomorium metoecus* Brown & Wilson, *Myrmecia* (*Monomorium*) *atra* Buckley. Formerly and incorrectly called *minutum* Mayr, or a subspecies of *minutum* in early US literature (Smith 1965).

General Description

Identification

Size: monomorphic, total length 1.5–2 mm

Colour: head and alitrunk dark brown to black (typically black) with a blue tinge. Nodes and gaster brown; legs yellow brown, distal half yellow. Setae white.

Surface sculpture: head smooth and shiny with small setae-bearing punctures; alitrunk and nodes mostly smooth and shining, unsculptured except very small to moderate setae-bearing punctures on dorsum and lower half of lateral propodeum with small parallel longitudinal wrinkles. The smooth and shiny mesopleuron (lateral alitrunk anterior to propodeum) distinguishes *M. minimum* from closely related species. Gaster head smooth and shiny with small setae-bearing punctures.

General description: antennae 12-segmented, including a 3-segmented club. Scape not reaching occiput. Eyes small. Mandibles each with 4 teeth. Metanotal groove absent. Propodeum without spines. Two nodes (petiole and postpetiole) present. Petiole higher and less broadly rounded than postpetiole. Subpetiolar process small. Dorsal surfaces of head and gaster with suberect setae, dorsal alitrunk and nodes with erect and suberect setae.

Source: Smith 1965; DuBois 1986

Formal description: DuBois 1986

Behavioural and Biological Characteristics

Feeding and foraging

Eats live and dead insects (usually dead or dying insects, (Adams & Traniello 1981), tends Homoptera, visits floral and extrafloral nectaries of plants, and may even feed on the pollen in flowers of certain plants (Smith 1965; Wheeler & Wheeler 1986; Traniello 1987). In its native range, researchers have placed it in the seed-harvester functional group (Nash et al. 2001). Workers feed on a wide variety of household foods such as sweets, meats, bread, grease, oils, cornmeal, fruit and fruit juices (Smith 1965). Workers can be locally very abundant, and move rapidly (Wheeler & Wheeler 1986). Although slow to locate food sources, they recruit in large numbers and monopolise and dominate food sources (www26). In its native range, maximal diurnal foraging occurs at 30°C, with morning and late afternoon peaks (Traniello 1987). *M. minimum* has a foraging range of about 10 m^2 (www26). Gaster flagging (raising the abdomen and spraying venom) is the predominant offensive and defensive behaviour used by *M. minimum* (www47). *M. minimum* can invade and kill small *Solenopsis invicta* worker-defended colonies (up to 480 workers) and has been observed carrying their brood back to their colony (Rao & Vinson 2002). It can coexist with *Linepithema humile* and is even capable of displacing them from baits (www26). There are reports of newly hatched birds being killed by these ants (Smith 1965).

Colony characteristics

Colonies have tens of thousands to hundreds of thousands of workers and are polygynous (Bhatkar 1992), with 2–38 queens (Smith 1965; Wheeler & Wheeler 1986; Bhatkar 1992). Polydomous colonies occur in nature, with worker exchange among 2–5 adjacent nests (Bhatkar 1992). Queens are winged and live for 1 year in laboratory colonies while workers live 4 months (DuBois 1986). Nests in soil appear to have a characteristic structure; most are shallow (less than 10 cm deep, with most brood chambers located just under the soil surface to depths of 5 cm (DuBois 1986). Nests in the ground are detected by very small craters of fine soil (www25; www48). The nest structure (crater and mound) varies depending on habitat type (DuBois 1986).

Dispersal

Males and winged females (nuptial flights) have been recorded from June to August (North America) (Smith 1965; DuBois 1986). Single mated queens were able to found colonies in laboratory conditions (Bhatkar 1992) and it is likely colonies are founded by a single queen, with secondary adoption other queens (DuBois 2000). Following establishment, colonies may grow rapidly (www25).

Habitats occupied

M. minimum has wide environmental and altitudinal tolerance. It is found from sea level to 2,438 m in the US (Smith 1965; Dubois 1986; Wheeler & Wheeler 1986), and 0–900 m in Hawaii (Reimer 1994). *M. minimum* occupies many different habitat types (including forest, meadows, woodlands, prairie, desert, roadside, exposed bedrock) but prefers moist habitat usually near wooded edges (DuBois 1986; Bhatkar 1992). They are one of the most common house-infesting ants in the USA and may nest in masonry or woodwork (Smith 1965). Outdoors, it is commonly found infesting rotted logs, stumps, and fence posts, and may be found in tree holes and dead tree limbs far above the ground (www30). Nests are also commonly located in piles of timber, rocks, bricks, flowerpots and similar items (Bhatkar 1992; www30). Under natural conditions, the ants are generalists in nest selection (Smith 1965). They may nest in exposed soil (sandy) or under the cover of objects, such as stones, or in rotting wood or under the bark of living trees (Smith 1965; DuBois 1986; Wheeler & Wheeler 1986; Bhatkar 1992).

Global distribution (See map)

Native to

M. minimum is native to North America (Smith 1965). It is distributed throughout southeastern Canada and the northern and eastern sections of the United States (Smith 1965).

Introduced to

Reported from Malaysia (Lee 2002) and Hawaii (McGlynn 1999), but the Hawaiian record is unverified and no further collections in have been made (www46).

History of spread

Currently only one recorded establishment outside it native range (Malaysia), and no details were found of when it arrived.

Interception History at New Zealand Border

M. minimum has not been intercepted at the New Zealand border. There have been 24 interceptions (including 2 queens and eggs) of unidentified *Monomorium* species in Auckland and Canterbury. However, there was only one interception that originated from the USA, and none from Malaysia or Hawaii, so they were unlikely to be *M. minimum*.

Justification for Inclusion as a Threat

A native of North America and the Caribbean, *M. minimum* has wide environmental and altitudinal tolerance (Smith 1965; Dubois 1986; Wheeler & Wheeler 1986), so could establish in New Zealand. It has large polygynous colonies and displays polydomy. It has been recorded killing nestling birds (Smith 1965), will forage indoors, and is one of the most common house-infesting ants in the USA (Smith 1965). It can coexist with and even displace *Linepithema humile* from baits (www26), and has been recorded as invading and killing small *Solenopsis invicta* colonies (Rao & Vinson 2002). It has established outside its native range in Malaysia (Lee 2002). It is a small species (< 2 mm) whose arrival in New Zealand could initially go unnoticed.

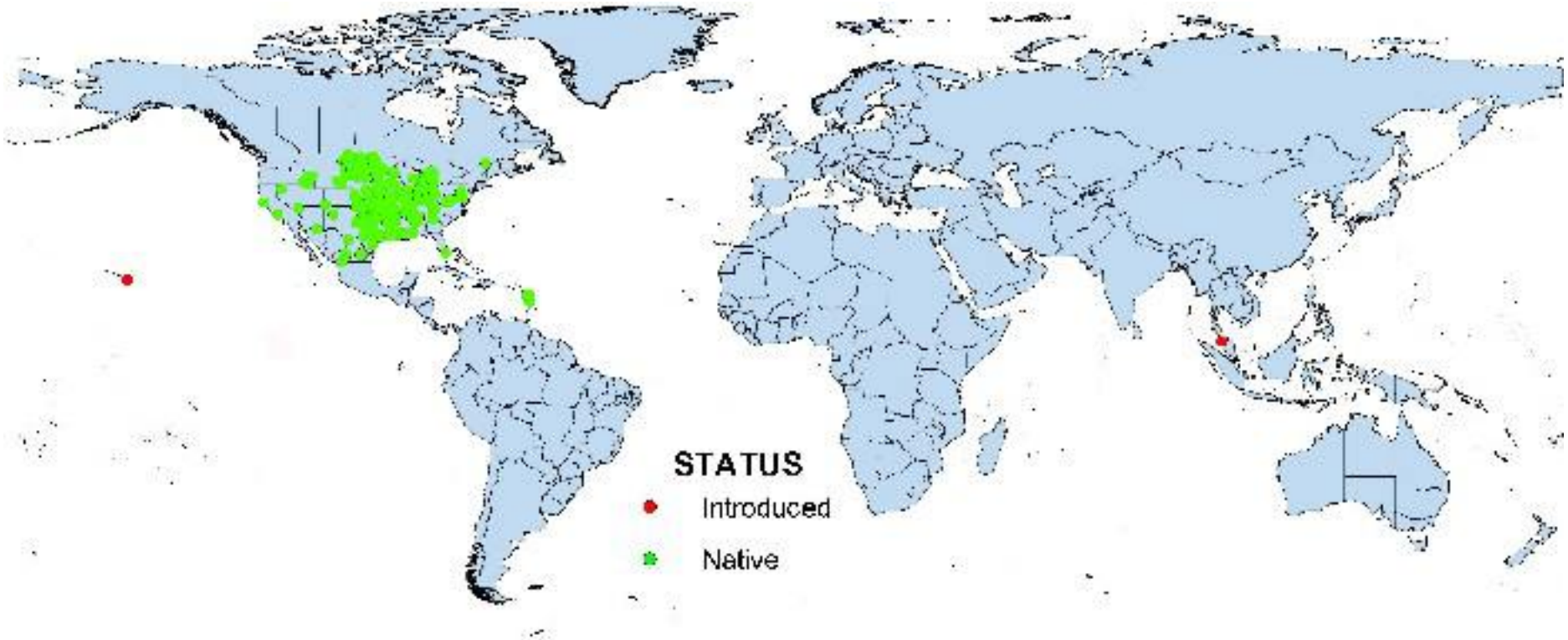
Mitigating factors

M. minimum is not established in the southern hemisphere and has not been intercepted at the New Zealand border.

Control Technologies

In bait attractant experiments, *M. minimum* was attracted primarily to tuna, also to honey (Brinkman et al. 2001) but only occasionally to egg or peanut butter (Brinkman et al. 2001). Elsewhere reported to prefer high fat/protein baits (www26). Sweet baits can be effective; however, if acceptance is low, protein-based bait may be considered (www25).

Compiled by Margaret Stanley, Richard Harris & Jo Berry



Global distribution of Monomorium minimum *(Buckley)*