

LADY BEETLES (COCCINELLIDAE: COLEOPTERA)  
FOUND ON CITRUS IN FLORIDA <sup>1</sup>

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The following annotated list of lady beetles represents the known coccinellid fauna of citrus groves in Florida at the present time. This list has been compiled during the course of an intensive survey of the predators and parasites of citrus insects and mites. Although it is recognized that the list is probably incomplete for vagrants, it is believed that most species commonly feeding on citrus insects and mites have been recognized. The present list should be considered supplementary to that published by G. B. Merrill in 1922 which listed and discussed all of the lady beetles known to occur in Florida.

For each species listed, the original description is cited, intrastate and seasonal distribution is discussed and food habits on citrus noted. For the common species only a few selected records have been included; all records have been cited for species uncommon or rare on citrus. For ease of reference the species are listed alphabetically.

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*Chilocorus stigma* (Say)

*Coccinella stigma* Say, 1835, Jour. Nat. Hist. Soc. Boston, Vol. 1, p. 202.

This species, commonly known as the twice-stabbed lady beetle, is the most abundant species found on citrus in the state. It is distributed throughout the citrus-growing areas and normally reaches a population peak in late winter, spring and early summer. Although it has been recorded feeding on many species of scale insects, mealybugs, aphids and whiteflies, its preferred

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food on citrus is Florida red scale, *Chrysomphalus aonidum* (L.). Seasonally abnormal beetle-population peaks are occasionally found on heavy infestations of this scale.

RECORDS: Goldenrod, 8 spms., Nov. 20, 1951 (W. Davis). Vero Beach, 5 spms., Nov. 13, 1951 (H. Holtsberg). Indian Rocks, 9 spms., Nov. 8, 1951 (K. Townsend). Lake Placid, 2 spms., Dec. 3, 1951 (J. B. Weeks). Ft. Pierce, 4 spms., July 18, 1953 (M. H. Muma and W. Long).

#### *Cycloneda sanguinea* (L.)

*Coccinella sanguinea* Linne, 1763, Systema Naturae, Ed. 12, p. 11.

This species, known by the common name blood-red lady beetle, is quite common on citrus in the spring and early summer. It is widely distributed in the citrus-growing areas. Although the species feeds predominantly on aphids it has been recorded eating citrus red mites, *Metatetranychus citri* (McG.); six-spotted mites, *Eotetranychus sexmaculatus* (Riley); mealybugs and scale insects.

RECORDS: Vero Beach, 4 spms., Nov. 13, 1951 (H. Holtsberg). Avon Park, 6 spms., March 6, 1952 (J. B. Weeks). Goldenrod, 2 spms., Nov. 14, 1952 (W. Davis). Bamboo, 3 spms., Jan. 9, 1952 (M. H. and K. E. Muma). Lutz, 6 spms., Mar. 18, 1952 (K. Townsend).

#### *Coleomegilla maculata* var. *floridana* (Leng)

*Megilla maculata* var. *floridana* Leng, 1903, Jour. N. Y. Ent. Soc., Vol. XI, p. 38.

Only two specimens of this vagrant species have been taken on citrus in Florida. Nothing is known concerning the seasonal and state distribution.

RECORDS: Unknown locality, one specimen, Oct. 25, 1950 (J. T. Griffiths). Vero Beach, one specimen, Apr. 14, 1953 (H. Holtsberg).

#### *Cryptolaemus montrouzeri* Muls.

*Cryptolaemus montrouzeri* Mulsant, 1853, Ann. Soc. Linn. Lyon, Vol. 1, p. 140.

The introduced Australian mealybug lady beetle apparently is widely distributed in the citrus areas of the state, but is not common on citrus. Populations occasionally are found on mealybug infestations in the spring. The species has also been collected while feeding on soft brown scale, *Coccus hesperidum* (L.).

RECORDS: Auburndale, many spms., May 13, 1953 (R. Johnson and M. H. Muma). Bradenton, 2 spms., May 25, 1954 (M. H. Muma).

**Delphastus catalinae** (Horn)

*Cryptognatha catalinae* Horn, 1895, Trans. Amer. Ent. Soc., Vol. 22, p. 83.

This species is included in this list doubtfully. It was introduced on citrus in the Clearwater area in 1917 in an effort to obtain biological control of the citrus whitefly, *Dialeurodes citri* (Ashm.). No recent specimens of the species have been collected.

RECORDS: Cortez, 2 specimens, Nov. 14-16, 1918 (H. B. Swartsel).

**Delphastus pallidus** (Lec.)

*Oeneis pallidus* LeConte, 1878, Proc. Amer. Philosophical Soc., Vol. XVII, p. 400.

This tiny lady beetle is uncommon to rare on citrus in Florida. The principal food is whiteflies with all records to date being from the cloudy-winged whitefly, *Dialeurodes citrifolii* (Morg.). At present the species is known from the East Coast, West Coast and Ridge districts of the citrus growing region.

RECORDS: Vero Beach, one specimen, May 25, 1951 (H. Holtsberg). Mims, two specimens, July 19, 1951 (H. Holtsberg). Scottsmeer, one specimen, June 19, 1953 (H. Holtsberg). Indian Rocks, one specimen, Nov. 8, 1951 (K. Townsend). Lake Alfred, three specimens, Sept. 9, 1953 (M. H. Muma).

**Delphastus pusillus** (Lec.)

*Oeneis pusillus* LeConte, 1852, Proc. Acad. Nat. Sci. Phila., Vol. VI, p. 135.

This small black lady beetle is the second most-common whitefly-eating species in the state. It is widely distributed in the citrus growing areas and reaches its peak population in the fall and early winter. To date it has been recorded feeding on citrus whitefly, *Dialeurodes citri* (Ashm.), and cloudy-winged whitefly, *Dialeurodes citrifolii* (Morg.). It probably also feeds on the woolly whitefly, *Aleurothrixus howardi* (Quaint.).

RECORDS: Plant City, 19 spms., Nov. 21, 1951 (K. Townsend). Winter Haven, 30 spms., June 16, 1952 (M. H. Muma). Brooksville, 8 spms., Oct. 16, 1951 (K. Townsend). Crescent City, 3 spms., Mar. 11, 1953 (H. Holtsberg). Vero Beach, 6 spms., June 16, 1952 (H. Holtsberg).

**Decadiomus bahamicus** (Csy.)

*Scymnus bahamicus* Casey, 1899, Jour. N. Y. Ent. Soc., Vol. VII, p. 159.

This tiny, distinctive species has been taken at only one locality feeding on citrus mealybugs, *Pseudococcus citri* Risso.

RECORDS: Auburndale, three specimens, May 13, 1953 (R. Johnson and M. H. Muma), and one specimen, May 25, 1953 (M. H. Muma).

***Exochomus marginipennis childreni* Muls.**

*Exochomus childreni* Mulsant, 1850, Ann. Soc. d'Agric. Lyon, Vol. 2, p. 1037.

Although this is the most common subspecies of the genus on citrus, seldom are more than a few specimens seen at one time. Records indicate that the subspecies is somewhat limited in distribution to the central citrus-growing region. Although the species has been recorded feeding on aphids, it is commonly taken in scale infestations. Insufficient material has been collected to determine seasonal distribution.

RECORDS: Dundee, one specimen, Nov. 28, 1951 (E. D. Harris). Apopka, 18 spms., May 6, 1952 (M. H. Muma). Tavares, one specimen, March 5, 1953 (W. Davis). Lake Alfred, one specimen, May 7, 1952 (R. Johnson). Minneola, 7 spms., April 19, 1953 (M. H. Muma).

***Exochomus marginipennis marginipennis* Lec.**

*Exochomus marginipennis* LeConte, 1824, Ann. Lyc. Nat. Hist. N. Y., Vol. I, p. 174.

This, the typical subspecies of the species, apparently is rare on citrus in the state and restricted to the south central region. No data are available on seasonal distribution.

RECORDS: Lake Placid, 2 spms., Oct. 1950 (J. B. Weeks). Lake Wales, 2 spms., August 21, 1952 and one specimen, Jan. 23, 1953 (T. B. Hallam).

***Hippodamia convergens* Guer.**

*Coccinella (Hippodamia) convergens* Guerin, Icon. Regne Animal, Insectes, Paris, 1829-1838, p. 321.

Although the convergent lady beetle is reported to have been common on citrus at one time, it has been comparatively rare in recent years. Only two recent records are available. It is primarily an aphid feeder.

RECORDS: Lake Magdalene, one specimen, Jan. 31, 1951 (K. Townsend). Winter Garden, one specimen, June 18, 1952 (W. Davis).

***Leis dimidiata quinque-decimmaculata* (Hope)**

*Coccinella 15-maculata* Hope in Gray. Zool. Miscell., 1831, p. 30.

The Chinese lady beetle introduced on citrus and at one time reportedly common in certain areas is now mainly restricted to a single locality. It is primarily an aphid feeder and reaches peak population in the spring and early summer.

RECORDS: Winter Garden, 3 spms., Apr. 16, 1952 (W. Davis). Ocoee, one specimen, June 4, 1952 (W. Davis). Winter Park, 9 spms., Mar. 19, 1953 (W. Davis). Auburndale, 2 spms., April 21, 1954 (T. B. Hallam).

**Microweisea coccidivora** (Ashm.)

*Hperaspidius coccidivora* Ashmead, 1880, Orange Insects, p. 10.

This, the little scale-eating lady beetle, apparently is the second most-common scale-feeding species on citrus in the state. Due to its small size it is easily overlooked and may actually be more common than *Chilocorus stigma* (Say). Although the species has been recorded from the East Coast, it is much more abundant in the north central citrus-growing region. The population peak occurs in late spring and early summer. The species feed on both purple, *Lepidosaphes beckii* (Newm.), and Florida red scale, *Chrysomphalus aonidum* (L.), but apparently prefers the latter.

RECORDS: Apopka, 2 spms., Apr. 22, 1952 (M. H. Muma). Lake Magdalene, 3 spms., Aug. 21, 1952 (K. Townsend). Lake Alfred, one specimen, May 21, 1952 (D. Ozanne). Winter Park, one specimen, June 26, 1952 (W. Davis).

**Nephaspis gorhami** Csy.

*Nephaspis gorhami* Casey, 1899, Jour. N. Y. Ent. Soc., Vol. VII, p. 168.

This little black and white lady beetle has been recorded feeding on cloudy-winged whitefly, *Dialeurodes citrifolii* (Morg.), citrus whitefly, *Dialeurodes citri* (Ashm.), and wooly whitefly, *Aleurothrixus howardi* (Quaint.). It is the most common species attacking whiteflies on citrus in Florida. The species is distributed throughout the citrus-growing areas of the state and attains a population peak in the winter and early spring.

RECORDS: Weirsdale, 2 spms., Dec. 19, 1951 (M. H. Muma). Indian Rocks, 7 spms., Nov. 8, 1951 (K. Townsend). Ft. Pierce, 2 spms., Sept. 10, 1952 (H. Holtsberg). DeLand, 10 spms., Nov. 9, 1951 (H. Holtsberg). Dundee, 12 spms., June 15, 1952 (M. H. Muma).

**Olla abdominalis** (Say)

*Coccinella abdominalis* Say, 1825, Jour. Acad. Nat. Sci. Phila., Vol. IV, p. 95.

The ash-grey lady beetle has been recorded at least once on citrus in the northern part of the state; the food was not noted.

RECORD: Bowling Green, one specimen, Sept. 9, 1949 (L. B. Hill).

**Olla abdominalis var. plagiata** Csy.

*Olla plagiata* Casey, 1899, Jour. N. Y. Ent. Soc., Vol. VII, p. 94.

The southern two-spotted lady beetle is distributed throughout the citrus-growing areas of the state. Peak populations occur

in the late winter, spring, and early summer. The species apparently is an omnivorous feeder; it has been recorded feeding on mealybugs, aphids and citrus red mites, *Metatetranychus citri* (McG.). During some years the species is quite common but recently populations have been low except in isolated groves.

RECORDS: Palm Harbor, one specimen, June 2, 1952 (K. Townsend). Auburndale, 9 spms., May 13, 1953 (M. H. Muma and R. Johnson). Oklawaha, 8 spms., April 21, 1952 (W. Davis). Lake Placid, one specimen, March 3, 1952 (J. B. Weeks). Vero Beach, 2 spms., May 12, 1952 (H. Holtsberg).

***Psyllobora parvinotata* Csy.**

*Psyllobora parvinotata* Casey, 1899, Jour. N. Y. Ent. Soc., Vol. VII, p. 101.

This little, white, black-spotted lady beetle apparently is a vagrant on citrus. It has been collected only four times. The species is believed to be a fungus feeder.

RECORDS: Wauchula, one specimen, March 16, 1951 (W. Davis). Vero Beach, one specimen, June 27, 1951 and 3 spms., June 16, 1952 (H. Holtsberg). Merritt Island, one specimen, Mar. 30, 1953 (H. Holtsberg).

***Rodolia cardinalis* (Muls.)**

*Vedalia cardinalis* Mulsant, 1851, Ann. Soc. d'Agric. Lyon, Vol. II, p. 906.

Since its introduction, the vedalia has become distributed throughout the citrus-growing areas of the state. Peak populations occur concurrently with those of the host insect, cottony-cushion scale, *Icerya purchasi* Mask.

RECORDS: Records of this well known species would be superfluous.

***Scymnillodes subtropicus* Csy.**

*Delphastus subtropicus* Casey, 1924, Mem. Coleop., Vol. XI, p. 170.

To date this little steel-blue lady beetle has been taken on citrus only at Vero Beach in the East Coast citrus region. Nothing is known of the food habits. It is probably a vagrant.

RECORDS: Vero Beach, one spm., May 20, 1953, 2 spms., June 16, 1953 and one spm., Dec. 16, 1952 (H. Holtsberg).

***Scymnillus aterrimus* Horn**

*Scymnillus aterrimus* Horn, 1895, Trans. Amer. Ent. Soc., Vol. XXII, p. 110.

This little black lady beetle has been collected only twice from citrus.

RECORDS: Apopka, one spm., April 22, 1952 (M. H. Muma). Auburndale, one spm., Sept. 18, 1952 (T. B. Hallam).

**Scymnus melsheimeri** WS.

*Scymnus collaris* Melsheimer, 1847, Proc. Acad. Nat. Sci. Phila., Vol. III, p. 180. *Scymnus melsheimeri* Weise, 1927, Zool. Jahrb. Suppl. XVI, Heft I, p. 33 (new name— not *collaris* Herbst).

This species, commonly known as the collared lady beetle, is most frequently collected from aphid colonies. Next to the blood-red lady beetle, it is the most common aphid-feeding species on citrus at the present time. It is most abundant in the spring and early summer.

RECORDS: Weirsdale, 2 spms., Oct. 13, 1952 (M. H. Muma). Umatilla, one spm., April 18, 1952 (W. Davis). Scottsmeer, one spm., June 17, 1952 (H. Holsberg). Waverly, one spm., May 18, 1953 (T. B. Hallam).

**Scymnus partitus** Casey

*Scymnus partitus* Casey, 1899, Jour. N. Y. Ent. Soc., Vol. VII, p. 158.

This tiny species has been taken only twice on citrus. It is believed to be an aphid feeder.

RECORDS: Lakeland Heights, one spm., May 27, 1952 (T. B. Hallam). Spring Lake, one spm., Nov. 14, 1951 (K. Townsend).

**Scymnus flavifrons** Melsh.

*Scymnus flavifrons* Melsheimer, 1847, Proc. Acad. Nat. Sci. Phila., Vol. III, p. 181.

This is the most common species of the genus found on citrus in Florida. Although several specimens have been observed feeding on scale insects, the primary food is mealybugs. Largest populations of the species are found in the spring in groves heavily infested with mealybugs. The species appears to be well distributed through the citrus-growing region.

RECORDS: Apopka, one specimen, Apr. 29, 1952 (K. E. Muma). Clearwater, one specimen, June 2, 1952 (K. Townsend). Lakeland Heights, 5 spms., May 27, 1952 (T. B. Hallam). Auburndale, 18 spms., June 6, 1952 (M. H. Muma). Merritt Island, one specimen, June 29, 1953 (H. Holsberg).

**Stethorus utilis** Horn

*Stethorus utilis* Horn, 1895, Trans. Amer. Ent. Soc., Vol. XXII, p. 107.

This little mite-eating lady beetle feeds primarily on the six-spotted mite, *Eotetranychus sexmaculatus* (Riley), but has been

recorded feeding on the citrus red mite, *Metatetranychus citri* (McG.), and *Hemitarsonemus peregrinus* Beer. Peak populations of the species occur concurrently with those of the favored host in the late spring. The species has been collected in every citrus-growing area of the state.

RECORDS: Umatilla, one specimen, April 18, 1952 (W. Davis). Lake Alfred, 11 spms., May 1, 1952 (M. H. Muma). Crescent City, one specimen, Mar. 11, 1953 (H. Holtsberg). Vero Beach, one specimen, May 18, 1953 (H. Holtsberg).

#### LITERATURE CITED

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