

First Records of the Green Lacewing *Leucochrysa pavida* (Hagen) (Neuroptera: Chrysopidae) in New Jersey

David Moskowitz¹ and David Golden²

Abstract – This report documents the first records of the green lacewing *Leucochrysa pavida* (Hagen) in New Jersey. The collected specimens were a second instar larva from East Brunswick, Middlesex County, New Jersey, two second instar larvae from Tuckahoe, Cape May County, New Jersey, and five second instar larvae from Villas, Cape May County, New Jersey. It is unknown whether these specimens represent a recent range expansion of a more southerly species or a species that was overlooked previously because of extreme crypsis and relatively small size.

On 7 October, 2010 a second instar larva of *Leucochrysa pavida* (Hagen) was found at Great Oak Park, East Brunswick Township, Middlesex County, New Jersey (40°25'11", 74°23'43"). Two additional second instar larvae were collected in Tuckahoe Wildlife Management Area, Tuckahoe, Cape May County, New Jersey (39°16'21", 74°43'08") on 27 October and 1 November, 2010 (*Note:* In September 2009, twelve lichen-covered lacewing larvae were observed in this exact location, but no species determination was made at that time). An additional five second instar larvae were collected on 16 November, 2010 from Cape May Wildlife Management Area, Villas, Cape May County, New Jersey (39°00'08", 74°56'57"). The species identification for the larvae was confirmed by C. Tauber (pers. comm., 12 October, 2010 and 17 November, 2010).

The lacewing larva found on 7 October, 2010 was collected from a small (4" dbh) cultivated flowering dogwood (*Cornus florida* Spach) growing in an open area surrounded by lawn. The two larvae found in Tuckahoe, New Jersey were on a black cherry (*Prunus serotina* Ehrh.) and those from Villas, New Jersey were all taken from a single willow oak (*Quercus phellos* L.). The habitat at these two localities differs greatly. The specimens from Tuckahoe were found in a very natural setting of oak-pine forest while the specimens from Villas were collected from an abandoned 100-hectare golf course, which is surrounded by moderate-density residential housing. These are the first records of the species in New Jersey, and they represent an expansion of the known range by at least (100km). The previously known distribution within the United States extends from the southeastern states of Louisiana and Florida, north to southern Illinois, Ohio and Maryland. The species has also been reported from Jalisco, Veracruz, Mexico. The Maryland record is the closest to New Jersey but specific locational data is not available (Penny, et. al. 2007, Tauber 2004).

¹ (Corresponding Author) EcolSciences, Inc. 75 Fleetwood Drive, Suite 250, Rockaway, New Jersey 07866 and Rutgers University Entomology Program, New Brunswick, New Jersey. E-mail dmoskowitz@ecolsciences.com

² Endangered and Nongame Species Program, New Jersey Division of Fish and Wildlife, 2201 Rte 631, Woodbine, New Jersey. E-mail dgolden@hughes.net

The species was not reported in older New Jersey entomological lists (NJSM 1909, Smith 1899) and no specimens were present in the Rutgers University Insect Collection, **previous to those documented here**. The specimens are deposited in the Rutgers University Insect Collection as a voucher.

Lacewing larvae that cover the dorsa with packets of material (exoskeletons of prey, insect waxes, lichens, terrestrial algae and other plant material) are commonly referred to as “trash carrying” (see Tauber et al. 2009). *L. pavida* larvae engage in this behavior, but they appear to be unusual because their packets of trash are restricted to lichens. It has been suggested that this habit may represent a close symbiotic relationship between *L. pavida* and lichens, with the lichens providing the larva protection from predators through crypsis and the lacewing larvae helping to disperse propagules for the lichens (Slocum and Lawrey 1976). Chromatological analysis of the lichen components in *L. pavida* trash packets indicates that the larvae selectively harvest and use lichen thallus fragments only from specific lichens, even when other lichens are present (Wilson and Methven 1997).

The extreme crypsis and relatively small size of the larva may have contributed to its having been overlooked in New Jersey prior to this report. Or, it is possible that the new records represent a northerly range extension of a more typically southern species. Such a range extension would be consistent with observations for other insects in New Jersey (Moskowitz 2001, Moskowitz and Bell 1998, pers. comm. F. Carle 16 October, 2010) and elsewhere (Hickling et al. 2006, Robinet and Roques 2010).

Acknowledgments. We are deeply indebted to Catherine A. Tauber, Cornell University, for assistance identifying the lacewing larva and with understanding the distribution of the species in New Jersey. Her review of the paper and suggestions greatly improved the paper. We also thank Dave Horn for his review and helpful comments. We are also appreciative of EcolSciences for the support to prepare this report.

Literature Cited

- Hickling, R., D. Roy, J. Hill, R. Fox and C. Thomas. 2006. The distributions of a wide range of taxonomic groups are expanding polewards. *Global Change Biology*. 12: 450-455.
- Moskowitz, D. and D. Bell. *Archilestes grandis* in central New Jersey with notes on water quality. *Bulletin of American Odonatology*. 5: 49-54.
- Moskowitz, D. 2001. First record of the Queen butterfly (*Danaus gilippus* Cramer) in New Jersey. *News of the Lepidopterists Society*. 43 (3): 72 and 74.
- New Jersey State Museum (NJSM). 1909. Annual Report of the New Jersey State Museum including a Report on the Insects of New Jersey. Trenton, New Jersey. 888 pp.
- Penny, N., J. Arias and J. Armistead. 2007. Seasonal emergence of Neuroptera in Fairfax County, Virginia. *Proc. Cal. Academy of Sciences*. 58(2): 7-19.
- Robinet, C. and A. Roques. 2010. Direct impacts of recent climate warming on insect populations. *Integrative Zoology*. 5: 132-142.
- Slocum, R. and J. Lawrey. Viability of the epizoic lichen flora carried and dispersed by green lacewing (*Nodita pavida*) larvae. *Can. J. Bot.* 54: 1827-1831.

- Smith, J. 1899. Insects of New Jersey. A list of species occurring in New Jersey with notes on those of economic importance. Twenty-seventh Annual report of the State Board of Agriculture. Trenton, New Jersey. 755 pp.
- Tauber, C. A. 2004. A systematic review of the Genus *Leucochrysa* (Neuroptera: Chrysopidae) in the United States. *Annals of the Entomological Society of America*. 97(6):1195-1221.
- Tauber, M. J., C. A. Tauber and G.S. Albuquerque. 2009. Neuroptera (Lacewings, Antlions), p. 695-707. In V.H. Resh & R. Cardé. (eds.). *Encyclopedia of Insects*, 2nd Edition. San Diego, Academic Press, 1132p.
- Wilson, P. J. and A. S. Methven. 1997. Lichen use by larval *Leucochrysa pavidata* (Neuroptera: Chrysopidae). *The Bryologist* 100: 448-453.



Photograph 1. Second instar larva of *L. pavidata* collected on 7 October 2010 in Great Oak Park, East Brunswick Township, Middlesex County, New Jersey. This is the first record of the species from the state. The larva is approximately 3-4mm.



Photograph 2. Second instar larva of *L. pavidus* with the legs and head pulled in beneath the lichen-covered dorsa. Same individual as above.



Photograph 3. Ventral view of second instar larva of *L. pavidus* collected on 16 November, 2010 from Cape May Wildlife Management Area, Villas, Cape May County, New Jersey.