The hairy crazy ant, *Paratrechina pubens* (Forel), is known from sites scattered across the New World tropics and subtropics. Forel (1893) described *P. pubens* from St. Vincent, and Smith (1951) reported that *P. pubens* was known from Mexico, Central and South America, and the West Indies. Other West Indian records include Martinique (Forel 1912), Anguilla (Trager 1984), Guadeloupe (Trager 1984), Puerto Rico (Torres & Snelling 1997), and Cuba (Fontenla 1995). In 1990, Miller (1994) found *P. pubens* in a barge full of potted plants from south Florida being unloaded at Guana Island, British Virgin Islands. The earliest Florida records of *P. pubens* come from the Miami area in 1953 (Trager 1984), and *P. pubens* is now a localized exotic pest in Florida (Deyrup et al. 2000). Wetterer (2007) recently reported a previously unrecognized 1905 record of *P. pubens* from Bermuda, and proposed that this species was the most likely candidate for an unidentified ant that underwent a great population explosion for 8 years in the 19th century in Bermuda and then disappeared (also see Wetterer 2006). Here, we report a recent population explosion of *P. pubens* on St. Croix, US Virgin Islands and evaluate its status there.

**ABSTRACT**

The hairy crazy ant, *Paratrechina pubens* (Forel), is undergoing a population explosion on St. Croix, US Virgin Islands. Here, we evaluate the status of *P. pubens* on St. Croix. In 2002, residents of Calquohoun and surrounding areas in central St. Croix began reporting large infestations of *P. pubens*. In 2005 and 2006, we surveyed ants at >100 sites across St. Croix. We found 3 geographically discrete populations of *P. pubens* occupying ~5% of the island: a main population centered on Calquohoun spread over ~9 km$^2$ and 2 smaller populations occupying <1 km$^2$ each. Locals blamed *P. pubens* for crop damage due to high densities of plant-feeding Hemiptera that tended the ants. Surveys of trees in areas with and without *P. pubens* present indicated that *P. pubens* has a significant negative impact on arboreal-foraging ants. The distribution and chronology of *P. pubens* records on St. Croix suggest that this species is a recently arrived exotic. It is unknown whether *P. pubens* will become a more serious pest on St. Croix or whether populations will collapse to inconsequential levels.

**Key Words:** exotic species, *Paratrechina pubens*, pest ants, Virgin Islands

**RESUMEN**

La población de la hormiga peluda-loca, *Paratrechina pubens* (Forel) está explotando en St. Croix una de las Islas Vírgenes de los EEUU. Aquí, evaluamos el estado de *P. pubens* en St. Croix. En 2002, los residentes de Calquohoun y en las áreas alrededores del centro de St. Croix empezaron a reportar infestaciones grandes de *P. pubens*. En 2005 y 2006, realizamos un monitoreo de las hormigas en más de 100 sitios por toda la isla de St. Croix. Nosotros encontramos 3 poblaciones geográficas distintas de *P. pubens* ocupando ~5% de la isla: una población principal con su centro en Calquohoun dispersada por ~9 km$^2$ y 2 poblaciones más pequeñas cada una ocupando <1 km$^2$. La gente local culpó a *P. pubens* por el daño a los cultivos debido a la alta densidad de los hemípteros fitófagos protegidos por las hormigas. Un monitoreo de los árboles en las áreas donde *P. pubens* estuvo presente versus ausente indicó que *P. pubens* tiene un impacto negativo significativo sobre las hormigas que buscan su alimento en los árboles. La distribución y cronología de los registros de *P. pubens* en St. Croix sugieren que esta es una especie exótica recién llegada. No se sabe si *P. pubens* llegara a ser una plaga mas seria en St. Croix o si la población bajara a niveles inconsecuentes.

**METHODS AND MATERIALS**

While working for the Cooperative Extension Service, JK received numerous complaints about insect pests on St. Croix, including outbreaks of *P. pubens*. JK took notes on these complaints and visited the sites. From 30 Oct to 5 Nov 2005 and 3-12 Mar 2006, JW collected ants at >100 sites on St. Croix. Collection sites included a diversity of
disturbed and relatively natural habitats. JW
sampled at 1-5 km intervals over most of the is-
land, but at shorter intervals in accessible areas
adjacent to sites where P. pubens was found to be
present.

From 5-10 Mar 2006, JW examined the impact
of P. pubens on arboreal-foraging ants on St.
Croix. At each of 24 sites (designated sites A-X; 12
sites with P. pubens present and 12 with P. pubens
absent), JW surveyed ants on 10 trees with trunk
diameter >10 cm, spaced at ~10 m intervals in for-
ested areas and at more irregular intervals in ar-
eas with fewer trees. JW tacked a folded index
card holding ~1 g of canned tuna (in water) at 2 m
height on the north side of the trunk between 9:00
and 14:00h and returned in 2 h (± 15 min) to col-
lect the cards and place ants in plastic bags. The
ants were frozen, counted, and placed in 95% al-
cohol. JW initiated a parallel study of ants coming
to terrestrial baits at site A, but abandoned it be-
cause mongooses removed most of the bait cards.
Roy Snelling of the Los Angeles County Museum
of Natural History confirmed identification of
P. pubens. Stefan Cover of the Museum of Com-
parative Zoology (MCZ) confirmed identification
of all specimens.

RESULTS

JK investigated several complaints concerning
P. pubens from 3 contiguous Estates (i.e., town-
ships) in central St. Croix: Calquohoun, Little
Fountain, and Upper Love (geocoordinates given in
°N, °W). The earliest complaint, on 24 Aug 2002,
was from a resident in Calquohoun (site 1; 17.741,
64.793; see Fig. 1) whose house and property were
overrun by these ants. The resident reportedly
swept up a dustpan full of dead ants every day. For
more than a year, all additional complaints con-
cerning P. pubens came from nearby parts of Cal-
quohoun. On 24 May 2004, a farmer in Little Foun-
tain (site 2; 17.749, 64.790; see Fig. 1) reported that
several small farm buildings as well as large areas
of pasture were overrun with P. pubens. Less than
1 km from this farm, a physician in Little Fountain
(site 3; 17.752, 64.794) reported that large num-
bers of P. pubens infested his house and the large
trees near the house (date not recorded). On 21 Oct
2005, a resident of Upper Love (site 4; 17.732,
64.810) complained of an infestation on his prop-
eerty, and reported that he scooped up ~2 liters of
dead P. pubens every day from his covered porch
and driveway area. On 6 Dec 2005, a resident of
Little Fountain (site 5; 17.755, 64.791) reported a
very large number of P. pubens inside his house
and attributed the death of several rabbits kept in
cages on his property to these ants.

JW collected P. pubens at 12 sites on St. Croix
in Oct-Nov 2005 and at 19 additional sites in Mar
2006. Paratrechina pubens occurred at high den-
sities in at least part of each of these 31 sites.

We delineated 3 geographically separate popu-
lations covering ~10 km² (~5% of the island; Fig.
1). The main population was spread across at
least 13 Estates and occupied ~9 km², including
all sites sampled by JK plus 21 sites sampled by
JW: Bethlehem Old Works; Rte 64; 1 km S of Rte
72 (17.730, 64.796), Bethlehem Old Works, Rte
64; 0.5 km NW of Rte 70 (site E; 17.729, 64.795),
Body Slob; S of Rte 709; E of Rte 75 (17.739,
64.776), Calquohoun; Cruzan Gardens (site K;
17.739, 64.801), Calquohoun; NNE of Cruzan
Gardens (17.745, 64.793), Canaan; Rte 73; 1.5 km
NW Frangipani (17.760, 64.798), Castle Burke;
Rte 78; 2 km E of Rte 69 (17.724, 64.804), Fre-
densborg; S of Rte 707; W of Rte 73 (17.735,
with much-reduced trails of live \textit{P. pubens}. In Hermitage (site Z), near the western edge of the main population, we saw large numbers of \textit{P. pubens} on a variety of fruit trees. Residents reported that the ants appeared around Dec 2005 and that their coconut plantation produced no coconuts this year because high densities of ant-tended Hemiptera covered the flowers and young fruit and caused them to drop prematurely. At Mount Victory Camp, an ecotourism resort in western St. Croix (adjacent to site P), the owner reported that \textit{P. pubens} first became evident around Dec 2005. In the northeastern corner of Little Fountain (site A), at the northern edge of the main population, local residents first noted \textit{P. pubens} in Mar 2006, and the ants were found only at the southern edge of their property, in the direction of the main population.

In the tree surveys, we collected \textit{P. pubens} plus 6 ant species we considered exotic to St. Croix (\textit{Monomorium floricola} (Jerdon), \textit{Paratrechina longicornis} (Latreille), \textit{Solenopsis geminata} (Fabricius), \textit{Solenopsis invicta} Buren, \textit{Tapinoma melanocephalum} (Fabricius), and \textit{Technomyrmex difficilis} Forel), and 6 we considered to be native (\textit{Brachymyrmex heeri} Forel, \textit{Crematogaster crinosa} Mayr, \textit{Linepithema iniquum} (Mayr), \textit{Monomorium ebeninum} Forel, \textit{Pheidole moerens} Wheeler, and \textit{Solenopsis corticalis} Forel). At the 12 \textit{P. pubens}-occupied sites (10 trees surveyed per site), we collected \textit{P. pubens} at 60 trees and made 34 additional arboreal-foraging ant records (17 records of 3 exotic species and 17 of 3 native species; Table 1). At the 12 sites without \textit{P. pubens} present, we made 75 arboreal-foraging ant species records (37 records of 5 exotic species and 38 of 5 native species; Table 2). Thus, there were significantly fewer records of other arboreal-foraging ants on trees in \textit{P. pubens}-occupied sites versus in sites without \textit{P. pubens} present ($\chi^2 = 15.4$, df = 1, $P < 0.001$).

The degree of dominance of \textit{P. pubens} varied greatly among the \textit{P. pubens}-occupied sites. At the 6 sites where \textit{P. pubens} occurred on 6 or more of the 10 trees, there were only 2 other arboreal-foraging ant records (1 native and 1 exotic; Table 1). In contrast, at the 6 \textit{P. pubens}-occupied sites where \textit{P. pubens} occurred on 5 or fewer of the 10 trees, there were 32 arboreal-foraging ant records of species other than \textit{P. pubens}. Thus, there were significantly fewer records of other arboreal-foraging ants at the 6 sites where \textit{P. pubens} were common in the trees than at the 6 sites where \textit{P. pubens} was present, but not common in the trees ($\chi^2 = 26.5$, df = 1, $P < 0.001$).

**DISCUSSION**

We documented 3 geographically discrete populations of \textit{P. pubens} on St. Croix: a main population occupying ~9 km$^2$ and 2 smaller populations occupying <1 km$^2$ each. The chronology of com-
plaints from residents and the current distribution of *P. pubens* suggest this species is an exotic that first arrived in the Calquohoun area circa late 2001 or early 2002. If the main population of *P. pubens* on St. Croix originated at the center of its current range in early 2002, then to reach peripheral areas 2.0-2.5 km from the center (e.g., sites 7 and A) by early 2006, it must have spread at an average linear rate of 0.5-0.6 km per year. The smaller populations of *P. pubens* in western and southern St. Croix may be satellite populations founded by propagules originating from the main population as recently as 2005. Cruzan Gardens, a botanical garden and nursery located near the center of the main population, may be acting as a hub for dispersal to other parts of St. Croix by *P. pubens* colonies living in potted plants.

Currently, *P. pubens* appears to be principally a house and garden pest on St. Croix. However, when occurring at extremely high densities, this species has the potential to be a significant agricultural pest by enhancing populations of the phloem-feeding Hemiptera it tends. Hemiptera cause crop damage both through sapping plants of nutrients and by increasing the occurrence of diseases, including viral and fungal infections. In addition to its negative impact on arboreal-foraging ants, *P. pubens* may also have negative impacts on other animals, both invertebrates and small vertebrates.

### Native Versus Exotic Range

Marlatt (1928) wrote that *P. pubens* “is believed to be a native of Brazil, but now occurs quite abundantly in Cuba and other West Indian Islands.” Records of *P. pubens* from South and Central America often come from nature preserves. For example, Leponce et al. (2004) and Theunis et al. (2005) recorded *P. pubens* in Rio Pilcomayo National Park, Argentina. Fisher et al. (1990) and Fisher (1992) reported *P. pubens* inhabiting myrmecophytic orchids in Barro Colorado National Monument, Panama.

### Table 1. Number of Trees with Different Exotic and Native Ant Species Present at 12 Sites (10 Trees per Site) with *Paratrechina pubens* Present, in Order of Dominance by *P. pubens* (See Text for Site Locations).

| Exotic species                  | Sites |
|---------------------------------|-------|
|                                 | B     | P     | T     | J     | E     | K     | A     | N     | D     | I     | M     | Q     | Total |
| *Paratrechina pubens*           | 10    | 10    | 10    | 9     | 8     | 6     | 5     | 2     | —     | —     | —     | —     | 60    |
| *Technomyrmex difficilis*       | —     | —     | —     | —     | —     | —     | —     | —     | —     | 2     | —     | —     | 10    |
| *Monomorium floricola*          | —     | —     | 1     | —     | —     | —     | —     | —     | —     | —     | 3     | —     | —     | 4     |
| *Paratrechina longicornis*      | —     | —     | —     | —     | —     | —     | 1     | —     | —     | —     | —     | —     | —     | 4     |
| **Native species**              |       |       |       |       |       |       |       |       |       |       |       |       |       |
| *Linepithema iniquum*           | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 5     | —     | 7     |
| *Crematogaster crinosa*         | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 3     |
| *Solenopsis corticalis*         | —     | 1     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 1     | —     | 2     |

### Table 2. Number of Trees with Different Exotic and Native Ant Species Present at 12 Sites (10 Trees per Site) with *Paratrechina pubens* Not Present, in Order of Collection Date.

| Exotic species                  | Sites |
|---------------------------------|-------|
|                                 | C     | F     | G     | H     | L     | O     | R     | S     | U     | V     | W     | X     | Total |
| *Paratrechina longicornis*      | 2     | 1     | —     | —     | 9     | —     | —     | —     | —     | —     | —     | —     | 12    |
| *Solenopsis geminata*           | 2     | —     | 1     | 3     | —     | 1     | 2     | —     | —     | —     | —     | —     | 9     |
| *Solenopsis invicta*            | —     | 5     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 5     |
| *Monomorium floricola*          | —     | —     | 2     | —     | 1     | —     | 4     | —     | —     | —     | —     | —     | 1     |
| *Tapinoma melanocephalum*       | 1     | 2     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 3     |
| **Native species**              |       |       |       |       |       |       |       |       |       |       |       |       |       |
| *Monomorium ebeninum*           | 2     | —     | 8     | —     | —     | —     | 3     | 3     | —     | 1     | —     | 8     | —     | 25    |
| *Solenopsis corticalis*         | —     | —     | 1     | 2     | —     | 1     | —     | 2     | 3     | —     | —     | —     | —     | 9     |
| *Linepithema iniquum*           | —     | —     | 1     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 2     |
| *Pheidole moerens*              | 1     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 1     |
| *Brachymyrmex heeri*            | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 1     | —     | 1     |

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This pattern suggests that *P. pubens* is native to South and Central America. Unfortunately, the taxonomic status of *P. pubens* and other closely related forms remains uncertain, and records of *P. pubens* from South and Central America could represent a different species.

In the West Indies and Florida, *P. pubens* has been reported primarily in open, disturbed areas, a habitat preference often indicative of exotic species. For example, Smith (in Forel 1893) collected *P. pubens* from 5 locales on the island of St. Vincent, four at the seashore and 1 in a sugar cane field, writing that this ant “appears to be confined to the seashore, or to open land not far from the sea.” Klotz et al. (1995) listed 3 records from Florida: in a Boca Raton home, in a Miami hospital, and in a commercial building near Homestead. Deyrup et al. (2000) reported that *P. pubens* “is abundant on the campus of the University of Miami . . . foraging on sidewalks and running up and down tree trunks.”

Warner and Scheffrahn (2004) recently proposed the common name “Caribbean crazy ant” for *P. pubens*, but this name is misleading and inappropriate because *P. pubens* appears to be exotic to the Caribbean islands. Therefore, we prefer the common name used by Wetterer (2007), “hairy crazy ant,” based on its Latin name *pubens* which means pubescent, i.e., covered with short soft hairs, a prominent characteristic of this species.

It will be interesting to track the progress of the *P. pubens* on St. Croix to see whether it continues to spread and becomes a major long-term economic and ecological pest. Alternatively, *P. pubens* may decline on St. Croix and become only a minor pest there, or disappear completely as happened in Bermuda.

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