# ABNORMAL *SIREX NOCTILO* F.
# (HYMENOPTERA: SIRICIDAE)

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*Abstract*

White-eyed forms and gynandromorphs of the wood wasp *Sirex noctilo* F. (Hymenoptera: Siricidae) are recorded from Victorian *Pinus radiata* D. Don hosts. It is the first record of these aberrant forms in *S. noctilio*.

Sirex-infested radiata pine billets *Pinus radiata* D. Don, are caged in Victoria annually to provide host material for the parasite breeding programme of the National Sirex campaign. This gives an opportunity to examine large populations of wood wasps *Sirex noctilio* F. (Hymenoptera: Siricidae) for aberrant forms, some of which are discussed below.

## White-eyed forms

Four male wasps with white compound eyes and white ocelli, quite distinct from the normal black eyes (Plate IA), were collected from approximately 15,000 insects that emerged in 1964. Since then, subsequent generations of *Sirex* were inspected for the abnormality, but it was not until 1970 that another white-eyed male and, for the first time, a similar female were, collected. There is no previous record of this abnormality in *S. noctilio*.

In the vinegar fly *Drosophila melanogaster* Meigen (Diptera: Drosophilidae) Morgan found white-eyed mutants, both male and female, in which this eye colour was controlled by a single recessive gene located on the X-chromosome (Bridges and Brehme 1944). There is no evidence available to determine whether white-eye in *S. noctilio* is genetically controlled or is a physiological aberration.

## Gynandromorphs

Five of the collected abnormal wasps were typical gynandromorphs, that is individuals morphologically male in one region and female in another. This is the first record of gynandromorphs in *S. noctilio*. The ratio of male to female structures varied between individuals. For example, one wasp was female in colour and morphology except for one male hind leg, easily distinguished from female legs by a greater thickness and the black colour (Plate IB). Another wasp had a normal male body shape but its coloration and leg morphology was female. The most spectacular of these gynandromorphs was male on one side and female on the other along a mid-longitudinal plane (Plate IC).

Kalmus (1964) considered gynandromorphs to be pathological individuals. There was supporting evidence of this viewpoint when one wasp with female leg morphology and coloration and with a morphologically male body was dissected. Its abdomen contained an abnormal female reproductive system with a large sac-like membraneous structure completely filled with eggs and lacking accessory glands, oviducts and a vagina. The ganglia of the ventral nerve cord were fused into a mass of nervous tissue instead of being separated by longitudinal commissures. In short, this particular gynandromorph was sterile and incapable of efficient nervous co-ordination.

The classical explanations for gynandromorphism in certain Lepidoptera and Diptera, namely the abortion of a sex chromosome in one of the early cleavage nuclei of the embryo (Morgan, Bridges and Sturtevant 1919), or double fertilisation of rare binucleate̞ ̦s in some Lepidoptera (Cockayne 1935) and Orthoptera (White 1968) are inapplicable as sex in ꞏ enoptera is controlled by haploidy and diploidy.

## REFERENCES

BRIDGES, C. B. and BREHME, K. S. (1944).—The mutants of ᴌ ꞏsophila melanogaster. *Publs Carnegie Instn* **552.**

COCKAYNE, E. A. (1935).—The origin of gynandromorphism in ᴌne Lepidoptera from bi-nucleate ova. *Trans. R. ent. Soc. Lond.* **83**: 509-521.

KALMUS, A. (1964).—"Genetics". (Doubleday and Co. Inc.: New York).

MORGAN, T. H., BRIDGES, C. B. and STURTEVANT, A. H. (1919).—Contributions to the genetics of *Drosophila melanogaster. Publs Carnegie Instn* **278.**

WHITE, M. J. D. (1968).—A gynandromorphic grasshopper produced by double fertilization. *Aus. J. Zool.* **16**: 101-109.