

## CICINDELIDAE OF NEW ZEALAND WITH DESCRIPTIONS OF A NEW SPECIES AND SUBSPECIES

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(Received for publication 26 April 1965)

### Summary

Reappraisal is made of the New Zealand Cicindelidae all recently placed in the endemic genus *Neocicindela* Rivalier. *N. spilleri* sp. nov. and *N. perbispida giveni* subsp. nov. are described. *N. latecincta* (White) is considered to be a full species, not a subspecies of *N. tuberculata* (Fabr.).

### INTRODUCTION

This review of the New Zealand species of Cicindelidae has been made possible through the courtesy of Dr D. Spiller, Plant Diseases Division, D.S.I.R., Auckland, and Mr E. S. Gourlay, Entomology Division, D.S.I.R., Nelson, who made available for identification and study the collections of their respective institutions and, in the case of Mr Gourlay, his own collection also.

The shortage of material, especially of the rare species, was a handicap, but Dr E. B. Britton of the British Museum (Natural History) and Prof. Dr H. Machatschke of the Deutsches, Entomologisches Institut in Berlin, kindly supplied material from their museums, and the late Mr B. H. Klynstra lent material in his collection. Dr Britton also supplied photographs of type-specimens and copies of some rare descriptions.

Though I have not had the opportunity to examine the material, I accept Horn's placing of *Neocicindela buttoni* (Broun) as a synonym of *N. tuberculata* (F.) and *Cicindela ezonata* Broun as a synonym of *Oceanella vitiensis* (Blanch.) (Rivalier, 1963, p. 40). My examination of the material confirms that *N. halli* (Broun) is a synonym of *Neocicindela helmsi* (Sharp).

Rivalier (1963, 1964) established the endemic genus *Neocicindela* for the New Zealand species of Cicindelidae.

The synonymy in this paper follows Horn (1936) except that *N. latecincta* (White) is considered to be a full species, not a subspecies of *N. tuberculata* (Fab.).

The locations of the type specimens are given for each species using the following abbreviations:

- P.M. - Museum d'Histoire Naturelle, Paris.  
 B.M. - British Museum (Natural History).  
 D.E.I. - Deutsches Entomologisches Institut, Berlin.  
 D.M. - Dominion Museum, Wellington.  
 E.D. - Entomology Division, D.S.I.R., Nelson.  
 P.D.D. - Plant Diseases Division, D.S.I.R., Auckland.

## SPECIES LIST

*Neocicindela* Rivalier, 1963

<i>N. tuberculata</i> (Fabr., 1775)—type species	B.M.
<i>N. buttoni</i> (Broun, 1877)	B.M.
<i>N. austromontana</i> (Bates, 1878)	P.M.
<i>N. incognita</i> (W. Horn, 1892)	D.E.I.
<i>N. brevilunata</i> (W. Horn, 1926)	B.M. & D.E.I.
<i>N. circumpictoides</i> (W. Horn, 1900)	D.E.I.
<i>N. dunedensis</i> (Cast., 1867)	?
<i>N. wakefeldi</i> (Bates, 1874)	B.M.
<i>N. feredayi</i> (Bates, 1867)	P.M.
<i>N. hamiltoni</i> (Broun, 1921)	*
<i>N. helmsi</i> (Sharp, 1876)	B.M.
<i>N. novaseelandia</i> (W. Horn, 1892)	D.E.I.
<i>N. halli</i> (Broun, 1917)	B.M.
<i>N. latecincta</i> (White, 1846)	B.M.
<i>N. parryi</i> (White, 1846)	B.M.
<i>N. perhispidata perhispidata</i> (Broun, 1880)	B.M.
<i>N. perhispidata campbelli</i> (Broun, 1886)	B.M.
var. <i>brouni</i> (W. Horn, 1893)	
"perhispidata variety", W. Horn, 1892	
<i>N. perhispidata giveni</i> subsp. nov.	E.D. & B.M.
<i>N. spilleri</i> sp. nov.	P.D.D. & E.D.
<i>N. waitouraensis</i> (Broun, 1914)	B.M.

Probably not occurring in New Zealand:

*Oceanella* Rivalier, 1963

<i>O. vitensis</i> (Blanch, 1853) .....	(Fiji) type species
= <i>Cicindela ezonata</i> Broun, 1921 .....	? New Zealand D.M.

## DESCRIPTIONS OF NEW SPECIES

*Neocicindela perhispidata giveni* subsp. nov. (Fig. 1, top)

Differs from the typical subspecies by the reduced dark area of the elytra. This dark area consists of a border along the suture, beginning as

\*Dominion Museum & E. S. Gourlay Collection, Nelson.

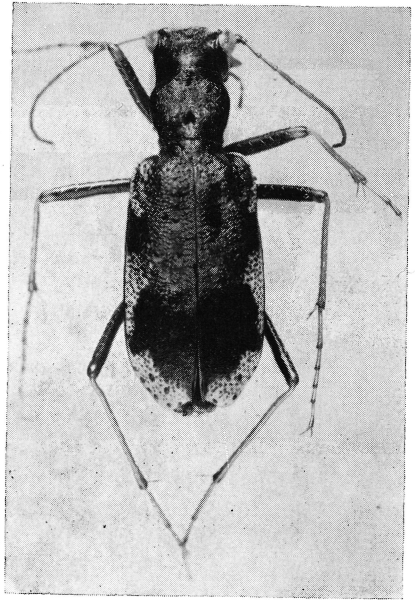
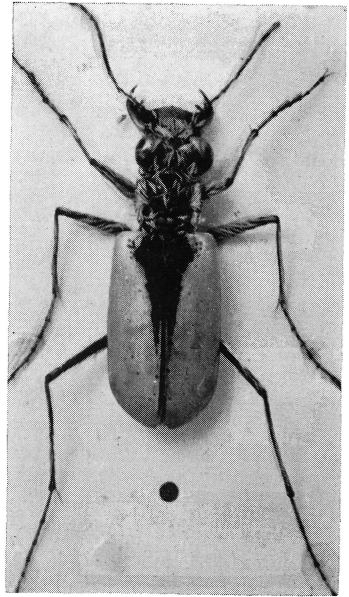
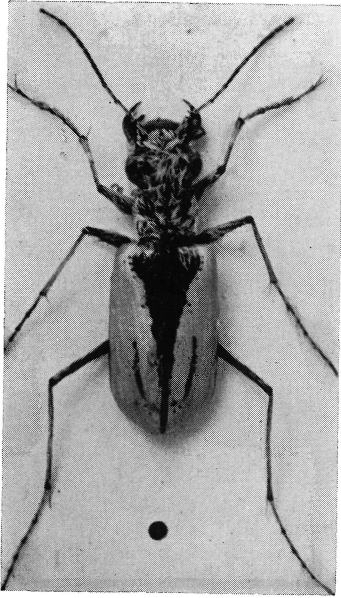


FIG. 1—(top) Paratype males *Neocicindela perbispida giveni* subsp. nov. showing variation in elytra markings. (bottom left) Holotype male *Neocicindela spilleri* sp. nov. (bottom right) Allotype female *Neocicindela spilleri* sp. nov.

wide as the width of the thorax, and gradually becoming narrower and ending at about  $\frac{3}{4}$  of the length of the suture. In some specimens there is a posterior lateral dark streak, about  $\frac{1}{3}$  the length of the elytrum; in other specimens, even this streak is absent.

The colour of head, pronotum and elytral dark area is brilliant purple-red with brilliant green spots. The quantity of green spots determines whether the insect seems to be purple or green.

As it differs so slightly from *N. perphispida*, I consider it as a subspecies. All the 24 specimens, collected by Mr B. B. Given at Spirits Bay on 10 January 1957, show the same reduced dark elytral area. This new subspecies is named after its collector.

Holotype ♂, Allotype ♀ and 18 paratypes Entomology Division, D.S.I.R., Nelson, two paratypes British Museum (Natural History), 2 paratypes, author's collection.

Size of Holotype: vertex to apex of elytra—9.0 mm, width at widest part 3.0 mm.

*Neocicindela spilleri* sp. nov. (Fig. 1, bottom)

In his generic revision of the Cicindelidae of the Australian region Rivalier (1963) inadvertently included *N. spilleri* in his list of New Zealand species, attributing it to the present author. This did not constitute valid publication under the International Code of Zoological Nomenclature and the name thus becomes available only from the date of the present description (1965).

Closely resembles *N. parryi* White. Has about the same dark area on the elytra and the white markings covered with brown dots.

Differs however by its much larger size and by having only the coxae covered with a few white hairs. *N. parryi* has the metasternum, the episterna of the meta- and mesothorax and the epimera of the mesothorax hairy. The suture ends in a little tooth, not or scarcely withdrawn. In the female the apical part of the elytra more rounded and less withdrawn. In *N. parryi* the antennae from the sixth articulation dark, in *N. spilleri* only the last one dark.

The white median markings on the elytra extending less to the suture than in *N. parryi*.

In spite of these differences, of which the length is striking, I received this species under the name of *N. parryi*. I name this species after Dr Spiller, who collected some of the specimens. Total numbers, 6 ♂♂ and 10 ♀♀.

Type Series: Holotype ♂, under stones in stream bed, Swanson, 8.ii.42 (D. Spiller); Allotype ♀, 2 ♂♂ paratypes, same data (D. McKenzie); 1 ♂ paratype, Niki Niho, King Country, 5.i.51 (R. S. Christensen); 1 ♂ paratype, Owairaka, Auckland, 29.i.53 (J. Leith); 1 ♀ paratype, Huia, Auckland, 2.i.49 (J. Edwards); 1 ♀ paratype, Owairaka, Auckland, 6.i.50 (M. Dye); 1 ♀ paratype, Titirangi, 9.i.48 (M. W. Carter); paratype (unsexed), Waitakere Range, Auckland, vi.51 (D. Spiller);—in col-

lection of Entomology Division Substation at Plant Diseases Division, D.S.I.R. (Auckland).

1 ♂ paratype, Ohakune, 31.xii.16 (Brookes col.), 1 ♀ paratype, Titi-rangi, 28.12.15 (Brookes col.); 1 ♀ paratype "Waitakeri", 30.xii.14 (Brookes col.)—in collection of Entomology Division, D.S.I.R., Nelson.

Size of Holotype: vertex to apex of elytra, 6.5 mm, width at widest part 4.0 mm.

Size of Allotype: vertex to apex of elytra, 7.0 mm, width at widest part 4.5 mm.

#### DISTRIBUTION RECORDS OF ESTABLISHED SPECIES

##### *Neocicindela austromontana* (Bates)

TYPE LOCALITY: Castle Hill, Canterbury.

*incognita* (Horn). TYPE LOCALITY: "New Zealand".

DISTRIBUTION RECORDS: SOUTH ISLAND: Bealey; Broken River; Castle Hill; Cass; Rakaia R.; (Canterbury). Coverham Track, (Marlborough); Southland.

##### *N. brevilunata* (Horn)

TYPE LOCALITY: "New Zealand".

DISTRIBUTION RECORDS: NORTH ISLAND: Hokianga; Manukau; Ruakaka Bch, nr Whangarei; Waipu, Northland.

##### *N. circumptuoides* (Horn)

TYPE LOCALITY: "Oceana".

DISTRIBUTION RECORDS: SOUTH ISLAND: Clarence Bridge; Waiau R.

##### *N. dunedensis* (Castelnau)

TYPE LOCALITY: ?Dunedin.

*wakefeldi* (Bates). TYPE LOCALITY: Christchurch.

DISTRIBUTION RECORDS: SOUTH ISLAND: Christchurch; Canterbury; Tekapo; Dunedin.

Broun (1880) created the typographical error *dunedinensis*, wrongly attributed to Castlenau for *dunedensis*, and this error was perpetuated by Lewis (1902), Hutton (1904), and Hudson (1923, 1934).

##### *N. feredayi* (Bates)

TYPE LOCALITY: unknown.

DISTRIBUTION RECORDS: NORTH ISLAND: Auckland, Turakina Beach; Otaki Beach. SOUTH ISLAND: Waiau R., Canterbury; Mt. Grey; Christchurch; Rakaia R.; Ashburton; Mt. Cook; Ophir (Otago); Dart R.

##### *N. hamiltoni* (Broun)

TYPE LOCALITY: Mouat's Lookout (5,700 ft), Awatere river basin, Marlborough.

DISTRIBUTION: Known only from the type locality and not since rediscovered, after the two original specimens were taken by Hamilton.

*N. helmsi* (Sharp)

TYPE LOCALITY: Greymouth.

*novaseelandia* (W. Horn.). TYPE LOCALITY: "New Zealand".

*ballii* (Broun). TYPE LOCALITY: Hollyford, Fiordland.

DISTRIBUTION: SOUTH ISLAND: Motueka; Motupiko; Lake Rotoroa; Clarence Bridge; Waiiau River; Greymouth; Waiho Downs; West Otago; Hollyford River.

*N. latecincta* (White)

TYPE LOCALITY: Waikouaiti.

DISTRIBUTION: NORTH ISLAND: Sandy Bay; Tairua; Ohakune. SOUTH ISLAND: Anakiwa; Takaka; Motupiko; Glynn Wye; Amuri; Hurunui; N. Canterbury; Mt. Grey; Christchurch; Dyers Pass; Governor's Bay; Kaituna; Mt. Hutt; Rakaia; Mt. Sommers; Otago; Waikouaiti; Dunedin; Portobello; Taieri; Kingston; Piano Flat; Garvie Mts; Owaka, Southland.

*N. parryi* (White)

TYPE LOCALITY: Wellington (Port Nicholson).

DISTRIBUTION: NORTH ISLAND: Waikare; Auckland; Tairua; Te Aroha; Waihi Beach; Matamata; Okauia (Matamata); Oio; Mt. Egmont; Ararata (near Hawera), S. Taranaki; Makatote; Tararuas; Rotorua; Blue Lake (Rotorua); Wairere Ranges; Manawatu; Mangahoa; Tokomaru Gorge; Wellington (Port Nicholson of White). SOUTH ISLAND: Kenepuru Sound, (Marlborough); Dun Mt. (3,000 ft) (Nelson); Roding River; Takaka Hills; Canaan; Cobb power house (Nelson); Flora River; Mt. Arthur tableland; Mt. Peel; Lake Peel; Mt. Kiwi; Goulard Downs; Beeby's Knob (3,500 ft); Mt. Grey (N. Canterbury); Westport; Greymouth; Kaihinu; Kumara; Pukekura Reserve; Lake Ianthe; Lake Luna; Waiho Gorge; Owaka; Tisbury; Bluff; Te Waewae Bay; Cromarty.

*N. perbispida perbispida* (Broun)

TYPE LOCALITY: Whangarei.

DISTRIBUTION RECORDS: NORTH ISLAND: Mangonui; Kerikeri; Hokianga; Bayly's coast, Dargaville; Whangarei Harbour; Marsden Point, Whangarei; Woodhill, Kaipara Harbour.

*N. perbispida campbelli* (Broun)

TYPE LOCALITY: Waikato Heads.

DISTRIBUTION RECORDS: NORTH ISLAND: Muriwai; Karekare; Waikato Heads; Manakau.

*N. tuberculata* (Fabr.)

TYPE LOCALITY: "New Zealand".

*buttoni* (Broun). TYPE LOCALITY: Hikuwai Forest, about ten miles from Tairua.

DISTRIBUTION: NORTH ISLAND: Waipapakauri; Manukau; Kaeo; Ngawha, near Kaikohe, Bayly's coast, Dargaville; Whangarei; Waipu; Auckland; Western Hills, near Auckland; Tairua; Titirangi; Mayor Island; Te Aroha; Matamata; Mt. Maunganui coast; Waimangu, near Rotorua; Wairakei, near Rotorua; Waikaremoana; Tongaporutu, N. Taranaki; Chateau, Mt. Ruapehu; Ngawhini Gorge, near Ararata, S. Taranaki; Henui Valley, New Plymouth; Horopito, near Ohakune; Kaihinu, N. Taranaki; Manawatu; Mangahao; Waitohu; Masterton; York Bay, Wellington. SOUTH ISLAND: Patarau River, W. Nelson; Stephens Island; Crail Bay, Pelorus Sound; Kenepuru, Pelorus Sound; Picton; Ronga Valley, Nelson; Nelson; Pokororo; Tapawera; Motupiko; Mt. Hope; Puhipuhi Reserve, Kaikoura; Titahi Bay, Southland; Martins Bay, S.W. Otago.

*N. waiouraensis* (Broun)

TYPE LOCALITY: Waiouru, near Mt. Ruapehu.

DISTRIBUTION: NORTH ISLAND: Waiouru; Mt. Ruapehu; Ohakune; Waimarino; National Park, 2,800 ft; Wairere Ranges, N.W. of Mt. Ruapehu.

*Cicindela ezonata* Broun

Probably identical with *Oceanella vitiensis* (Blanch.), a Fijian species and not from New Zealand—see Horn (1936).

TYPE LOCALITY: ?Greymouth.

#### ACKNOWLEDGMENTS

I am indebted to Dr E. Rivalier who assisted in solving some of the problems, to Mr E. S. Gourlay who placed at my disposal his card index system of references to New Zealand Cicindelidae, and to Mr J. G. Brown, Entomology Division, D.S.I.R., Nelson, who helped to prepare this paper for publication.

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