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A MAJOR PEST OF COTTON, *OXYCARENUS HYALINIPENNIS* (HETEROPTERA: OXYCARENIDAE) IN THE BAHAMAS

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*Oxycarenus hyalinipennis* (Fig. 1) is a member of the superfamily Lygaeoidea, family Oxycarenidae (Henry 1997), subfamily Oxycarinae. Originally named *Aphanus tardus* var. *hyalinipennis*, this species was described from Italy by Costa in 1847. Adults measure 4 to 4.3 mm long and are tapered anteriorly and rounded posteriorly; their thorax, head, antennae, and femora are black and their wings are translucent white, but this species is highly variable (Slater 1972). Males and females have similar coloration, but males are slightly smaller than females. There are 5 instars (Fig. 1), which have pink to red abdomens.

*Oxycarenus hyalinipennis* has numerous synonyms and common names, but as an important pest of cotton worldwide, it is commonly referred to as “the cotton seed bug.” It not only feeds on other plants in the order Malvales, especially in the family Malvaceae, but also in Tiliaceae and Sterculiaceae (Slater & Baranowski 1994). Adults and nymphs suck oil from mature seeds and fluid from leaves of young stems to obtain moisture, according to Ananthakrishnan et al. (1982). If cotton seed bugs are present in sufficient numbers, the cotton fiber becomes stained during processing by the maceration of their bodies. In Israel during outbreaks, this insect has been reported as aggregating on various trees and shrubs including dates, figs, avocados, and persimmons. Many of these fruits were damaged, purportedly due to contamination with a pungent odor (Nakache & Klein 1992).

*Oxycarenus hyalinipennis* has a worldwide distribution, although it has not been reported from North America. Because it has been intercepted numerous times at U.S. ports of entry and because it is already established on islands near the U.S. mainland, its arrival in the U.S. is expected. In the West Indies, Baranowski & Slater (2005) report it from the Turks and Caicos, Bahamas, Cayman Islands, and Hispaniola. It was not found during a preliminary survey along the entire eastern coast of Florida in 2006 (Brambila & Dobbs, unpublished data, 2007).

The objectives of this study were to (1) collect observational data on *O. hyalinipennis*, and (2) determine the infestation levels of this pest on cotton in Great Inagua.

Great Inagua was the site of a failed attempt to grow and cultivate cotton, *Gossypium hirsutum* L., in the early 20th century. These cotton plantations lasted only a few years, but the cotton itself has persisted in a feral state and can be found as a roadside weed near Matthewtown and former settlements (Fig. 2). This made Great Inagua an excellent location to look for and study infestation levels of *Oxycarenus hyalinipennis* (Costa), a known pest of cotton.

Three locations were chosen for survey along the western coast of Great Inagua (Fig. 2). Only

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Fig. 1. Adult and 5 nymphal instars of *O. hyalinipennis*. 
easily accessible sites with dense populations of cotton were chosen for study. The majority of Great Inagua is made up of large saltwater ponds and very xeric palm forests. For the most part cotton could only be found near current or former settlements. Sites were spaced out as far as the
existing cotton population would allow. Site 1 was at the extreme north/northwestern limit of the fe-
ral cotton distribution on the island, Site 2 was in
the middle of the distribution and Site 3 was at
the extreme south/southeastern edge of the distri-
bution. At each location, 20 cotton plants were
randomly selected and 5 bolls from each plant
were removed and placed into a plastic bag. Each
boll was inspected for the presence of O. hyalin-
ipennis and then beaten over a white laboratory
tray. All insects were aspirated and placed in 70%
isopropanol. The presence or absence of O. hyalin-
ipennis in a boll was recorded for each boll. The
percent infestation within the bolls on each plant
at each of the 3 locations was then determined.
This survey was carried out 10-15 Jul 2007.

The cotton surveyed at Site 1 (Fig. 2) on the
northwest end of the island produced no O. hyalin-
ipennis. This area was completely uninhabited and
quite remote; about 16 km from Matthewtown.
This part of the island contains an abandoned set-
tlement, with large amount of cotton growing in the
area. The northwest portion of the island was
separated from other cotton aggregations by the
enormous evaporation ponds surrounding the Mor-
ton salt factory. This salt water recovery area was
extremely harsh with desolate salt beds stretching
for many miles. If O. hyalinipennis arrived in Mat-
thewtown recently it could be years before these in-
sects are able to cross this barrier (Fig. 2).

Cotton from site 2 (Fig. 2), located in Matthe-
town, was severely infested (96% of bolls) with
O. hyalinipennis. Matthewtown is the only settle-
ment on the island and therefore a likely site of
introduction from imported plant material. Most
plant material brought into the island comes from
Nassau (New Providence), which has not had
O. hyalinipennis recorded from the island. How-
ever, it is unknown whether this pest was intro-
duced via plant material or flew from neighboring
islands where the insect is known to exist.

Site 3 (Fig. 2) was located just east of Matthew-
town. This area was uninhabited, but was much
closer to the settlement. A contiguous line of
plants and vegetation exists from Site 2 to Site 3
without major biological boundaries such as the
aforementioned evaporation ponds. Cotton plants
sampled in this area also were severely infested
(91% of bolls).

The levels of infestation in the cotton at Sites 2
and 3 were so high that it made it very difficult to
determine whether an alternate host existed.
This pest could be found resting on many differ-
ent plant species near cotton plants. Virtually all
of the 1,000 O. hyalinipennis collected during this
survey were found in the bolls of the cotton
plants. They could be found on practically every
boll of every cotton plant in the infested area and
in some cases with over 30 bugs in a single boll.
While some specimens were collected standing on
the cotton fibers on the outside of the boll, the
great majority were found deeper in the boll
around the seeds and would emerge when the boll
was agitated. Occasionally, these bugs could be
found in the leaf litter beneath the cotton plant
and even more rarely on the leaves.

This tendency to heavily infest either the cot-
ton boll or the leaf litter beneath the plant is what
makes effective application of pesticides for con-
trol of O. hyalinipennis so difficult. The insecticide
will have very little effect within these protected
environments. During seedbug outbreaks, effec-
tive control is achieved in other countries with a
combination of chemicals that have both contact
and systemic properties. These are usually recom-
manded as ULV (ultra low volume) sprays applied
aerially early in the morning while the insects are
less active.

A pest reservoir of this magnitude, only 800
km (500 mi) from the coast of Florida should
greatly concern anyone associated with invasive
species research and/or cotton production. While
this pest has not as yet been found in Florida, it
has been steadily extending its range northward
in the Caribbean. Continued vigilance by port in-
spectors and target-based surveys, such as those
carried out by the Cooperative Agricultural Pest
Survey (CAPS) program, are the keys to intercep-
tion or early detection of this very damaging pest.
This species of quarantine importance can be in-
trduced into Florida inadvertently, or by natural
means, and could easily become widespread in the
state. It could pose a serious threat to agriculture,
not only to cotton but okra as well. This insect is
also a pest of hibiscus which could threaten some
of Florida’s largest plant nurseries.

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**Summary**

The cotton seed bug, Oxyccarenus hyalinipennis
(Costa), was found heavily infesting feral cotton in
Matthewtown, Great Inagua, Bahamas. This pest
was found in 2 out of the 3 sites and had severely
infested the 40 plants surveyed at those 2 loca-
tions. Although collected in leaf litter and occa-
sionally on the leaves of cotton plants, the vast
majority of these bugs were found within the bolls.
In some cases, as many as 30 individual bugs
could be found in a single cotton boll. At Site 2,
96% of the cotton bolls were infested while 91% of
the cotton bolls were infested at Site 3. These observations indicate that *O. hyalinipennis* is a major economic threat to cotton in the United States.

**REFERENCES CITED**


