

THE GRENADE SCALE (CEROCOCCUS DEKLEI KOSZTARAB & VEST)

(ASTEROLECANIIDAE: HOMPTERA) 1/

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**INTRODUCTION:** GRENADE SCALE, THE COMMON NAME PREFERRED BY THE DIVISION OF PLANT INDUSTRY, ALSO CALLED HAND-GRENADE SCALE, HIBISCUS SCALE, AND HIBISCUS HAND-GRENADE SCALE, WAS COLLECTED ON ACALYPHA SP. AND HIBISCUS SP. BY L. J. DAIGLE, EXTENSION AGENT, AND R. I. McMILLAN, FORMER DIVISION OF PLANT INDUSTRY PLANT SPECIALIST, AT MIAMI, FLORIDA, IN 1962. THE SPECIMENS WERE DESCRIBED AS A NEW SPECIES OF ASTEROLECANIIDAE (PIT SCALES) IN 1966 BY DR. MICHAEL KOSZTARAB AND DENNIS F. VEST, DEPARTMENT OF ENTOMOLOGY, VIRGINIA POLYTECHNIC INSTITUTE, BLACKSBURG, VIRGINIA. SINCE THE ORIGINAL COLLECTION THE SCALE HAS NOW BEEN RECORDED IN FLORIDA ON 12 GENERA OF HOST PLANTS AND IS CONSIDERED ESTABLISHED IN EIGHT COUNTIES.

**DESCRIPTION:** FEMALE COVER: THE ADULT FEMALE IS ENCLOSED IN A BROADLY OVAL, CONVEX, WRINKLED, YELLOWISH BROWN, WAXY COVER WHICH DARKENS WITH AGE (FIG. 1). THE SECRETIONARY COVER IS 1.3-1.8MM IN LENGTH WITH THREE LONGITUDINAL RIDGES (TRICARINATE). A TUBULAR PORE ON THE POSTERIOR EXTREMITY OF THE MEDIAN RIDGE MAY PROTRUDE SLIGHTLY AND MAY BE SEEN WITH A 10X HAND LENS (FIG. 1). THE GENERAL APPEARANCE RESEMBLES SOMEWHAT THE PINEAPPLE HAND-GRENADE.

MALE COVER: THE MALE COVER IS ELONGATE-OVAL WITH A FLAP AT ONE END. IT IS BROWNISH YELLOW INTERSPERSED WITH FLECKS OF CRIMSON, IS WEAKLY TRICARINATE AND IS 0.9-1.0MM IN LENGTH. THE FLAP SERVES AS THE ESCAPE ROUTE FOR THE WINGED MALE; IT IS ALMOST CIRCULAR, PARCHMENT-LIKE AND OPAQUE (FIG. 1).



FIG. 1. GRENADE SCALE ON HIBISCUS STEM (X16); FEMALE (♀) AND MALE (♂). CURVED ARROWS POINT TO FLAP OF ♂ AND TUBULAR PORE OF ♀.

**HOSTS:** ACALYPHA WILKESIANA MUELL. ARG. (COPPER-LEAF), AMBROSIA ELATIOR L. (RAGWEED), EUONYMUS JAPONICUS L. (SPINDLE-TREE), FLACOURTIA INDICA MERR. (GOVERNOR'S PLUM), GARDENIA JASMINOIDES ELLIS (CAPE JASMINE), PELARGONIUM SP. (GERANIUM), HIBISCUS ROSA-SINENSIS L. (SNOW-QUEEN), HIBISCUS SCHIZOPETALUS HOOK F. (FORMOSA HIBISCUS), HIBISCUS SYRIACUS L. (ROSE-OF-SHARON), IXORA COCCINEA L. (IXORA), MALPIGHIA GLABRA L. (BARBADOS CHERRY), MALVAVISCUS ARBORENS CAV. (TURKSCAP), PITTOSPORUM SP. (PITTOSPORUM).

**ECONOMIC IMPORTANCE:** GRENADE SCALE, A SUCKING INSECT FOUND ON THE TRUNK AND STEM OF ITS HOST, IS AN ECONOMIC PEST OF HIBISCUS, WHICH MIGHT BE CONSIDERED THE PREFERRED HOST. DIEBACK ON INFESTED PLANTS CAN BE EXPECTED IF CONTROL MEASURES ARE DELAYED. THE SPREAD OF THE PEST IN COMMERCIAL NURSERIES IS USUALLY TRACEABLE TO CUTTINGS, SCIONS, AND AIR LAYERS SELECTED FROM INFESTED STOCK PLANTS. VOLUNTARY DESTRUCTION, CHEMICAL CONTROL, AND NURSERY STOCK MOVEMENT RESTRICTIONS HAVE LIMITED THE SPREAD OF THE SCALE IN FLORIDA.

**CONTROL:** DIMETHOATE (CYGON 23.4% EC OR DE-FEND 267 EC) AT 1 QUART TO 100 GALLONS OF WATER. THE INFESTED PLANTS ARE TO BE SPRAYED THREE TIMES AT 4-WEEK INTERVALS. SEVERE INFESTATIONS MAY REQUIRE ADDITIONAL SPRAY TREATMENTS. FOLLOW SAFETY PRECAUTIONS GIVEN ON MANUFACTURERS' LABELS.

**DISTRIBUTION:** CUBA, PANAMA, PUERTO RICO, UNITED STATES (FLORIDA ONLY), AND THE VIRGIN ISLANDS. THE SCALE HAS BECOME ESTABLISHED IN BREVARD, BROWARD, DADE, LEE, MANATEE, MARTIN, PALM BEACH, PINELLAS, AND SARASOTA COUNTIES IN FLORIDA (FIG. 2).

**REFERENCES:**

DEKLE, G. W. 1962. NEW SCALE AND MEALYBUG INSECTS TO FLORIDA. BULL. FLORIDA DIV. PLANT INDUSTRY 1(2):74-81.  
KOSZTARAB, MICHAEL AND DENNIS F. VEST. 1966. TWO NEW CEROCOCCUS SPECIES, WITH A REVISED KEY TO THE GENUS IN NORTH AMERICA (HOMOPTERA: COCCOIDEA: ASTEROLECANIIDAE). ANN. ENT. SOC. AMER. 59(2):369-376.

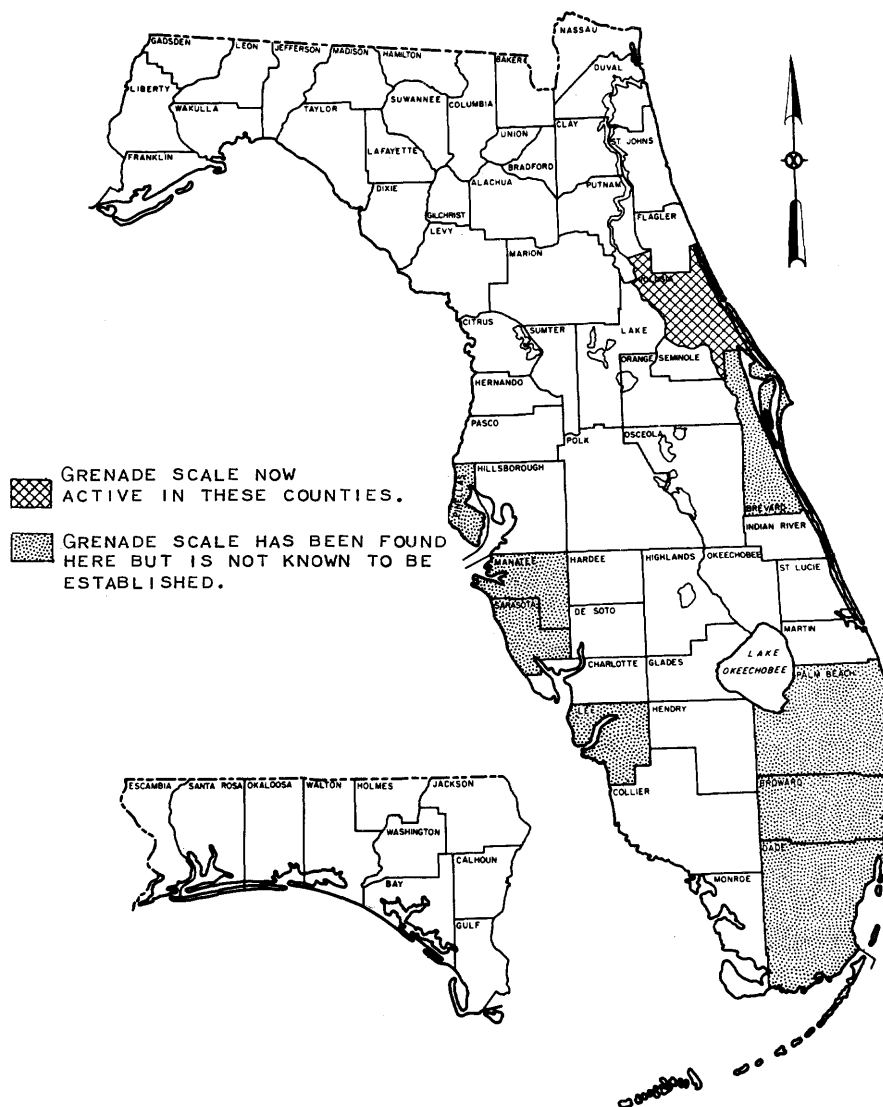


FIG. 2. GRENADE SCALE DISTRIBUTION IN FLORIDA.