

Research Note

TOUMEYELLA PARVICORNIS (COCKERELL) (HEMIPTERA: COCCOIDEA: COCCIDAE): A NEW INVASIVE PEST OF PINE TREES IN PUERTO RICO^{1,2}

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This is the first report of the pine tortoise scale, *Toumeyella parvicornis* (Cockerell), in Puerto Rico. This is also the first report of a member of the soft scale genus *Toumeyella* there. The first finding of this pest occurred at a private residence in Ponce, road 505 km. 3.9, Bo. La Yuca 17 February 2009 on young Honduran pine (*Pinus caribaea* var. 'hondurensis' Morelet). Further inspection of the source nursery in the Guilarte State Forest 28 February 2009 revealed almost complete infestation of seedlings. Severe damage to twigs and foliage was observed, with extensive damage and death caused to shoot terminals. Infested twigs have a grayish black appearance caused by build-up of sooty molds (Figure 1a). Both females and immature stages, including crawlers, were observed. Branch samples from Ponce examined by the authors contained several imported fire ants *Solenopsis invicta* Buren, and those from Guilarte contained the little fire ant, *Wasmannia auropunctata* (Roger). *Toumeyella parvicornis* is considered a myrmecophilous scale (Wilkinson and Chellman, 1979), a fact corroborated by our observation. The authors used a taxonomic key of Coccidae (Miller and Williams, 2004). Dr. Greg Hodges from Florida Department of Agriculture, Division of Plant Industry, Gainesville, Florida, later confirmed our identification.

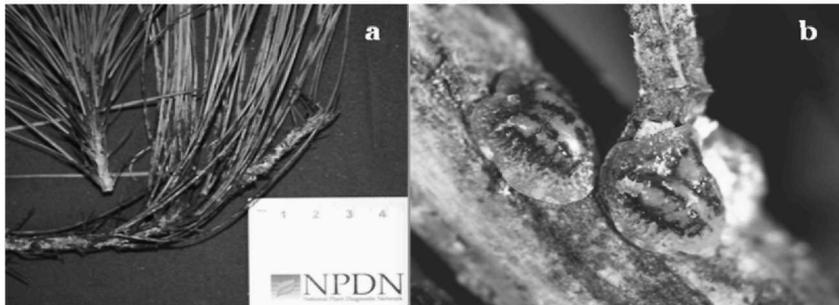


FIGURE 1. Pine tortoise scale, *Toumeyella parvicornis* on *Pinus caribaea*. (a) Attack on shoot tips, and illustration of sooty mold (scale in mm). (b) Adult females.

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These scales have a striking and distinctive appearance. Mature females are oval to elongate, reddish brown mottled with darker spots, and about 3.5 to 5 mm in length and 3.0 to 4.0 mm in width. This shape and these markings give the scale the appearance of a turtle's shell, hence its name pine tortoise (Figure 1b). Other characters that distinguish this species from other members of the genus are (1) presence of numerous dorsal aggregations of bi-ocular pores; (2) anal plates with seven to nine dorsal and apical setae; (3) legs small close to same size as spiracles; and (4) numerous quinquelocular pores in spiracular furrows and vulvar areas. Immatures are reddish brown. Voucher specimens PR Acc. No. 2-2010 are deposited at the Museum of Entomology and Tropical Biodiversity of the University of Puerto Rico.

The pine tortoise scale is a native of Eastern North America (Drooz, 1985; Hamon and Williams, 1984). Host plants appear restricted to conifers particularly in the genus *Pinus*. These authors state that *T. parvicornis* is generally more damaging to seedlings and young saplings, and that its populations are kept at more acceptably low levels in larger trees by parasites and predators. Baker (1972) identifies several coccinellids and parasitic wasps as responsible for naturally controlling pine tortoise scale populations. No evidence of predation or parasitism could be gathered from our samples. A systematic search for naturally occurring enemies should be conducted.

The pine tortoise scale is considered a severe pest of pine trees (Miller and Miller, 2003). This pest appears now to be moving through the Caribbean. This soft scale has recently been reported in the Turks and Caicos Islands causing catastrophic mortality in Caribbean pine (*Pinus caribaea* var. '*bahamensis*'), especially in low-lying areas (Ross et al., 2009). At the moment, we do not know how this pest was introduced to Puerto Rico. However, it is not unreasonable to propose the import of Christmas trees from North America as a likely pathway for invasion. Christmas trees, especially Scots pine are common host plants of this scale in the United States and Canada, where severe attacks are often a limiting factor to their production (Baker, 1972). Currently, Christmas trees entering Puerto Rico require only a phytosanitary certification clearing them from having Sudden Oak Death Syndrome (*Phytophthora ramorum*), gypsy moth [*Lymantria dispar* (L.)], or pine shoot beetle [*Tomicus piniperda* (L.)].

Future impact of this invasive species is difficult to predict; however, there is little likelihood of impact on native plant species. Unlike the Turks and Caicos, where the variety of Caribbean pine is a native plant, there are no native pines in Puerto Rico. The most commonly found pine here is *Pinus caribaea* var. '*hondurensis*', which was established in Puerto Rico in the 1960s for forestry trials. This pine species appears well adapted to a variety of island environments, including reforestation and urban plots. Likely impact of this pest may be restricted to nursery production, and to the establishment of future reforestation projects using *Pinus caribaea* or other members of this genus.

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