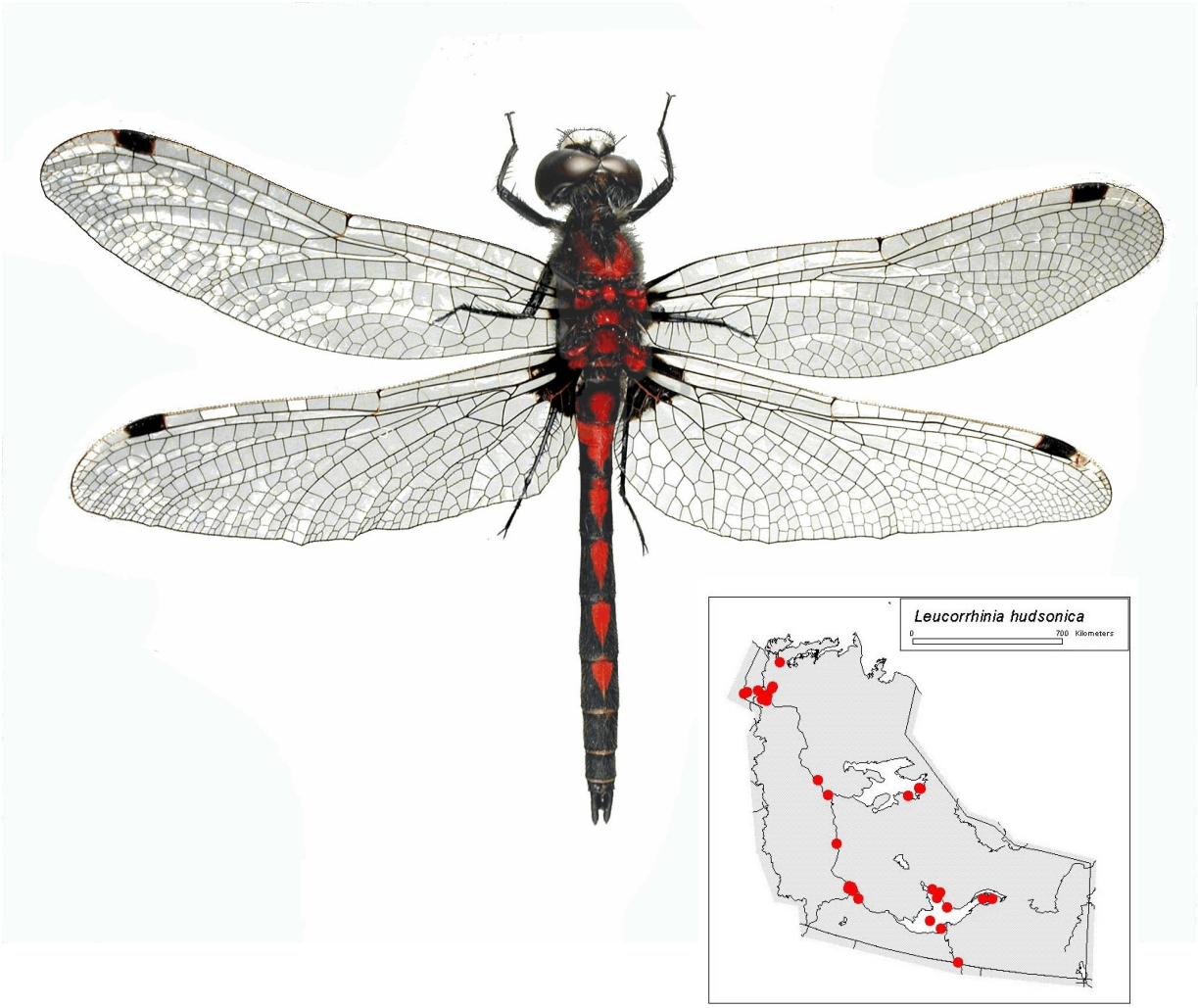
DRAGONFLIES (ODONATA)
OF THE NORTHWEST TERRITORIES

STATUS RANKING AND PRELIMINARY ATLAS



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ABSTRACT:

Thirty-five species of Odonata are given status ranks in the Northwest Territories based on number of occurrences and distributional area within the territory. Nine species are ranked as S2, may be at risk, including *Aeshna subarctica, Lestes congener, Nehalennia irene, Ophiogomphus colubrinus, Somatochlora albicincta, Somatochlora forcipata, Somatochlora franklini, Somatochlora sahlbergii and Somatochlora septentrionalis*. Many of these are widespread and on the edge of their range in the Northwest Territories. The most restricted species overall in North America is the Paleaectic - East Beringian *Somatochlora sahlbergi*. *Ophiogomphus colubrinus* appears rare and local in the western part of its range. Nineteen species are ranked as S3, sensitive and 7 are ranked as S4, secure. The ranking is based on a database of 1040 records each defined as unique combination of date, location and collector. Rejected taxa and possible additions are outlined. Regions requiring further survey are noted. Information on collecting and inventory is provided. Distribution maps for the species in the Northwest Territories are included.

ACKNOWLEDGEMENTS

Help with many aspects of this work was provided by both Dr. Suzanne Carrière, Ecosystem Management Biologist, Wildlife and Fisheries, Dept. of Resources, Wildlife and Economic Development , Government of the Northwest Territories and Dr. Lisa Twolan, Scientific Project Officer, General Status of Species in Canada, Canadian Wildlife Service , Ottawa. Information on occurrences was provided by Dr. Rex Kenner, Dr. Donna Giberson, Dr. Nick Donnelly and Dr. Robert Cannings (some details provided below). General information on contacts and locations of collections provided by Dr. Cannings was very useful.

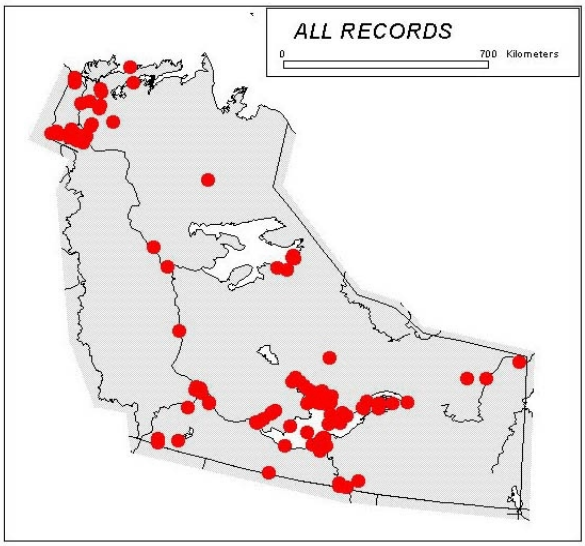
METHODS

The dragonflies (ORDER - ODONATA) in the broad and frequently used sense include the suborder ANISOPTERA, the dragonflies and the suborder ZYGOPTERA, the damselflies. Both of these suborders are covered here.

The general status ranking for dragonflies of NWT is part of an existing plan for additional groups to be covered in the report on general status due in 2005 (Carrière and Lange 2002).
Ranks are generally assigned using the procedures manual and using three categories of information: size, trend and threat in tables (Carrière and Lange 2002, pp. 6-14) and applying guidelines (Carrière and Lange 2002, pp. 16-17). The size information includes population size, number of occurrences, and distribution, this latter being a percentage of the territory occupied. The trend information includes a consideration of trends in both population and distribution. Threat includes both threat to population and threat to habitat. Species are assigned a rank corresponding to the most serious risk category of any indicator.

In the case of dragonflies there is currently no specific information on threat, trend and population size. Nevertheless specimens in several institutional collections have been

databased and they provide a means of evaluating number of occurrences and distribution. Using the process (Carrière and Lange 2002), a rank of "S2" indicating "may be at risk" was assigned to species with less than 5 occurrences. A rank of S3 denoting "sensitive" was assigned to either species with 6-20 occurrences, and/or species restricted to less than 10% of the surface of the continental Northwest Territories. Species with more than 21 occurrences and/or occurring in more than 10% of the land area were given a rank of S4 denoting "secure."



Using the database table of 1040 distinct (species, locaton, date, observer) records in ARVIEW-GIS, maps were produced showing occurrences. Approximate distribution areas were then calculated by enclosing occurrences in a poygon for which area was automatically calculated. This area was then expressed as a percentage of the continental Northwest Territories land surface.

THE DATABASE

In order to provide the basis for a book on the dragonflies of the Northwest Territories, a database of specimens in collections was completed. It provided a basis for ranking. The source of the database is three major collections which contain a substantial number of specimens from the Northwest Territories. These are the Canadian National Collection of Agriculture and Agr-Food Canada in Ottawa (CNC) which has the largest number of specimens from the Northwest Territories. This collection was examined and databased by the author. A large number of specimens were accumulated by Odonata expert Professor E.M. Walker when he was working on the dragonflies of Canada at the Royal Ontario Museum (ROM). These were published by Walker (Walker 1943, 1947 and 1951), but have not been examined by the author. The literature reports were included in the database. There are also specimens in the Royal British Columbia Museum (RBCM) and a database including 180 reports was provided by Dr. Robert A. Cannings who has examined and verified some of the mateial, but none of it was seen by the author. A few smaller databases were also accumulated. These provided useful records, none of which have been verified by the author. These include 105 records in a database at the Spencer Entomological Museum (SEM) at the University of British Columbia supplied by Dr. Rex Kenner and Ms. Karen Needham, several records supplied by Dr. Nick Donnelly of Binghamton, New York, and 13 records from Dr. Donna Giberson with voucher specimens at University of Prince Edward Island. In summation more than half of the database includes material at CNC examined by the author. The rest has been examined

and verified by two other acknowledged Odonata experts leaving less than 5% lacking expert verification. A few records in this 5% were dubious and were rejected (see below for an explanation).

HISTORY

The earliest publication that gathered together the widely scattered Odonata records for northern Canada was that of Walker (1943) entitled "the subarctic Odonata of North America." Although dates were given they did not include the year. There are a number of very early reports of Odonata from the Northwest Territories. *Coenagrion resolutum* and *Somatochlora franklini* were reported from Fort Resolution in 1875 by Selys, the former based on a specimen in the Selys collection in Brussels (Walker 1925). Fort Resolution is the type locality for both of these species. In 1871 Selys reported *Somatcochlora septentrionalis* from Fort Simpson and *Somatochlora hudsonica* from Fort Resolution. In his North American synopsis published in 1875, Hagen reported *Aeshna eremita, Aeshna juncea, Cordulia shurtleffi*, *Somatochlora franklini*, *Somatochlora forcipata* and *Leucorrhinia hudsonica* from Fort Resolution.

Most of the material from the Northwest Territories in collections was obtained during the fisheries surveys of Great Slave Lake and during the Northern Insect Survey, both of which occurred in the middle 20th century. The major collector was J. R. Vockeroth, Research Scientist with Agriculture and Agri-Food Canada. A detailed history of the survey of Odonata of the Northwest Territories will appear elsewhere.

RANKING RESULTS

Thirty-five species of Odonata were assigned status ranks in the Northwest Territories based on number of occurrences and distributional area within the territory (Appendices 1 and 2). Nine species are ranked as S2, may be at risk, including *Aeshna subarctica, Lestes congener, Nehalennia irene, Ophiogomphus colubrinus, Somatochlora albicincta, Somatochlora forcipata, Somatochlora franklini, Somatochlora sahlbergii and Somatochlora septentrionalis*. Many of these are widespread and on the edge of their range in the Northwest Territories. The most restricted species overall in North America is the Paleaectic - East Beringian *Somatochlora sahlbergi*. *Ophiogomphus colubrinus* appears rare and local in the western part of its range. Nineteen species are ranked as S3, sensitive and 7 are ranked as S4, secure.

REJECTED TAXA

Leucorrhinia glacialis is listed from Niven Lake near Yellowknife in the Royal British Columbia Museum database. The specimen was collected by C. Shank on 2 July 1997. The specimen was not available for verification and is rejected as a probable misidentification.

Enallagma exsulans is listed from Inuvik, Northwest Territories, in the Royal British Columbia Museum database. The specimen was collected on 18 Aug. 1985 by S. Laycock. It is rejected as a probable

misidentification

Aeshna palmata Hagen, PADDLE-TAILED DARNER. The specimen which justifies the report in the SEM database has been reexamined by Rex Kenner who advises that it is not referable to *A. palmata*. The specimen, a larva, was collected at Fort McPherson on 13 Aug. 1981.

POSSIBLE ADDITIONS

Thirty-three species of dragonflies are known from the Yukon (Cannings and Cannings 1997) and 35 are known fron the Northwest Territories (listed here). Of those occurring in the Yukon *Aeshna canadensis, Aeshna palmata, Somatochlora minor, Somatochlora semicircularis*, and *Somatochlora whitehousei* have not been have not yet been recorded in the Northwest Territories and all are to be expected. Of the species occurring in the Northwest Territories, *Coenagrion angulatum, Lestes congener, Ophiogomphus colubrinus, Somatochlora forcipata, Sympetrum costiferum,* and *Sympetrum obtrusum* have not been found in the Yukon (Cannings and Cannings 1997). As knowledge of the dragonflies of Alberta and Saskatchewan accumulates (e.g. Hutchings 2002a) other possible additions to the dragonfly fauna of the Northwest Territories may become evident in addition to the following.

Aeshna canadensis Walker, CANADA DARNER. Reported from Yukon (one record, see Cannings and Cannings 1997) and from Athabasca Sand Dunes Provincial Wilderness Park in northern Saskatchewan (Hutchings 2002b). Males have a broad S-shaped lateral stripe as in *A. subarctica* and *A. eremita.* They differ from the former in having short instead of long hamular proccesses, and from the latter in lacking the black stripe across the face (on the fronto-clypeal suture).

Aeshna palmata Hagen, PADDLE-TAILED DARNER. The Cordilleran species occurs in the Yukon and is to be expected in the Boreal Cordillera and Taiga Cordillera Ecozones of southwestern Northwest Territories (including the Mackenzie Mountains). It is distinguished by a combination of the black line on the fronto-clypeal suture (across the face as in *A. eremita*) and a straight lateral stripe (instead of S-shaped as in *A. eremita*). In males a relatively broad superior appendage with a downwardly directed spine (in lateral view) is also distinctive. The head shape of the larva is also relatively distinctive with eyes widest in front of the middle. See also above under rejected reports.

Aeshna tuberculifera Walker, BLACK-TIPPED DARNER. This species has been reported from Athabasca Sand Dunes Provincial Wilderness Park in northern Saskatchewan (Hutchings 2002). The lateral stripe is straight.

Ischnura damula Calvert, PLAINS FORKTAIL. A disjunct occurrence in northeastern British Columbia at Liard River may be attributable to an unusual hot spring environment (Cannings and Stuart 1977). The location is near to southwestern Northwest Territories where a number of hot springs occur. Males have apair of small spots on each side of the dorsal thorax.

Leucorrhinia glacialis Hagen, CRIMSON-RINGED WHITEFACE. Although rejected

for lack of a specimen to verify (see above), this species has been reported from Athabasca Sand Dunes Provincial Wilderness Park in northern Saskatchewan (Hutchings 2002b). In females the scales of the vulvar lamina are barely developed and in males the hamuli have distinct abruptly curved tips.

Ophiogomphus severus Hagen, PALE SNAKETAIL**.** This species occurs in northeastern British Columbia (Cannings and Stuart 1977). This species lacks the transverse stripe across the face that distinguishes *O. colubrinus*.

Somatochlora albicincta x ***Somatochlora sahlbergi***. Hybrids have been reported from northern Yukon (Cannings and Cannings 1997) and are to be expected in the Mackenzie delta region of Northwest Territories where the ranges of the two species overlap.

Somatochlora brevicincta Robert, FATHER ROBERT'S EMERALD. Also called the QUEBEC EMERALD, this species was long thought to be confined to Quebec, but was subsequently discovered in Nova Scotia and New Brunswick. The most recent and remarkable discovery was made in the plateaus of central British Columbia (e.g. Cannings 2002). The female has a large and rounded vulvar lamina. The males have superior appendages similar to that of *S. septentrionalis* and *S. albicincta*. They differ from the former in lacking the brown spot on the triangle at the base of the wing and subbasal teeth of the superior appendage are visible in dorsal view instead of not evident as in the latter species.

Somatochlora cingulata (Selys), LAKE EMERALD. This species has been reported from Athabasca Sand Dunes Provincial Wilderness Park in northern Saskatchewan (Hutchings 2002b). This is a large, dark species with a ringed abdomen. The inferior appendage of the male is truncate.

Somatochlora minor Calvert in Harvey, OCELLATED EMERALD. This species has been reported from the five slow moving streams in the southern valleys of the Yukon (Cannings and Cannings 1997). It has a relatively short abdomen and two yellow spots on the side of the thorax.

Somatochlora semicircularis (Selys), MOUNTAIN EMERALD**.** A species with a distinctive Cordilleran distribution, this one is known from one locality in the Yukon near the British Columbia border (Cannings and Cannings 1997). The superior appendages of the male are straight in lateral view and meet in a curve in dorsal view.

Somatochlora whitehousei Walker, WHITEHOUSE'S EMERALD. This species is known from Yukon and Churchill, Manitoba. In the Yukon it is known from only three widely separate localities (Cannings and Cannings 1997). It resembles *S. septentrionalis* but the males have converging superior appendages (instead of paralell) and the vulvar lamina of the females is only slightly notched in ventral view and projecting in lateral view (instead of prominently notched and not projecting). Walker and Corbet (1975) noted that this species is found across the continent ,but they had an indication of abundance only at Fort Severn on Hudson Bay where it was associated with extensive level muskeg and Sphagnum bog. In another situation it was reported from shallow stagnant pools a few

feet across in open bog. Here it occurred with *Aeshna sitchensis, Somatochlora franklini* and *Sympetrum danae*. In Yukon it occurs in level sedge fens where the females oviposit in small puddles (Cannings and Cannings 1997).

ADDITIONAL FIELD INVENTORY

There have been no inventories of dragonflies in the Taiga Cordillera Ecozone of southwestern Northwest Territories. Only the small northern portion of Boreal Cordillera Ecozone (including the Mackenzie Mountains) has been inventoried. These ecozones are biodiversity-rich and are a high priority for Odonata inventory. In contrast the more accessible (by road) Taiga Shield, Taiga Plain and Boreal Plain ecozones have been relatively well surveyed.

Of the very unique Behringian distribution area including the non-glaciated (e.g. Scudder 1997, p. 24 - Wisconsin glaciation) portion of Alaska, Yukon and the Northwest Territories, only the Fort McPherson-Inuvik-Reindeer Depot portion has been surveyed leaving the east slope of the Mackenzie Mountains (the Canyon Ranges) poorly known. This is part of the Taiga Cordillera Ecozone noted above.

Although the numbers of dragonflies declines abruptly in the arctic (beyond the northern limit of trees), there has been relatively little coverage of the arctic region (Southern Arctic Ecozone). Characteristic arctic species (e.g. Danks 1981) such as *Aeshna eremita, Aeshna interrupta lineata, Aeshna juncea, Aeshna septentrionalis,* and *Enallagma boreale* will undoubtedly prove to be more widespread as the arctic region is further surveyed. *Somatochlora sahlbergi* is also an arctic species, but appears to be confined to Beringia .

COLLECTING AND INVENTORY OF DRAGONFLIES

Although sufficient to provide some reliable S-ranks, knowledge of dragonflies in the Northwest Territories is still incomplete (see above for example). Thus recording of observations photographs and collection of specimens to document and verify occurrences is important. The following notes provide basic information on submitting material and collecting (adapted from Catling et al. 2002)

Identification

It is not necessary to identify photographs or specimens because experts are available to do that job. However the more one knows about identification the better will be any job of surveying and monitoring. Popular books with photographs include Dunkle (2000) and Cannings (2002). With increased experience, Westfall and May (1996) will be the standard text for damselflies and Needham, Westfall and May (2000) will serve as the standard text for dragonflies. Additional books on North American dragonflies and a book on the dragonflies of the Northwest territories are being produced.

Photographs, specimens and other information

A photograph or a collected specimen (see below) is often very important to substantiate an occurrence. Photos of significant occurrences or specimens in a

well padded box, should be sent to Dr. Suzanne Carrière, Ecosystem Management Biologist, Wildlife and Fisheries, Dept. of Resources, Wildlife and Economic Development , Government of the Northwest Territories, 600, 5105 50th Ave., Scotia Centre, 5th floor, Yellowknife, NT, CANADA X1A 3S8. (Tel. 867-920-6327). The material will be made available to researchers, and if appropriate, incorporated in an institutional collection.

There is a very simple way of collecting voucher specimens. The live insects are placed individually with wings folded over the back in paper envelopes or paper triangles. Only one is placed in each envelope because they will destroy each other in a confined space. The date and location and collectors name should be written on the envelope. Next the envelopes can be put in a dry place where the insects will dry out. The envelopes should not be compressed because the dried specimens are fragile. If they are kept loosely organized in a box, they will be well protected. This is the easiest way to collect specimens but entomologists often produce longer lasting specimens that retain diagnostic color using the methods described below.

For best results dry specimens as quickly as possible (without too much heat). A well dried specimen will last as a tool for researchers for hundreds of years. The specimen in the envelopes can be killed in a wide-mouthed bottle with cotton or paper in the bottom to which a few tablespoons of acetone have been added. If acetone is not available alchohol or gasoline will work. [WARNING: ACETONE IS TOXIC AND HIGHLY FLAMMABLE, ALCHOHOL AND GASOLINE ARE ALSO FLAMMABLE as well as being highly volatile. ACETONE may be harmful by inhalation to the liver and kidneys, and it may also cause eye and skin irritation. Smoking and dragonfly collecting is a very dangerous combination. Acetone should be kept in a tightly closed unbreakable container inside a box. Use it only under well ventilated conditions. Since acetone has a drying effect on the skin, direct contact should be avoided through the use of forceps. Acetone is used for removing grease, varnish, resins, lacquer, and nail polish, and the least expensive stock can usually be obtained from hardware stores.

Entomologists often put the insect alive in a 3 3/16 x 4 7/8 inch glassine envelope. Either put a slip of paper with a date and location in the envelope or write directly on the envelope. It is often a good idea to keep a dragonfly alive in an envelope for at least a couple of hours (in a cool place). This allows it to rid itself of feces before drying and may improve colour retention. Next they put the entire envelope in acetone which quickly kills the insect, removes fat and permits rapid drying without excess color loss. In a fresh acetone solution one to five hours is often long enough. In used solutions a day may be sufficient. After removing the glassine envelope from the acetone, let it dry (IN A WELL VENTILATED SPACE). If becoming part of a permanent collection the specimen can be placed with a 3 x 5 file card (for support) and an accurate label in a clear cellophane envelope (an odonata envelope, see list of suppliers below). This has become a standard method for collecting damselflies and dragonflies and is more economical for storage than pins. Any parts that become detached stay with the specimen. The

specimens are fragile and are not packed tightly. The glassine envelopes can be obtained from stores supplying stamp collector materials, or from biology supply companies (see below). The stores supplying stamp and coin collector materials may also carry hand lenses (a little more powerful and useful for identification than a simple magnifying glass).

For more information on collecting methods see www.afn.org/~iori and use links for more.

Suppliers of dragonfly envelopes, nets, etc.

American Biological Supply Co., 2405 N.W. 66th Court, Gainsville, Florida 32653-1633. Phone: 352-377-3299; Fax: 352-375-AMBI. Full line supplier of fine entomological/biological eqwuipment for over 30 years.

BioQuip Products, 17803 La Salle Avenue, Gardena, California 90248-3602. Phone: 310-324-0620; Fax: 310-324-7931. Entomological & botanical equipment, books, software.

International Odonata Research Institute (IORI) - Odonata envelopes, books. I.O.R.I., c/o Division of Plant Industry, P.O. Box 147100, Gainsville, Florida 32614-7100 Phone: 352-375-5903. Email: iori@afn.org

Collector's Code of Ethics

A great deal of valuable information can be obtained from reliable sight records. Collecting a lot of specimens is thus generally unnecessary. To the extent that it is necessary, it should be justified. Never collect a rare or restricted species unless it is relatively common at a site. Never collect on private land without landowner permission and remember that it is only possible to collect in parks with a special permit that may be given to researchers following consideration of a research proposal. Parks often do not issue permits for more casual inventory type work, and issuance of any permit may require a detailed proposal and a detailed report. This does not mean that parks should be avoided. It means that they have to be treated as special places. Lands belonging to or managed by native peoples are also special places, and collecting in such areas, even on the roadside may be strictly prohibited. For more information on collecting policy and guidelines see the IORI web site (www.afn.org/~iori) and the guidelines produced by the Dragonfly Society of the Americas.

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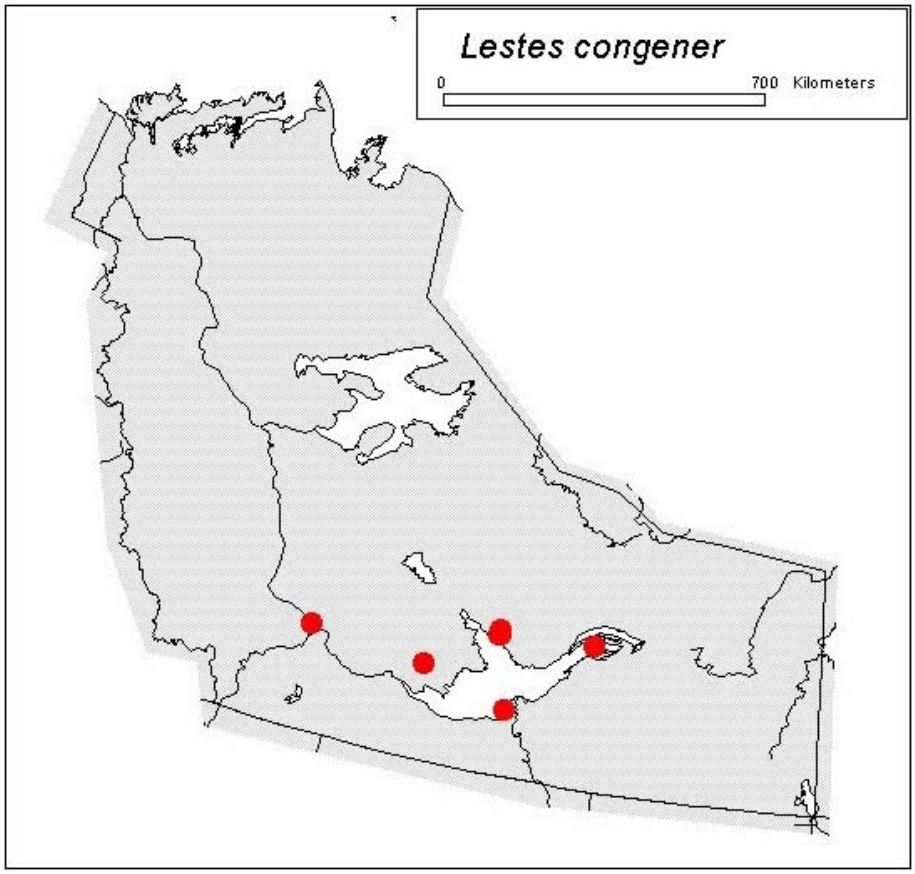
APPENDIX TABLE 1. CHECKLIST OF ONTARIO ODONATA OF NORTHWEST TERRITORIES, showing number of occurrences (Occ.), approximate area of occurrence (Area), approximates percentage of continental Northwest Territories occupied (%Area) and status rank (RANK).

	Occ.	Area	%Area	RANK
ZYGOPTERA - DAMSELFLIES				
Lestidae, **Spreadwings**				
Lestes congener Hagen, SPOTTED SPREADWING	5	51,464	3.54	S2
Lestes disjunctus Selys , COMMON SPREADWING	15	86,764	5.97	S3
Lestes dryas Kirby, EMERALD SPREADWING	8	164,875	11.35	S3
Coenagrionidae, Pond Damsels				
Coenagrion angulatum Walker, PRAIRIE BLUET	8	116,687	8.03	S3
Coenagrion interrogatum (Selys), SUBARCTIC BLUET	8	275,697	18.98	S3
Coenagrion resolutum (Selys), TAIGA BLUET	21	459,518	31.64	S4
Enallagma boreale Selys, BOREAL BLUET	19	281,327	19.37	S3
Enallagma cyathigerum (Charpentier), NORTHERN BLUET	23	439,937	30.29	S4
Nehalennia irene (Hagen), SEDGE SPRITE	2	337	0.02	S2
ANISOPTERA, DRAGONFLIES				
Aeshnidae, Darners				
Aeshna eremita Scudder, LAKE DARNER	44	607,097	41.81	S4
Aeshna interrupta Walker ***lineata*** Walker, VARIABLE DARNER	23	298,870	20.58	S4
Aeshna juncea (Linnaeus) ***americana*** Bartenef, RUSH DARNER	30	644,289	44.37	S4
Aeshna septentrionalis Burmeister, AZURE DARNER	15	324,972	22.38	S3
Aeshna sitchensis Hagen, ZIGZAG DARNER	8	98,700	6.79	S3
Aeshna subarctica Walker, MUSKEG DARNER	4	80,072	5.51	S2
Aeshna umbrosa Walker ***umbrosa***, SHADOW DARNER	7	31,166	2.14	S3
Gomphidae Clubtails				
Ophiogomphus colubrinus Selys, BOREAL SNAKETAIL	2	617	0.04	S2
Corduliidae Emeralds				
Cordulia shurtleffi Scudder, AMERICAN EMERALD	32	541,783	37.31	S4
Somatochlora albicincta (Burmeister), RINGED EMERALD	5	240,322	16.55	S2
Somatochlora forcipata[1] (Scudder), FORCIPATE EMERALD	1	1	<0.01	S 2
Somatochlora franklini (Selys), DELICATE EMERALD	5	3,071	0.21	S2
Somatochlora hudsonica (Hagen in Selys), HUDSONIAN EMERALD	15	521,517	35.91	S3
Somatochlora kennedyi Walker, KENNEDY'S EMERALD	7	190,845	13.14	S3
Somatochlora sahlbergi Tryybom, TREELINE EMERALD	1	1	<0.01	S 2
Somatochlora septentrionalis (Hagen), MUSKEG EMERALD	2	565	0.04	S 2
Libellulidae Skimmers				
Leucorrhinia borealis Hagen, BOREAL WHITEFACE	20	283,308	19.51	S3
Leucorrhinia hudsonica (Selys), HUDSONIAN WHITEFACE	30	497,275	34.24	S4
Leucorrhinia patricia[1] Walker, CANADA WHITEFACE	8	222,900	15.35	S3
Leucorrhinia proxima Calvert, VARIABLE WHITEFACE	16	270,009	18.59	S3
Libellula quadrimaculata Linnaeus, FOUR-SPOTTED SKIMMER	10	166,773	11.48	S3
Sympetrum costiferum (Hagen), SAFFRON-BORDERED MEADOWFLY	7	35,870	2.47	S3
Sympetrum danae (Sulzer), BLACK MEADOWFLY	14	105,286	7.25	S3
Sympetrum internum Montgomery, CHERRY-FACED MEADOWFLY	14	188,509	12.98	S3
Sympetrum obtrusum (Hagen), WHITE-FACED MEADOWFLY	10	65,504	5.51	S3
Sympetrum madidum Hagen, RED-VEINED MEADOWHAWK	9	64,869	4.46	S3

APPENDIX 2 - ATLAS AND RANKING NOTES

Lestes congener Hagen, SPOTTED SPREADWING . . . . RANK: S2



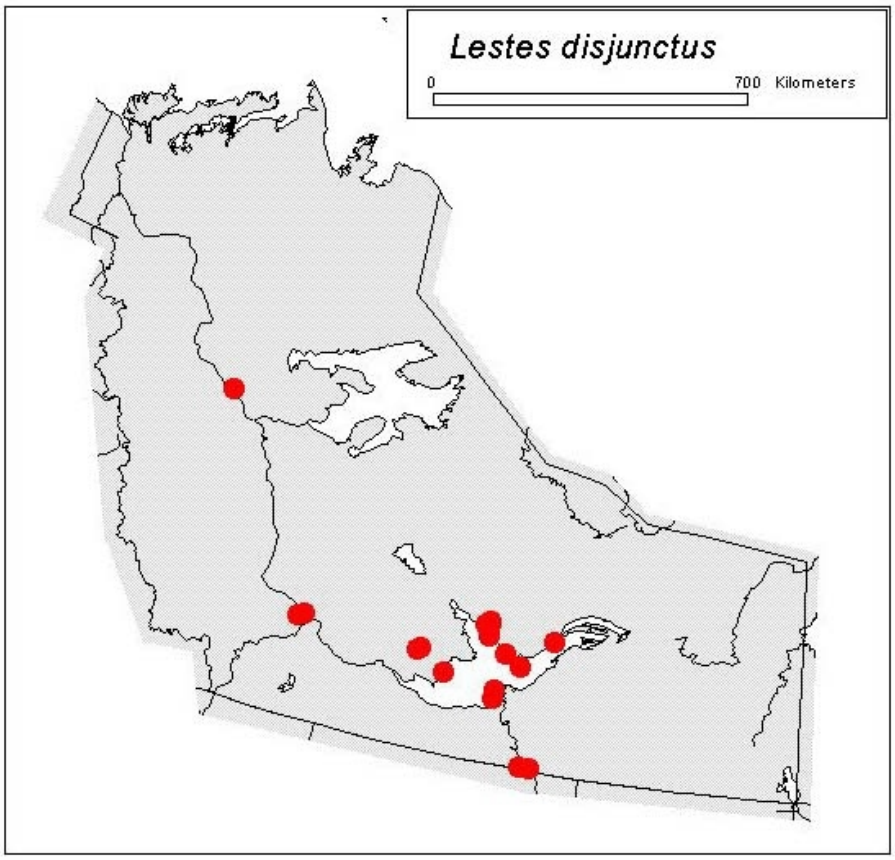
-

OCCURRENCES: 5

DISTRIBUTION: ≈ 51,464 km^2, 3.54 %

NOTES: This late flying inconspicuous species is apparently at its northern limit in the area of Great Slave Lake. It is not known from the Yukon. Although it will likely prove to be more frequent in the Great Slave Lake area, it seems less likely that its distributional area will be substantially increased in the Northwest Territories.

Lestes disjunctus Selys , COMMON SPREADWING . . . RANK: S3



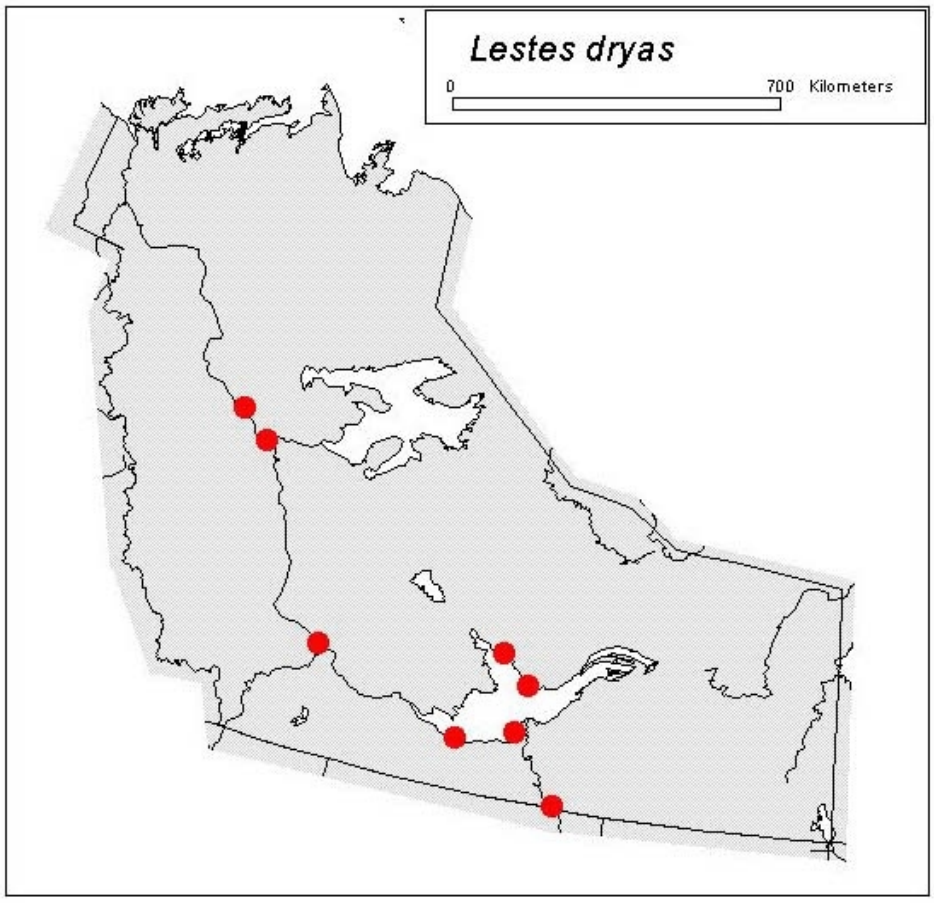
-

OCCURRENCES: 15

DISTRIBUTION: ≈ 86,764 km^2, 5.97 %

NOTES: In Yukon this species extends north to the Old Crow Basin. With additional study its rank will likely be S4.

Lestes dryas Kirby, EMERALD SPREADWING . . . . . RANK: S3



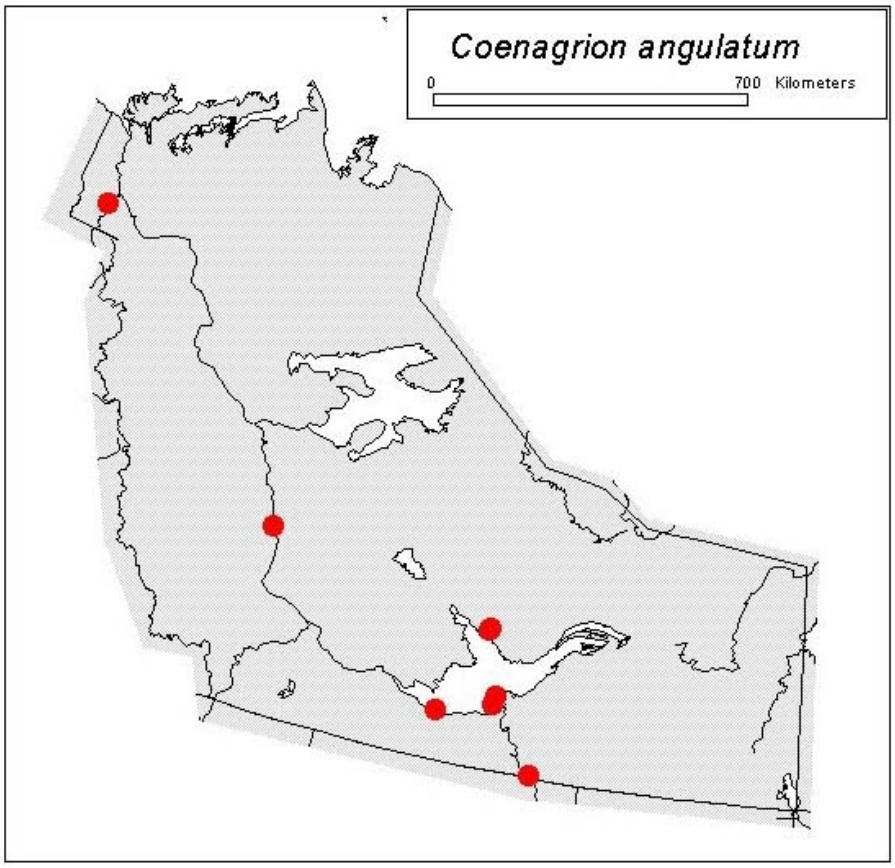
-

OCCURRENCES: 8

DISTRIBUTION: ≈164,875 km^2, 11.35 %

NOTES: This distinctive metallic-green species will likely prove to be S4 with additional study.

Coenagrion angulatum Walker, PRAIRIE BLUET . . . . RANK: S3



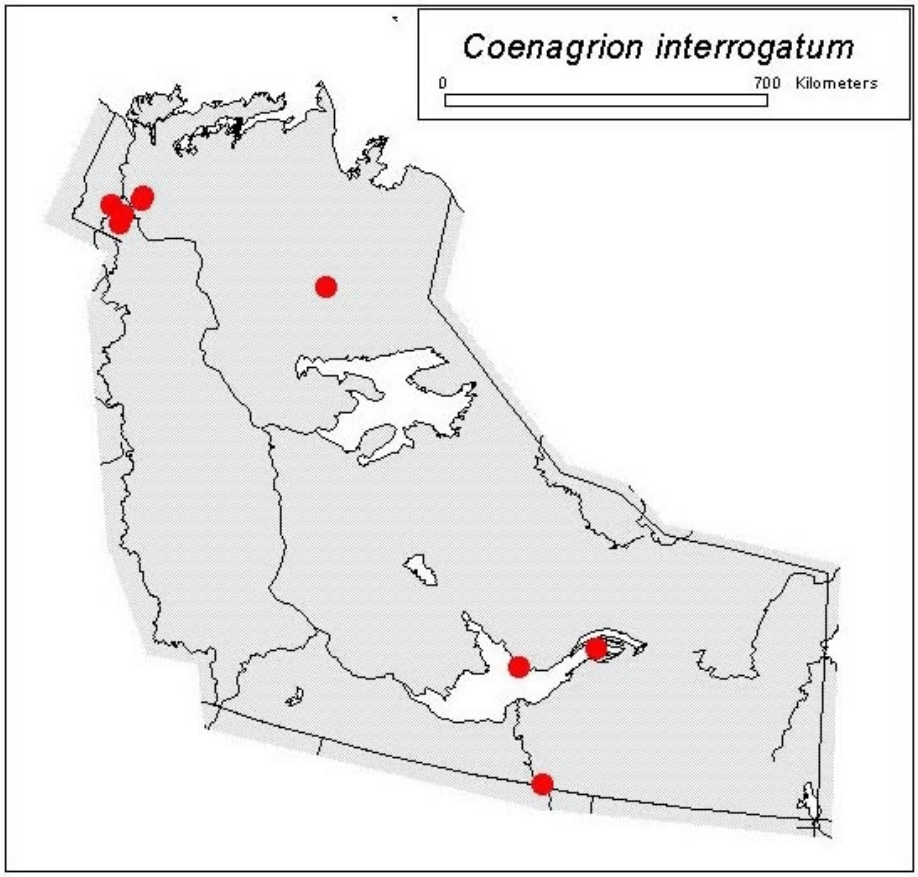
-

OCCURRENCES: 8

DISTRIBUTION: ≈116,687 km^2, 8.03 %

NOTES: This species is not known from the Yukon (Cannings and Cannings 1997).

Coenagrion interrogatum (Selys), SUBARCTIC BLUET RANK: S3



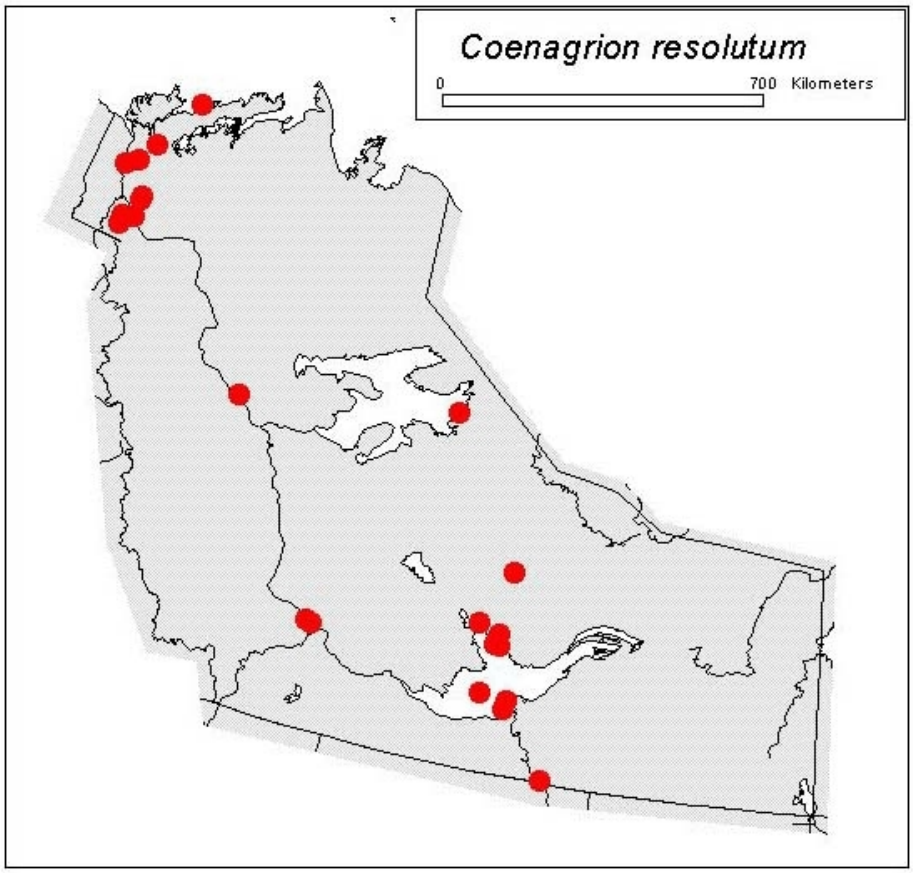
-

OCCURRENCES: 8

DISTRIBUTION: ≈275,697 km^2, 18.98 %

NOTES: Although widespread, this species is not common, possibly as a result of a requirement for a restricted habitat including water with abundant aquatic mosses (Cannings and Cannings 1997).

Coenagrion resolutum (Selys), TAIGA BLUET . . . . . RANK: S4



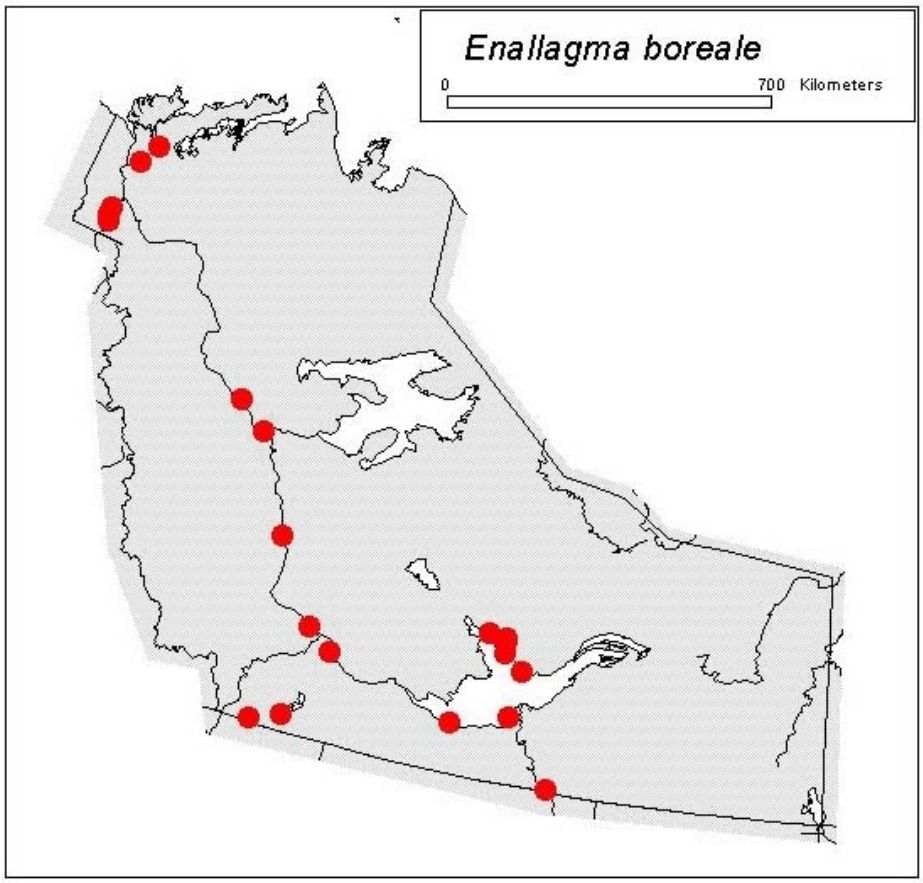
-

OCCURRENCES: 21

DISTRIBUTION: ≈ 459,518 km^2, 31.64 %

NOTES: This widespread greenish-blue damselfy has a broad habitat tolerance. It is the most widespread damselfy in the Northwest Territories.

Enallagma boreale Selys, BOREAL BLUET . . . . . RANK: S3



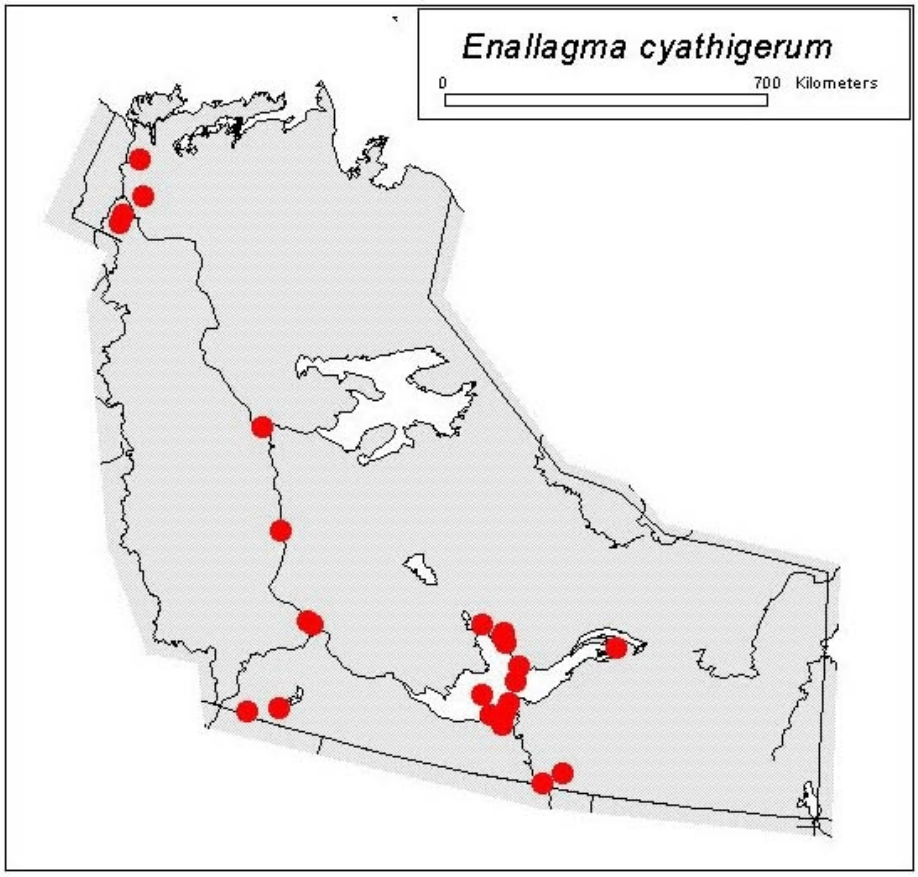
-

OCCURRENCES: 19

DISTRIBUTION: ≈ 281,327 km^2, 19.37 %

NOTES: This widespread species occurs north of treeline at Reindeer Depot and on Herchel Island in Yukon (specimens at CNC). As with some other subarctic Odonata the flying season lasts all summer in the north whereas it is restricted to early spring in the southern parts of the range. It will likely prove to have a status rank of S4 as more information is gathered.

Enallagma cyathigerum (Charpentier), NORTHERN BLUET RANK: S4



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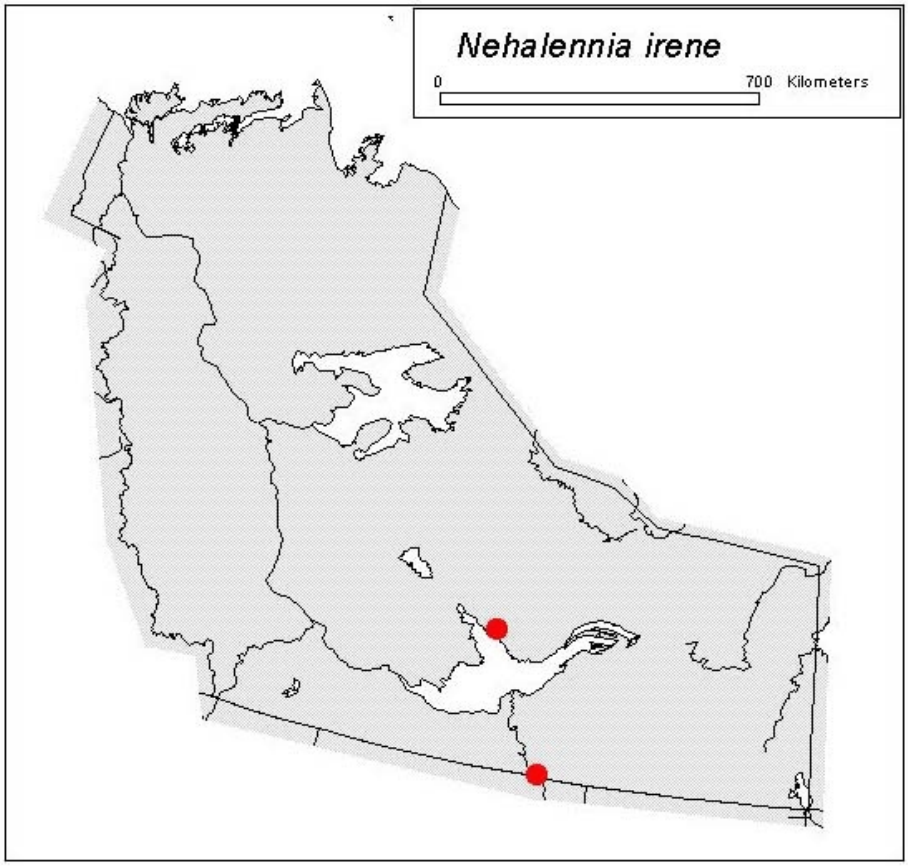
OCCURRENCES: 23

DISTRIBUTION: ≈ 439,937 km^2, 30.29 %

NOTES: This species is less common than *E. boreale* in the Yukon (Cannings and Cannings 1997), but evidently not in NWT. The name is used here in the strict sense, i.e. not including *E. vernale.*

Nehalennia irene (Hagen), SEDGE SPRITE . . . . . RANK: S2



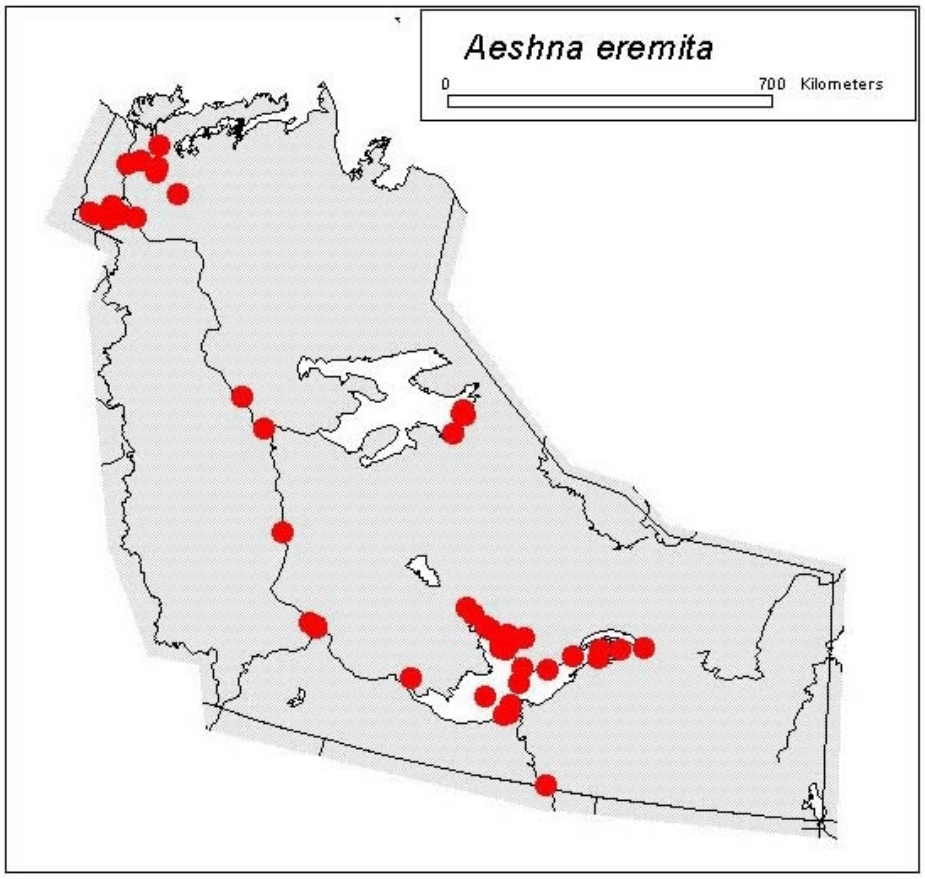
-

OCCURRENCES: 2

DISTRIBUTION: ≃ 337 km^2, 0.02 %

NOTES: This is the smallest and most inconspicuous species of Odonata occurring in the Northwest Territories. It will likely be found in additional localities in the Great Slave Lake region, but is probably confined to this area which is the northern range limit. It is currently known in NWT only from Fort Smith and Yellowknife.

Aeshna eremita Scudder LAKE DARNER . . . . . RANK: S4



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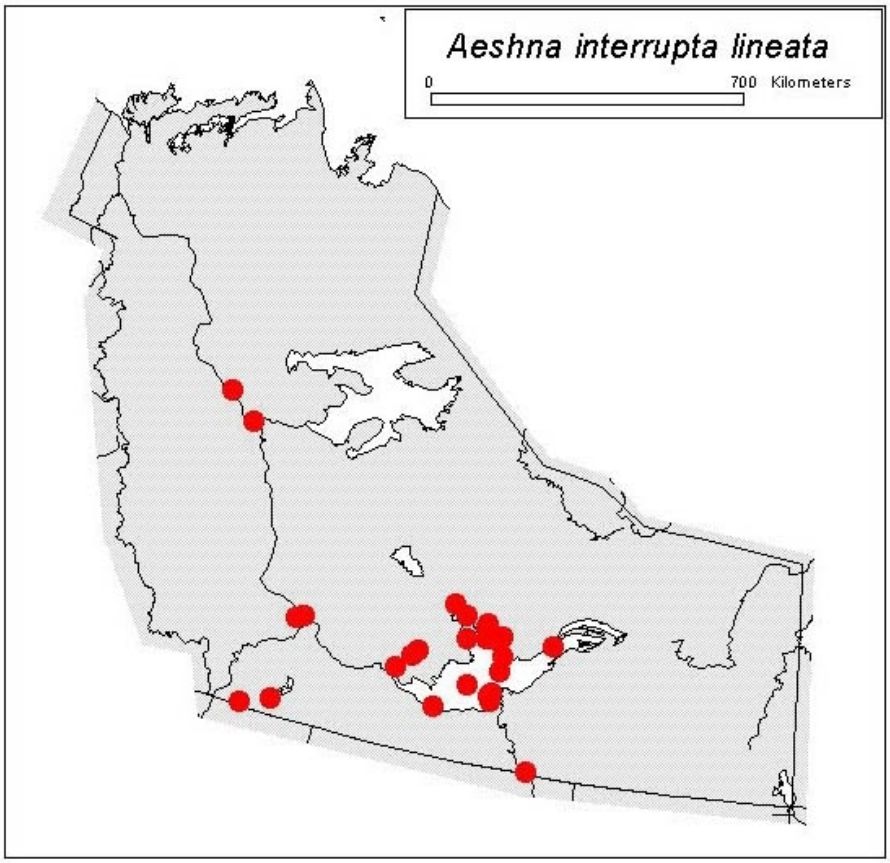
OCCURRENCES: 44

DISTRIBUTION: ≈ 607,097 km^2, 41.81 %

NOTES: This species is known from more localities than any other dragonfly in the Northwest Territories.

Aeshna interrupta Walker ***lineata*** Walker, VARIABLE DARNER RANK: S4



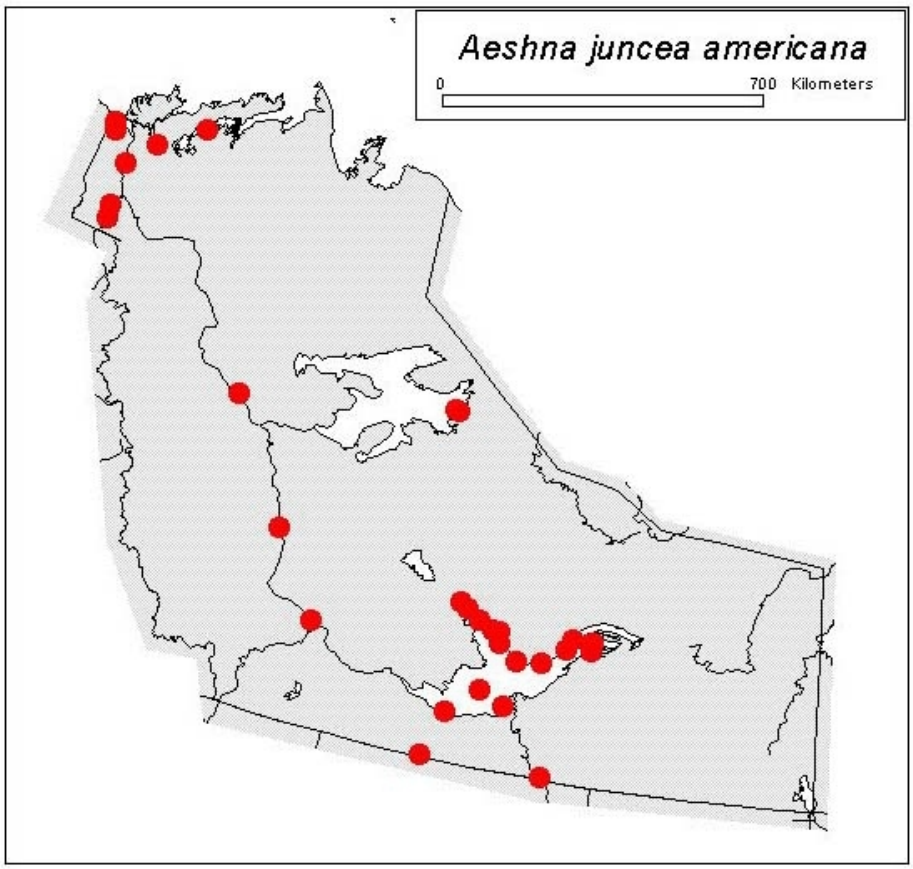
-

OCCURRENCES: 23

DISTRIBUTION: ≈ 298,870 km^2, 20.58 %

NOTES: Although sometimes called *A. interrupta* without reference to a subspecies, the only subspecies occurring in the Northwest Territories is *lineata* (which has a linear lateral thoracic stripe either continuous or divided - unlike the nominate subspecies *interrupta* which has the thoracic stripe divided into two separate spots). The latter subspecies does not occur west of Ontario or east of the Pacific coast (Walker 1958). I have assumed that all *A. interrupta* in databases provided is referable to subspecies *lineata* as is the case for the CNC material.

Aeshna juncea (Linnaeus) ***americana*** Bartenef, RUSH DARNER . . . RANK: S4



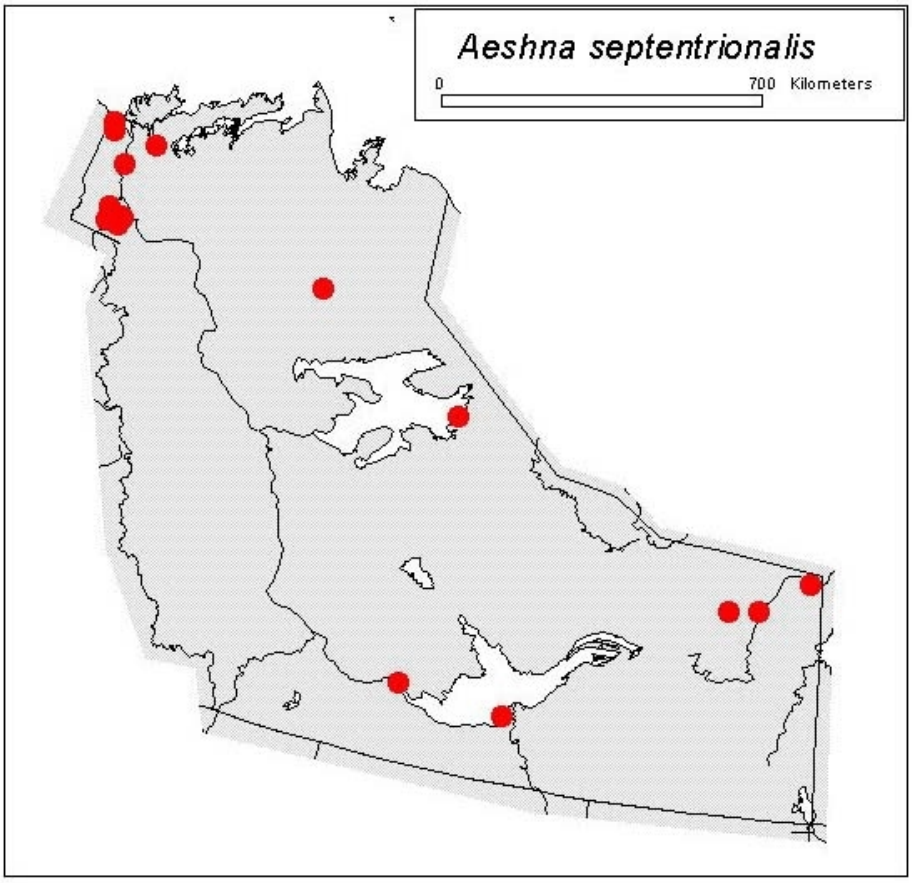
-

OCCURRENCES: 30

DISTRIBUTION: ≈ 644,289 km^2, 44.37 %

NOTES: The record from 40 miles N of Tuktoyaktuk from the Royal British Columbia Museum database has not been checked. This dragonfly occurs over a larger portion of the Northwest Territories than any other species.

Aeshna septentrionalis Burmeister, AZURE DARNER . RANK: S3



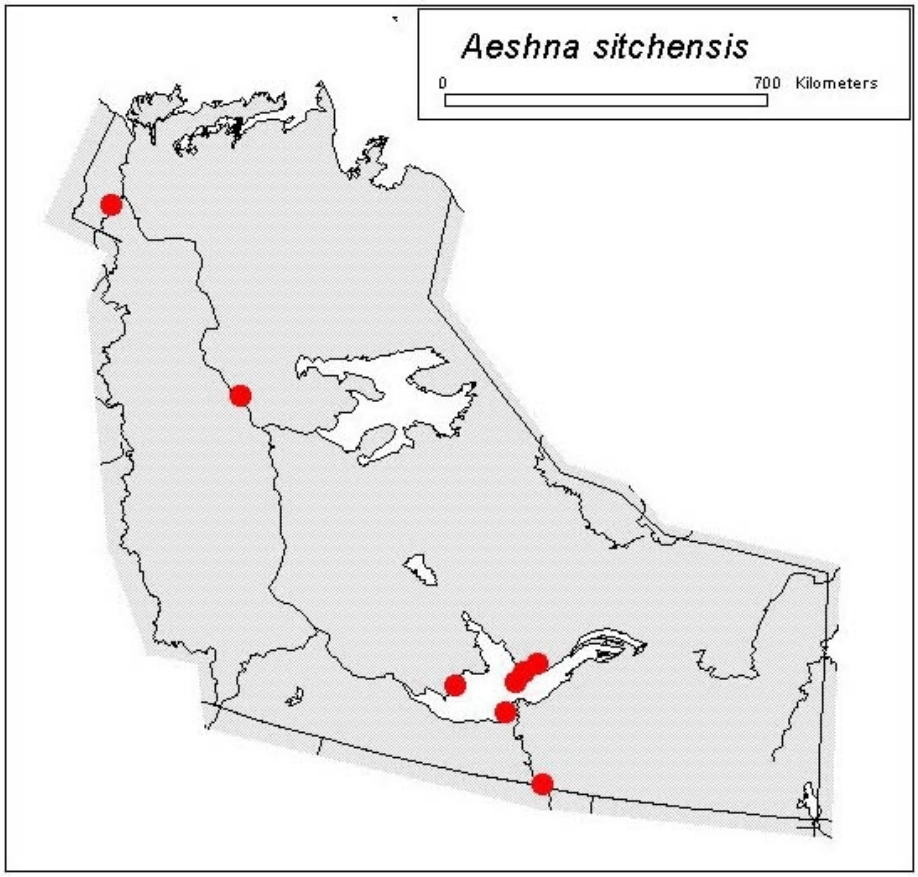
-

OCCURRENCES: 15

DISTRIBUTION: ≈ 324,972 km^2, 22.38 %

NOTES: Records of larvae in the Firth valley of Yukon (Cannings and Cannings 1997) may be the northernmost breeding records for a dragonfly in North America.

Aeshna sitchensis Hagen, ZIGZAG DARNER . . . . . RANK: S3



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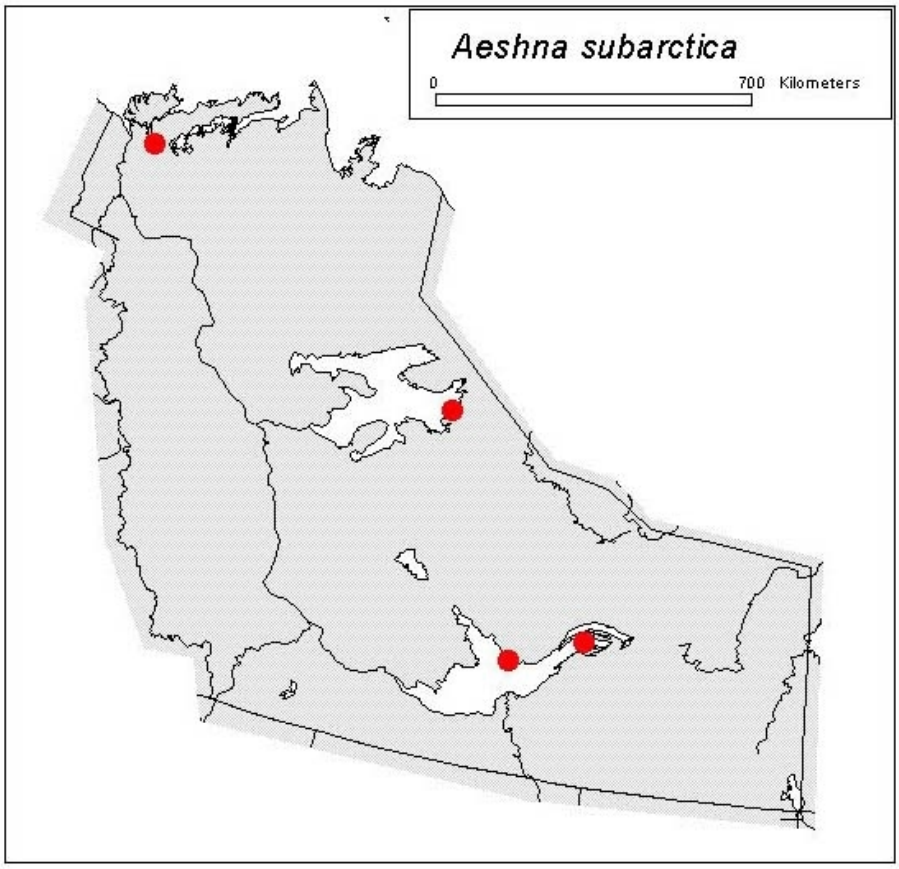
OCCURRENCES: 8

DISTRIBUTION: ≈ 98,700 km^2, 6.79 %

NOTES: This relatively small (*for an Aeshna*) species is associated with shallow water and small pools in bogs and fens where it occurs with *Somatochlora franklini*. Although it has not been frequently collected it has a relatively extensive range.

Aeshna subarctica Walker, MUSKEG DARNER . . . . . RANK: S2



-

OCCURRENCES: 4

DISTRIBUTION: ≈ 80,072 km^2, 5.51 %

NOTES: Although widespread this species has not often been encountered. Adults fly over ponds with beds of aquatic mosses.

Aeshna umbrosa Walker *umbrosa*, SHADOW DARNER RANK: S3

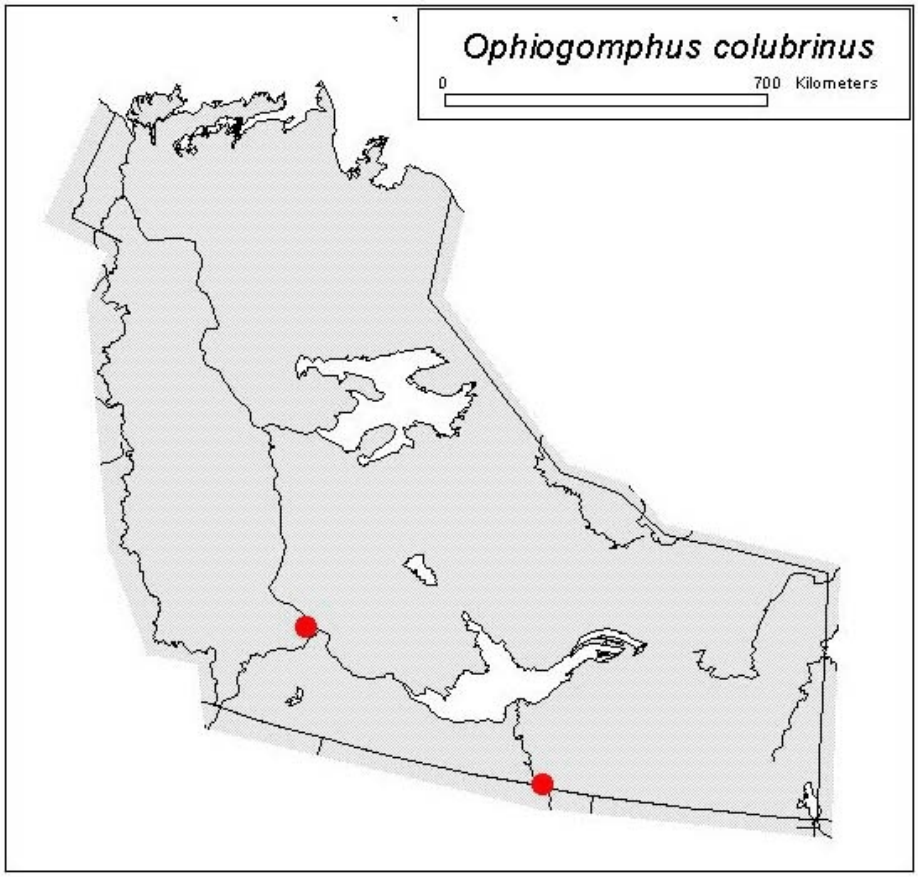
-

OCCURRENCES: 7

DISTRIBUTION: ≈ 31,166 km^2, 2.14 %

NOTES: This species, associated with small slow streams is apparently confined to the Great Slave Lake area.

Ophiogomphus colubrinus Selys, BOREAL SNAKETAIL . RANK: S2



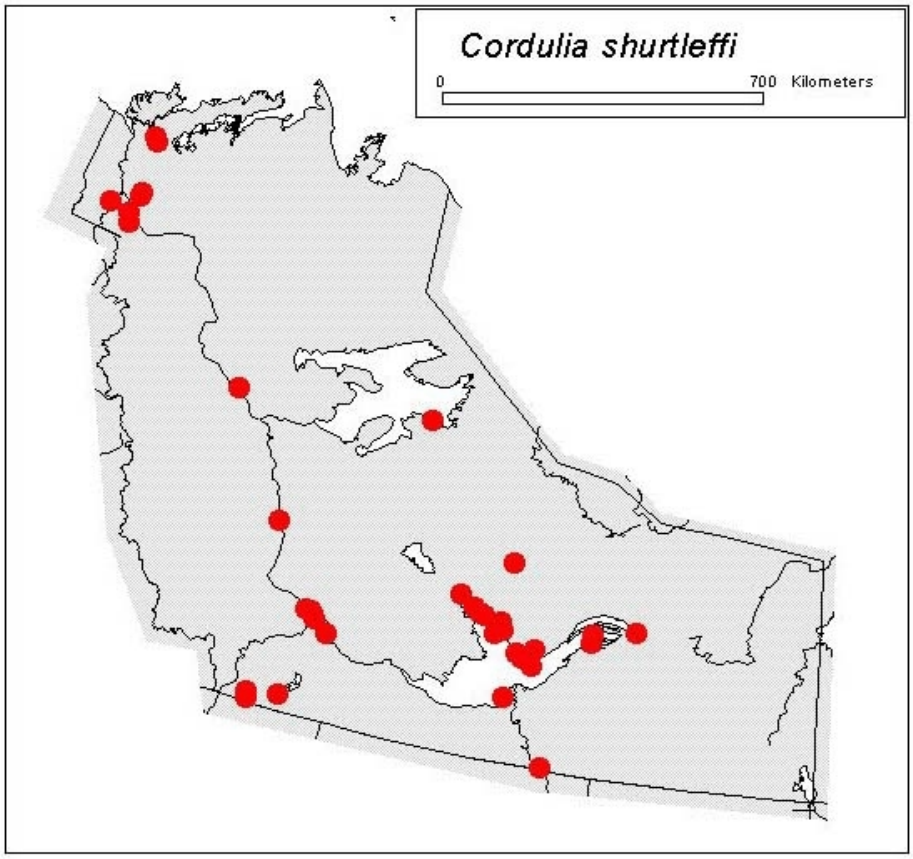
-

OCCURRENCES: 2

DISTRIBUTION: ≈ 617 km^2, 0.04 %

NOTES: The larval habitat, rapids in larger rivers, is restricted in the southern Northwest Territories and the species is at the northern limit of its range. It is likely to be correctly ranked as either S1 or S2. This is the only species in the large family Gomphidae that occurs north of 60˚ North Latitude.

Cordulia shurtleffi Scudder, AMERICAN EMERALD RANK: S4



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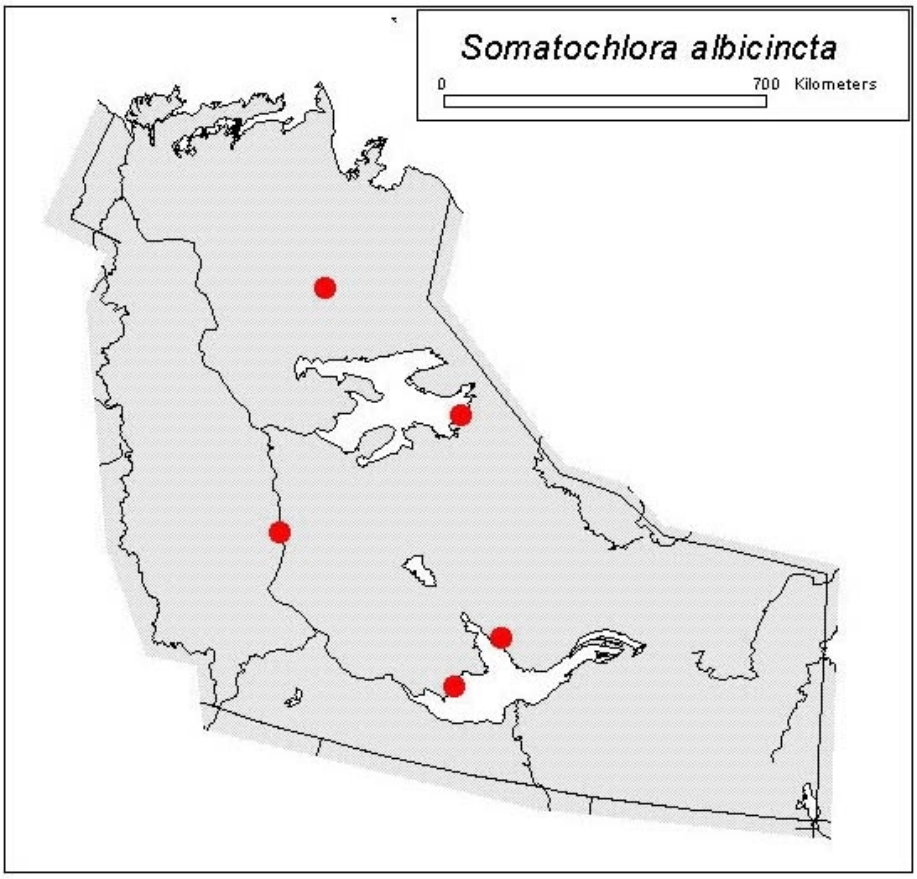
OCCURRENCES: 32

DISTRIBUTION: ≈ 541,783 km^2, 37.31 %

NOTES: This is apparently the second most common and widespread dragonfly in the Northwest Territories. Reindeer Depot is the northern limit of its range, since it does not occur north of Old Crow in the Yukon.

Somatochlora albicincta (Burmeister), RINGED EMERALD RANK: S2



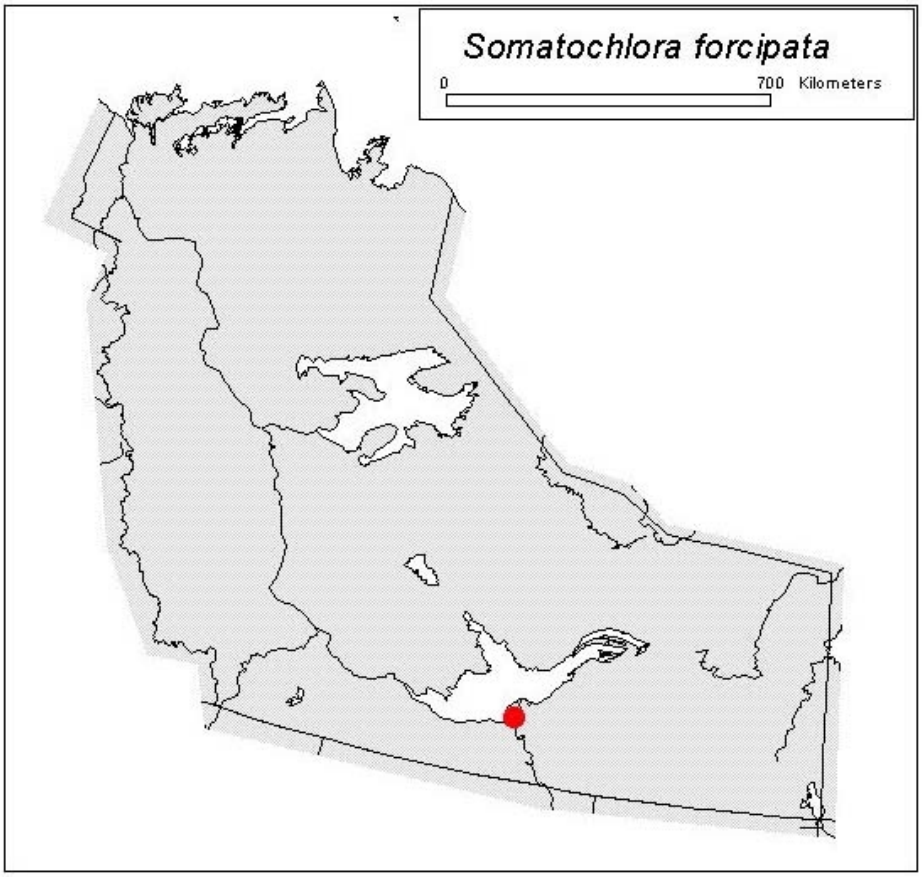
-

OCCURRENCES: 5

DISTRIBUTION: ≈ 240,322 km^2, 16.55 %

NOTES: With additional field inventory this species will likely prove to be more accurately ranked as S3. Although widespread in the Northwest Territories, it is uncommon. Hybrids with *S. sahlbergi* have been reported from northern Yukon (Cannings and Cannings 1997) and are to be expected in the Mackenzie delta region of Northwest Territories where the ranges of the two species overlap.

Somatochlora forcipata[1] (Scudder), FORCIPATE EMERALD . . RANK: S2



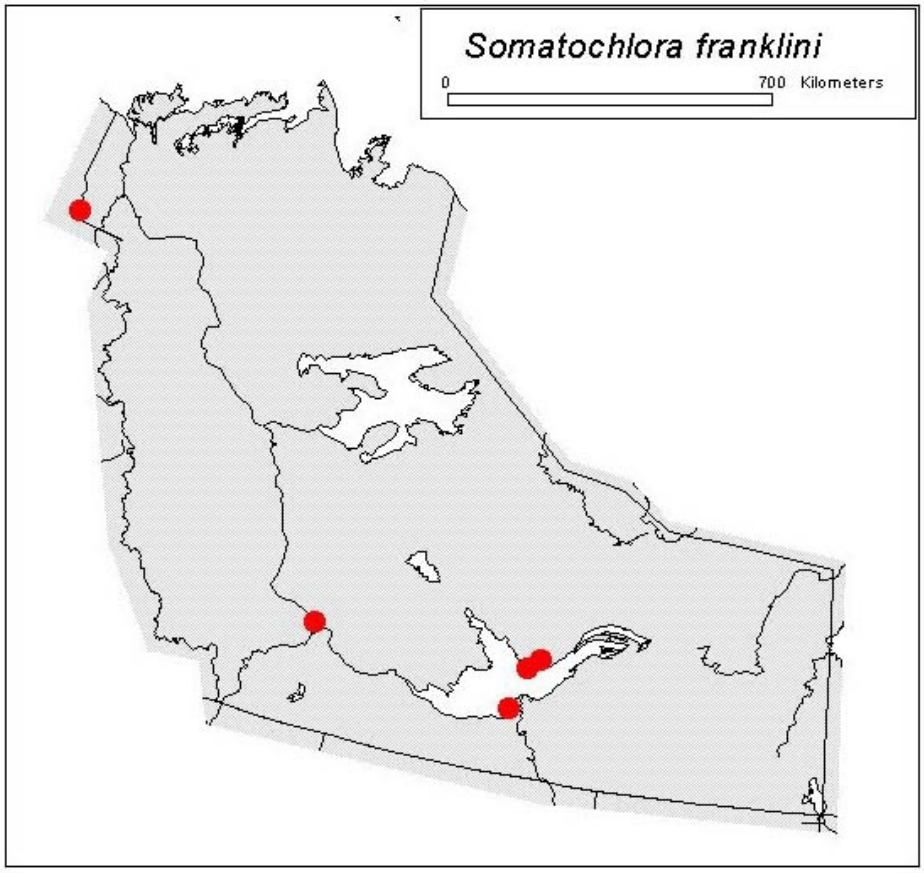
-

OCCURRENCES: 1

DISTRIBUTION: ≈ 1 km^2, <0.01 %

NOTES: The single occurrence is based on a report by Walker (1943) from Fort Resolution. This species is widespread in eastern North America but rare west of Ontario. The larvae inhabit small, spring-fed boggy streams (Walker and Corbet 1975). Its status in the Slave River lowland area requires further study.

Somatochlora franklini (Selys), DELICATE EMERALD RANK: S2



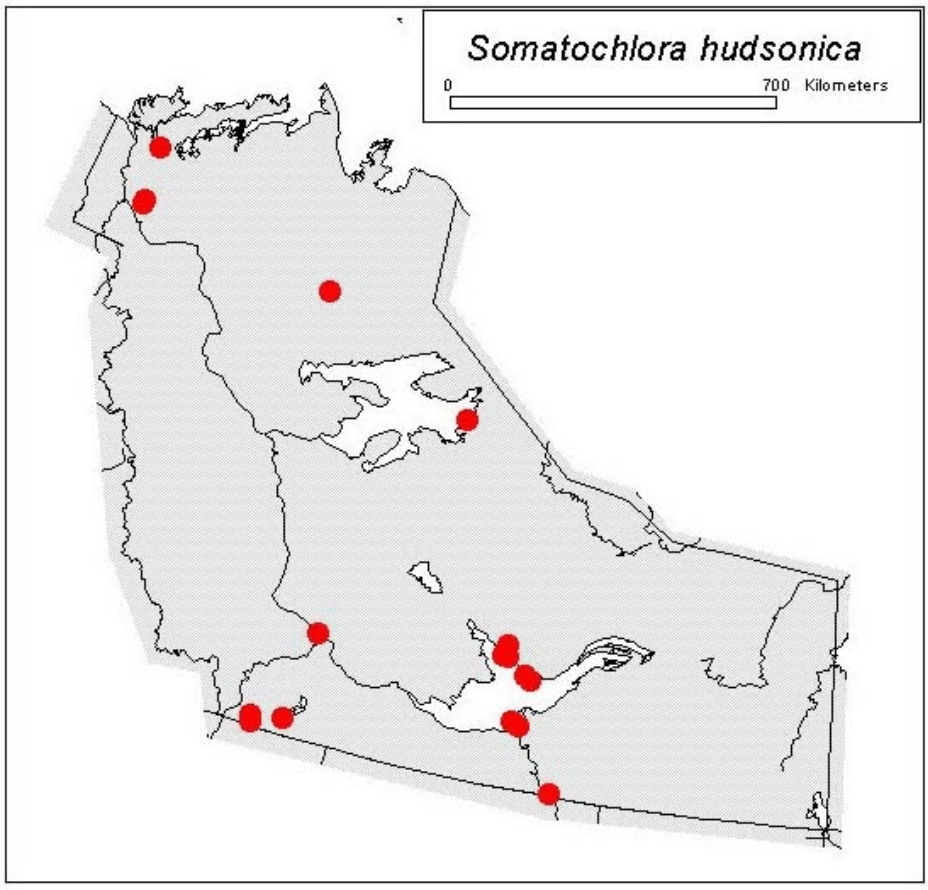
-

OCCURRENCES: 5

DISTRIBUTION: ≈ 3,071 km^2, 0.21 %

NOTES: This species occurs in evenly vegetated bogs and fens with wet substrate or very shallow water and small shallow moss-bottomed pools. Adults often keep to the treed or semi-open portions of wetlands. As a result of specific habitat requirements and behaviour it is easily overlooked. The currently known localities include Fort Resolution, Dempster highway km 491, Caribou Island, Caribou Lake and Fort Simpson.

Somatochlora hudsonica (Hagen in Selys), HUDSONIAN EMERALD RANK: S3



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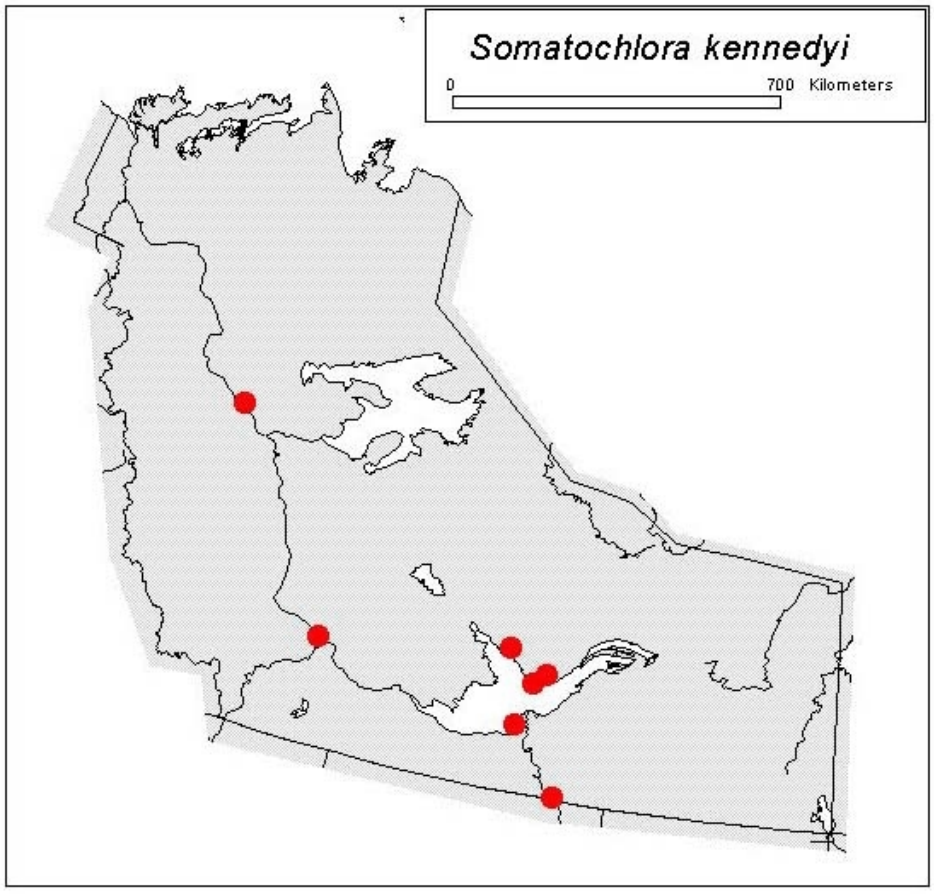
OCCURRENCES: 15

DISTRIBUTION: ≈ 521,517 km^2, 35.91 %

NOTES: This is the most widespread and common species of Emerald (*Somatochlora*) in the Northwest Territories.

Somatochlora kennedyi Walker, KENNEDY'S EMERALD RANK: S3



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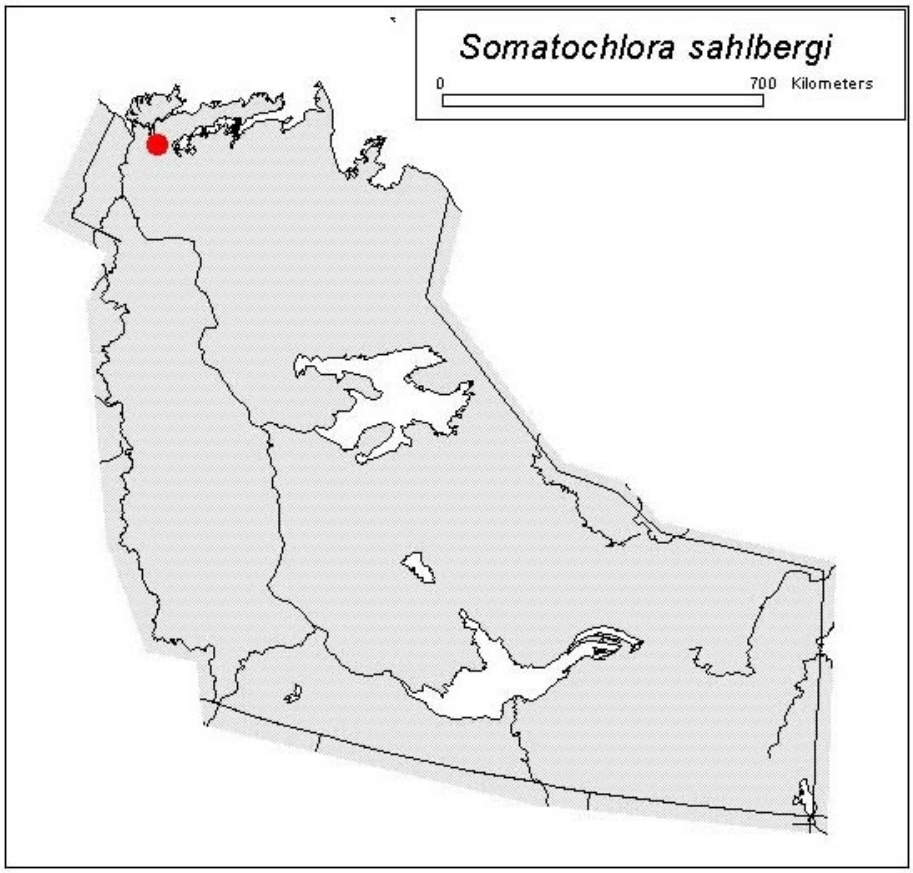
OCCURRENCES: 7

DISTRIBUTION: ≈ 190,845 km^2, 13.14 %

NOTES: Since this species occurs at Old Crow in the Yukon (Cannings and Cannings 1997), it is likely to occur further north than currently known in Northwest Territories.

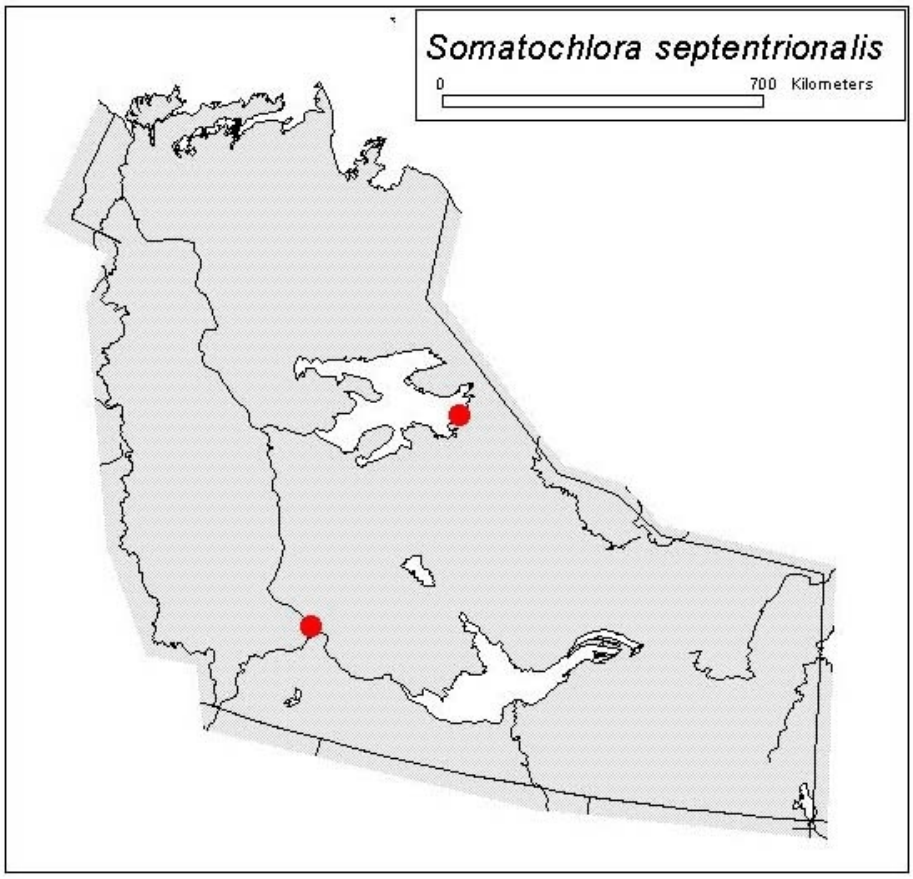
Somatochlora sahlbergi Tryybom, TREELINE EMERALD . RANK: S2



-

OCCURRENCES: 1
DISTRIBUTION: ≈ 1 km^2, <0.01 %
NOTES: This is one of the few species ranked as S2 that could be reliably ranked as S1 (if it were not for the fact that S1 ranking requires official evaluation of a detailed report) because of the strong evidence for a very restricted Beringian distribution. The Beringian pattern includes confinement to the non-glaciated (during the Wisconsin) portion of Alaska, Yukon and the Northwest Territories. Interestingly this species is associated with the more open habitats that were presumably characteristic of the former steppe-tundra, now largely replaced by boreal forest. The Treeline Emerald generally occurs within 100 km of the latitudinal treeline and within 300 m of the altitudinal treeline (Cannings and Cannings 1997) and is associated with relatively deep, cold water with aquatic mosses (Cannings and Cannings 1985). Hybrids with *S. albicincta* and *S. hudsonica* are known from northern Yukon and a hybrid with the latter species has been reported from Reindeer Station in Northwest Territories.

Somatochlora septentrionalis (Hagen), MUSKEG EMERALD . RANK: S2



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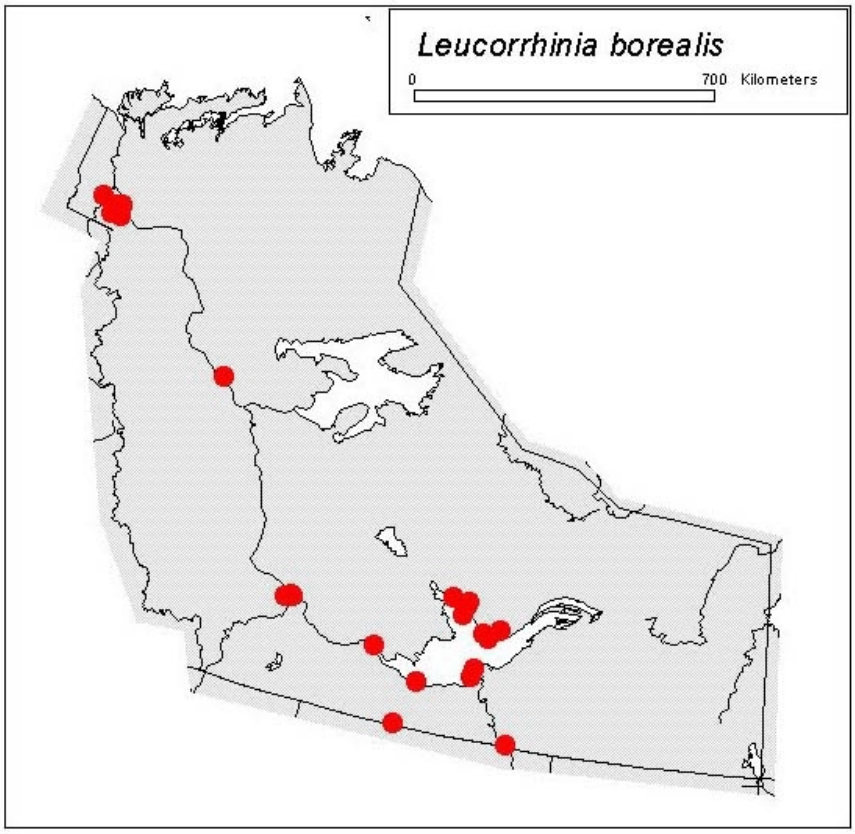
OCCURRENCES: 2

DISTRIBUTION: ≈ 565 km^2, 0.04 %

NOTES: The only known occurrences are from Fort Simpson and Cameron Bay, Great Slave Lake. Although widespread in northern Canada, this species is known from only one locality in the Yukon and the record is based on a larval skin (Cannings and Cannings 1997). Males have a dark brown spot covering the hindwing triangle as in *S. whitehousei* and *S. franklini*. More study of this species is needed.

Leucorrhinia borealis Hagen, BOREAL WHITEFACE . RANK: S3



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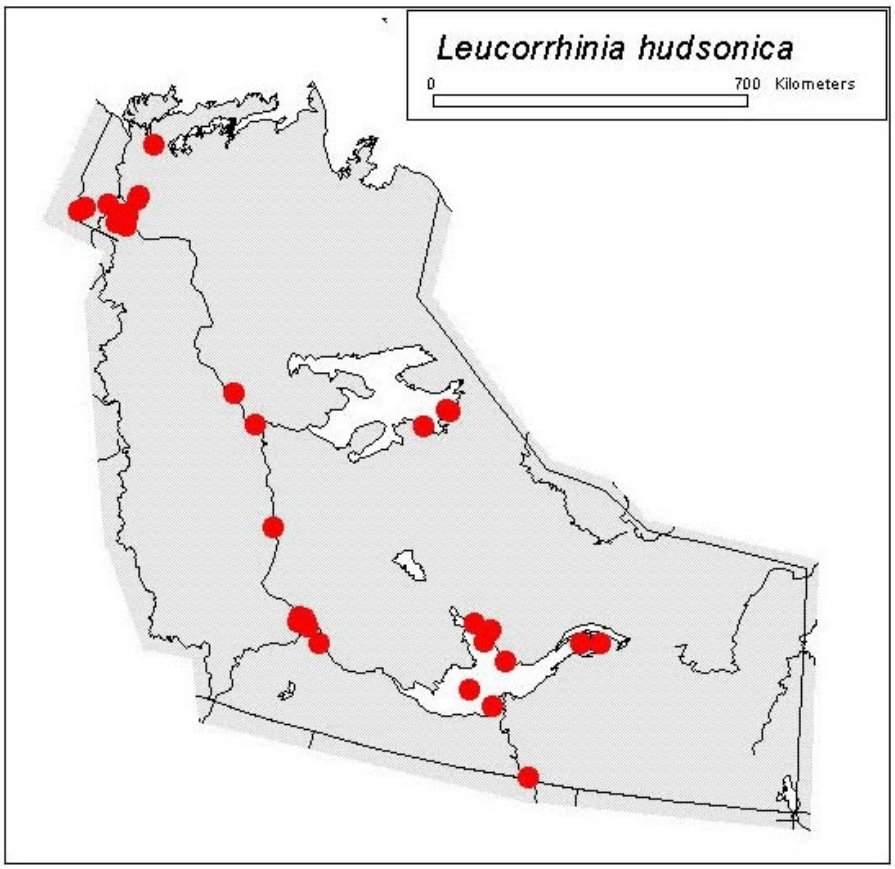
OCCURRENCES: 20

DISTRIBUTION: ≈ 283,308 km^2, 19.51 %

NOTES: With more field study this species will likely be ranked as S4.

Leucorrhinia hudsonica (Selys), HUDSONIAN WHITEFACE . RANK: S4



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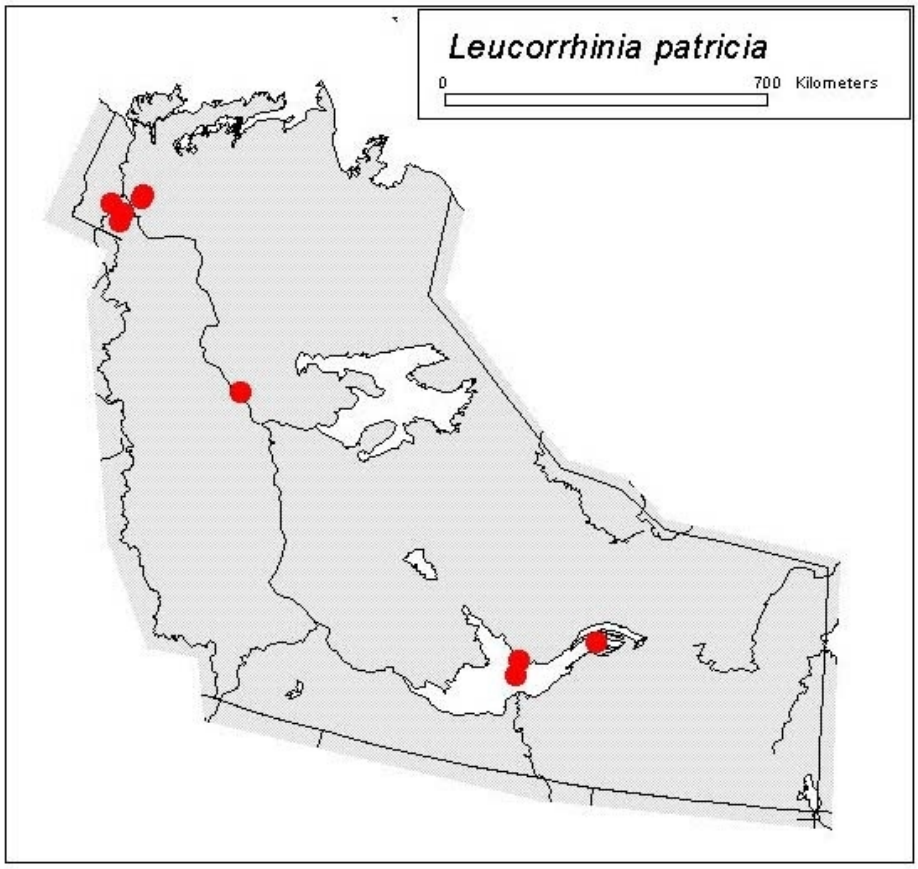
OCCURRENCES: 30

DISTRIBUTION: ≈ 497,275 km^2, 34.24 %

NOTES: Widespread in the Northwest Territories and the third most abundant species based on the number of occurrences.

Leucorrhinia patricia[1] Walker, CANADA WHITEFACE . . RANK: S3



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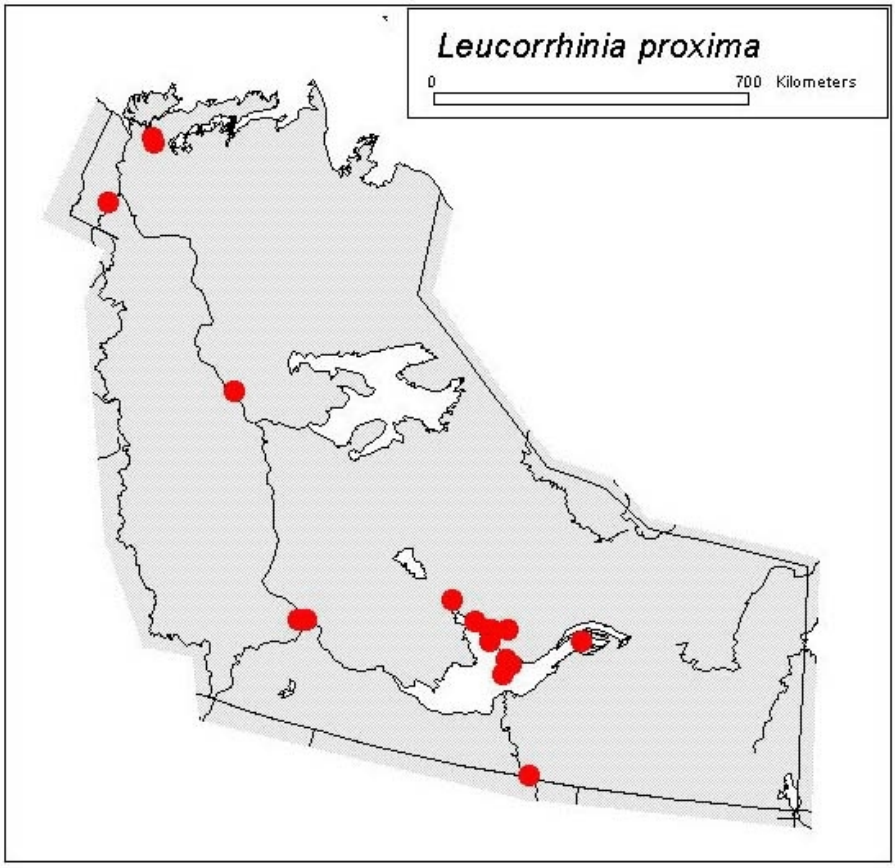
OCCURRENCES: 8

DISTRIBUTION: ≈ 222,900 km^2, 15.35 %

NOTES: A widespread species with relatively few records at present, *L. patricia*, may be confined to shallow pools in Sphagnum bogs with floating or a mossy bottom.

Leucorrhinia proxima Calvert, VARIABLE WHITEFACE RANK: S3



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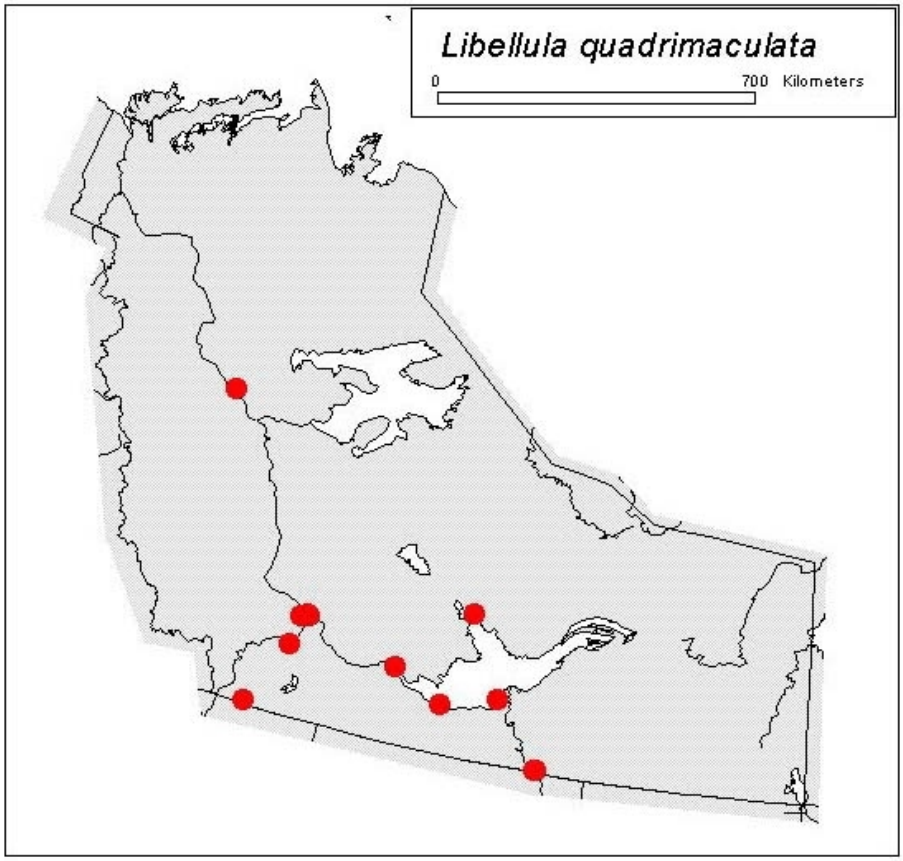
OCCURRENCES: 16

DISTRIBUTION: ≈ 270,009 km^2, 18.59 %

NOTES: With additional survey this widespread species may be expected to have a rank of S4.

Libellula quadrimaculata Linnaeus, FOUR-SPOTTED SKIMMER . . RANK: S3



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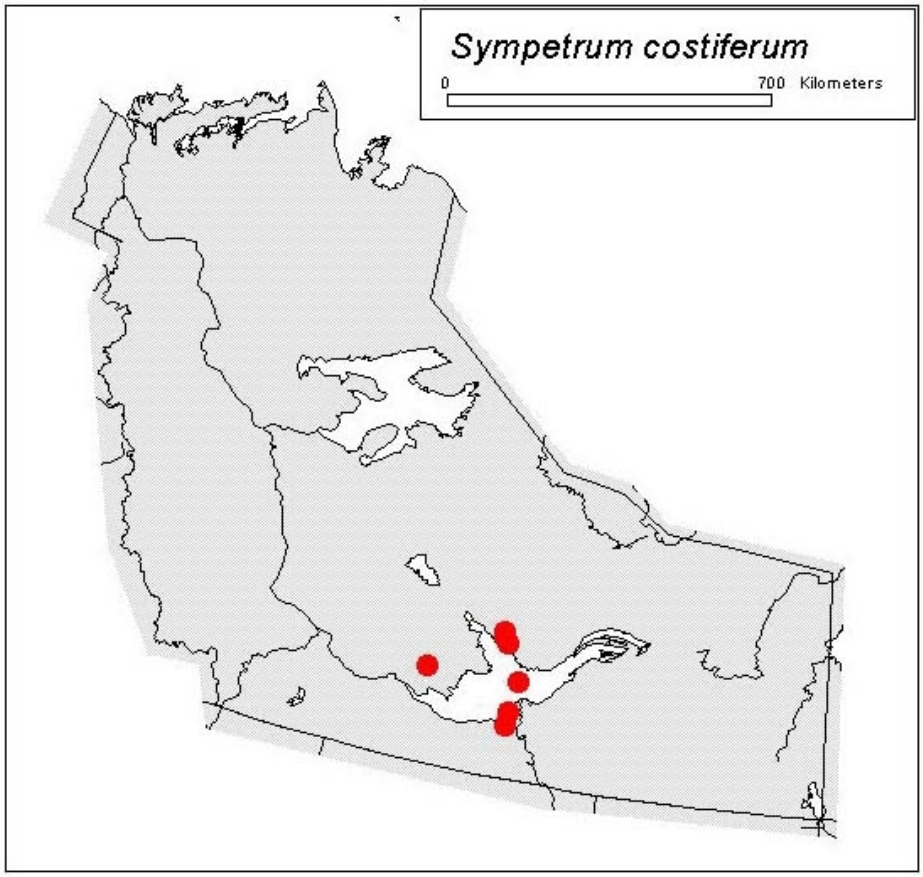
OCCURRENCES: 10

DISTRIBUTION: ≈ 166,773 km^2, 11.48 %

NOTES: The early and short flight period may account for the few records of this widespread species. It migrates in some parts of its range but there are at present no records for migration in the Northwest Territories. However, the extent to which an occurrence represents a breeding site is less clear for this species than for other dragonflies.

Sympetrum costiferum (Hagen), SAFFRON-BORDERED MEADOWFLY RANK: S3



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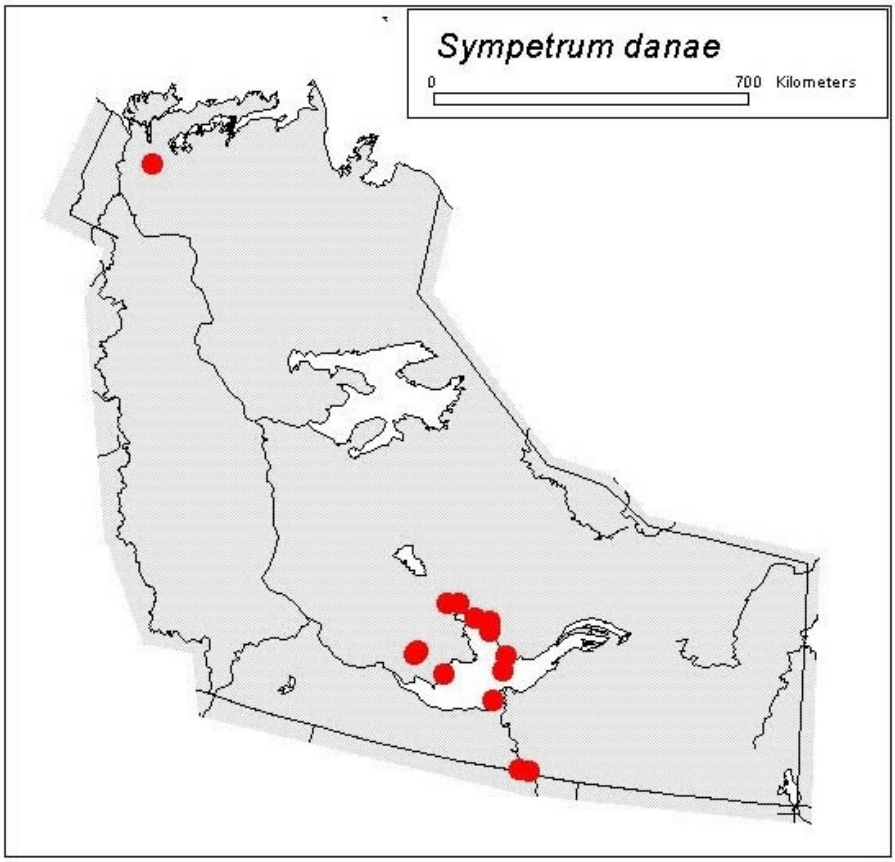
OCCURRENCES: 7

DISTRIBUTION: ≈ 35,870 km^2, 2.47 %

NOTES: This is the most confined distribution in the genus *Sympetrum* in the Northwest Territories. In some parts of its range it is associated sandy-bottomed lakes and rivers.

Sympetrum danae (Sulzer), BLACK MEADOWFLY . . RANK: S3



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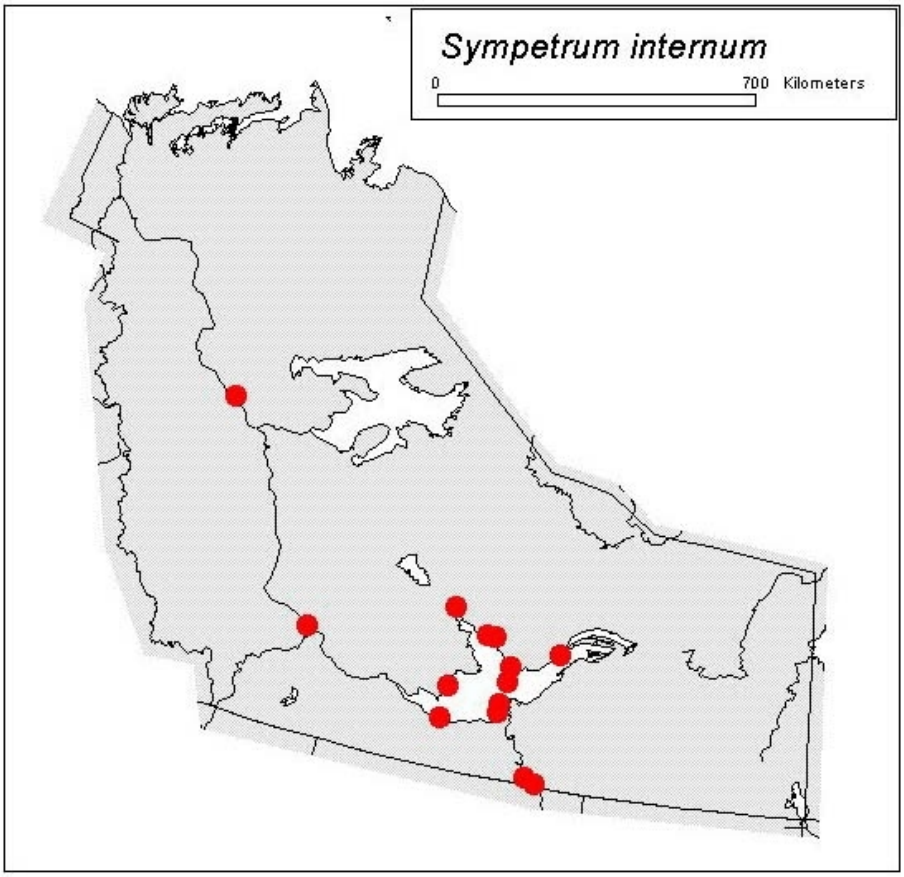
OCCURRENCES: 14

DISTRIBUTION: ≈ 105,286 km^2, 12.98 %

NOTES: The disjunction from Great Slave Lake to Inuvik seems remarkable but Cannings and Cannings (1997) report this species from similar latitude (Old Crow) in the Yukon. It has been reported from treeline on the Tuktoyaktuk Peninsula, based on specimens at the Royal British Columbia Museum (Cannings and Cannings 1997) but these specimens are not listed in the RBCM database and have not been checked.

Sympetrum internum Montgomery, CHERRY-FACED MEADOWFLY . . RANK: S3



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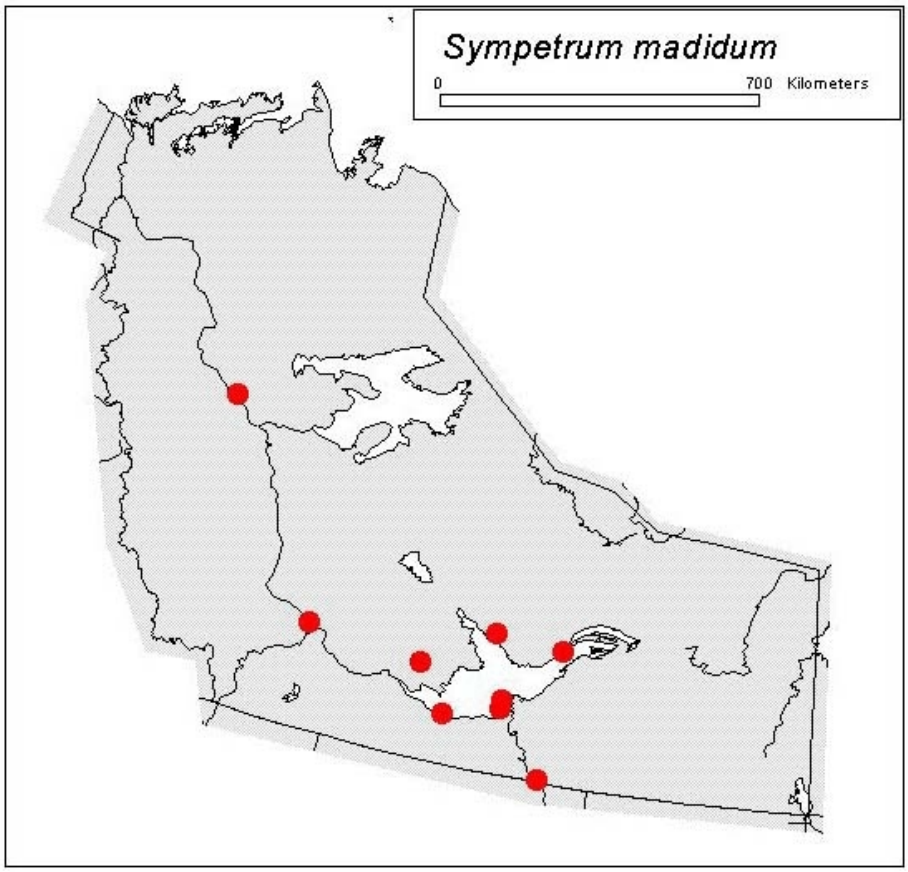
OCCURRENCES: 14

DISTRIBUTION: ≈ 188,509 km^2, 12.98 %

NOTES: Cannings and Cannings (1997) report that the specimens from the Yukon are relatively small compared to those from other parts of the range. This species is widespread and additional study will likely result in a rank of S4.

Sympetrum madidum Hagen, RED-VEINED MEADOWHAWK . . . . RANK: S3



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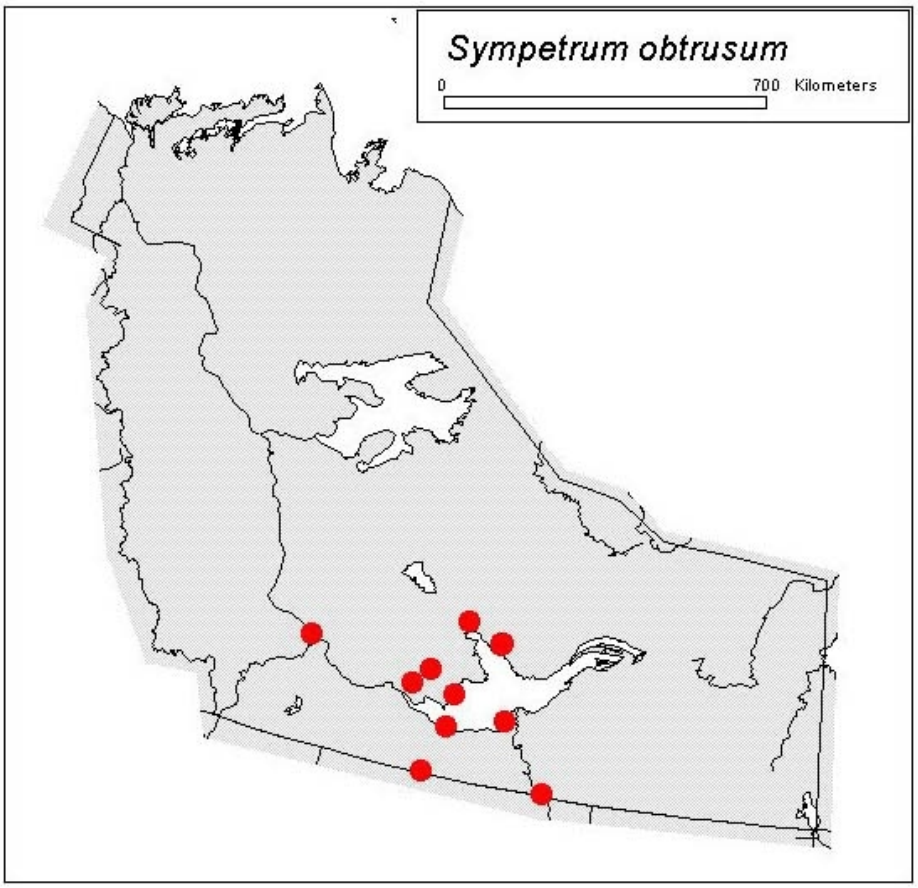
OCCURRENCES: 9

DISTRIBUTION: ≈ 64,869 km^2, 5.51 %

NOTES: Although relatively widespread in the Northwest Territories, this species is not known from the Yukon and apparently does not occur on the west side of the Mackenzie Mountains.

Sympetrum obtrusum (Hagen), WHITE-FACED MEADOWFLY . . . RANK: S3



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OCCURRENCES: 10

DISTRIBUTION: ≈ 65,504 km^2, 4.46 %

NOTES: Within the Northwest Territories this species appears to be confined to the Great Slave Lake region. It is known from only one locality in the Yukon where there is a population (Cannings and Cannings 1997).