

THE BLACK TWIG BORER, XYLOSANDRUS COMPACTUS (EICHHOFF)<sup>1</sup>

(COLEOPTERA: SCOLYTIDAE)

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**INTRODUCTION:** The black twig borer, Xylosandrus compactus (Eichhoff), is one of the few ambrosia beetles that infests healthy plants. In Florida, orchids (Dendrobium spp. and Cattleya spp.), and avocado (Persea americana Mill.) have sustained notable economic losses (Dekle and Kuitert 1968; McClanahan 1951). Although ornamental shrubs and shade trees (Figs. 1 & 2) seldom die from beetle infestations, the loss of growth and aesthetics can be substantial. Elsewhere, the black twig borer is a serious pest of coffee, Coffea canephora Pierre (esp. var. robusta Ineac) (Brader 1964).

**DESCRIPTION:** Adult female (Fig. 3) length 1.4-1.9 mm, width 0.7-0.8 mm; body stout, cylindrical, elongate, brown to black; distinct punctures on pronotum posterior; transversely oriented hair tuft at base of pronotum; and long strial setae. Adult male length 0.8-1.1 mm, width 0.4-0.5mm; body rounded, dwarfed, reddish-brown; all characters poorly formed; flightless and rare. Egg small (0.3 mm wide x 0.5 mm long), white, and ovoid. Mature larva length ca. 2 mm; head capsule pale brown; body creamy white and legless. Pupa length similar to adult; body creamy white; form exarate.



Fig. 1. Wilted foliage of flowering dogwood (Cornus florida L.) caused by Xylosandrus compactus (Eichhoff) infestation. (DPI Photo #702734-14)

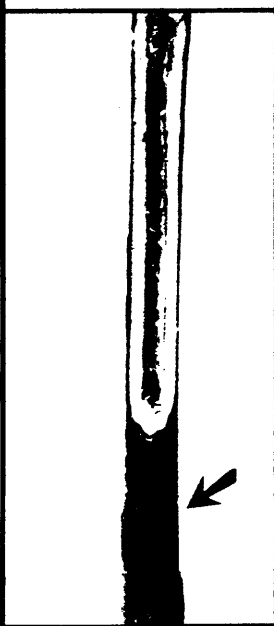


Fig. 2. Entrance hole and gallery associated with infestation of flowering dogwood by X. compactus. (DPI Photo #702734-C-14)

Fig. 3. Adult female X. compactus (17.5 X). (DPI Photo #702734-13)

Photo Credit: V. J. Windsor, FDACS, DPI, Gainesville, FL.



**DISTRIBUTION:** In Florida, and presumably the first U. S. record, the black twig borer was first collected at Ft. Lauderdale in 1941 (Wood 1982); since then, it has attained nearly statewide distribution. Other infested states are Alabama, Georgia, Hawaii, Louisiana, and Mississippi. Its pantropical distribution includes Brazil, Cuba, Indonesia, Japan, and Sri Lanka (Ceylon) (Bright 1968; Murayama & Kalshoven 1962; Wood 1982).

**HOSTS:** Over 224 plant species, belonging to 62 families, are susceptible to black twig borer infestation (Ngoan, et al. 1976). Known hosts in Florida: Acer barbatum Michx., A. negundo L., A. rubrum L., Callicarpa americana L., Carya illinoensis (Wang.) K. Koch, C. glabra (Mill.) Sweet, Cassia fistula L., Cattleya skinneri Lindl., Celtis laevigata Willd., Cercis canadensis L., Cinnamomum camphora (L.) Nees and Eberm., Cornus florida L., Dendrobium pulchellum Roxb., Khaya nyasica Staphf., Koelreuteria elegans

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(Seem.) A. C. Sm., Liquidambar styraciflua L., Macadamia ternifolia F. V. Muell., Magnolia grandiflora L., Malus pumila Mill., Mangifera indica L., Ostrya virginiana (Mill.) K. Koch, Persea americana Mill., P. borbonia (L.) Spreng., Platanus occidentalis L., Quercus laurifolia Michx., Q. nigra L., Salix sp., Sambucus simpsonii Rehder, and Symplocos tinctoria (L.) L'Her.

**BIOLOGY:** Only adult females initiate infestation of host plants. Male beetles are flightless, remain solely in brood galleries, and arise from parthenogenesis (production of male progeny without fertilization), thus haploid in genetic composition. In a host twig or branch the female constructs an entrance tunnel into the pith or wood to a depth of 1-3 cm where a small cavity is formed and a loose cluster of eggs is deposited. One or more females may occupy a twig or branch. Generally, there is only a single female if twig diameter is less than 7 mm, but up to 20 females for branch diameters from 8-22 mm. Larvae feed on a mixture of ambrosial fungus (Fusarium solani (Mart.) Sacc.) cultured on chamber walls and host plant tissues. Pupation and mating of brood adults occurs in the infested material. The brood adults emerge through the entrance holes of the parent beetles, which are located on branch undersides. Approximately 28 days (at 25°C) are required for development from egg to adult. In north central Florida, adults overwintering in Cornus florida emerge during late February, attack twigs in March, and brood production begins in April. Highest population levels occur from June to September. Adults overwinter in damaged twigs and branches (Ngoan, et al. 1976; Wood 1982).

**TAXONOMY:** This species was recorded for many years under the name Xyleborus morstatti Hagedorn. The synonymy was established by Murayama and Kalshoven (1962). The genus Xylosandrus, described by Reitter (1913), has been synonymized under Xyleborus, but resurrected by Browne (1963). It was recognized by Bright (1968) and Wood (1982) as a distinct genus. Xylosandrus is distinguished by having widely separated anterior coxae, whereas they are contiguous or narrowly separated in Xyleborus. Three other species [crassiusculus (Motschulsky) from South Carolina, germanus (Blanford) from N.E. states, and zimmermanni (Hopkins) from S. Florida] are recorded from the U.S. and distinguished by Wood (1982).

**SURVEY AND DETECTION:** Wilting of twigs and branches usually becomes evident within weeks after beetle infestation. Entrance holes are small (0.8 mm wide) and are located on the underside of branches. Cankers 10-210 mm long are common around the attacked area of larger twigs and branches. Flowering dogwood (C. florida), redbud (C. canadensis), and red maple (A. rubrum) are common hosts and may serve useful as monitor plants for timing of control measures. A whitish exudate is common in avocado twig infestations.

**CONTROL:** Pruning and destruction of beetle-infested plant material is highly recommended. Concomitantly, apply good tree care practices to promote tree vigor and health to aid in recovery from beetle damage. If an insecticide is warranted, one with chlorpyrifos as the active ingredient is recommended (Mangold, et al. 1977). Check for phytotoxicity prior to application by spraying 1 or 2 branches and follow label directions carefully.

#### REFERENCES

(The literature on this species is so extensive that space does not permit a complete listing here. The most important papers are cited, and their bibliographies can be consulted for additional references.)

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