

# Extreme Northern and Southern Distribution Records for Jumping Spiders (Araneae, Salticidae) in the Western Hemisphere

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**ABSTRACT.** In Alaska and Canada the northern limit of salticid spider distribution corresponds closely to the boreal forest-tundra ecotone. The only occurrence in the polar tundra is at Tuktoyaktuk, Northwest Territories, Canada. In South America, Puerto Deseado, Argentine marks the southernmost record.

Key words: Salticidae, jumping spider, distribution

**RÉSUMÉ.** En Alaska comme au Canada, la limite nordique de la distribution de la saltique correspond de près à celle de l'écotone de la forêt boréale et de la toundra. On ne la trouve dans la toundra polaire qu'à Tuktoyaktuk, dans les Territoires du Nord-Ouest, au Canada. En Amérique du Sud, Puerto Deseado, en Argentine, marque la limite australe.

Mots clés: Salticidés, araignée sauteuse, distribution

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## INTRODUCTION

The Salticidae are the largest spider family, comprising over 3000 species, mostly tropical, but with good representation in temperate areas. The number of species decreases rapidly as one approaches polar regions. For example, Chickering (1946) notes approximately 230 species from Panama, while Richman and Cutler (1977) list 290 species from all of North America north of Mexico (an area over 260 times the size of Panama). With the help of several colleagues who checked label data, I have been able to list the extreme latitudinal distributions of the family in tabular form (Table 1).

While records are scattered, they do allow for a reasonable interpretation of extreme northern salticid distribution in the Nearctic. The southernmost Neotropical record is of *Dendryphantes patagonicus* Simon from Puerto Deseado, Argentina (66°W, 47°30'S). The family is absent from Tierra del Fuego and the Falkland Islands. One salticid species does occur in the Antipodes, Campbell and Auckland Islands, the only species on any sub-Antarctic island (Forster, 1964).

*Salticus scenicus* (Clerck), a common synanthropic European and North American species, was apparently introduced into Greenland during Viking times and became feral. The species has not been found there since the 1700s (Sorensen, 1898).

## DISCUSSION

Perhaps the most striking feature to emerge is the close fit of the family distribution limit with the margin of the boreal forest-tundra ecotone (Hudsonian zone, subarctic) in North America (Table 1; Hammond Medallion World Atlas, 1966; National Atlas of Canada, 1974). This is also well illustrated by the numerous specimens of *Sitticus palustris* (Peckham and Peckham) from Churchill, Manitoba. By

comparing the detailed label data with the specimens, and the map in Ferris (1974), I determined that the specimens were all collected at the ecotone, or in the forest-tundra, but not in the polar tundra proper. Only at Tuktoyaktuk, in the northwest of the Northwest Territories, Canada, do salticids exist on the polar tundra. This area was not glaciated during the last glacial period, and the specimens may represent a possible relict population (National Atlas of Canada, 1974; Ritchie, 1977). Another possibility is anthropogenic introduction. However, the species involved, *Sitticus lineolatus* (Grube), is not known to be synanthropic, and is common in the boreal and montane forests of western North America.

A similar northern limitation of the family to the forest-tundra ecotone is found in northwestern Europe (Koponen, 1975, 1976, *in litt.* 1977; Prószyński, 1978, *in litt.* 1977). Records for eastern and central Asia are sparse, though Prószyński (1978) has provided some maps. Again it appears that no polar tundra records exist, although this area is so poorly represented by specimens, relative to land area, that it would be premature to draw conclusions.

The species found at high latitudes in the northern hemisphere are predominantly inhabitants of herbaceous and shrubby vegetation. Unlike the situation in polar tundra, salticids are characteristic of the alpine tundra of nearctic mountains, where they dwell among rocks and talus. The salticids of high altitudes in North America are poorly known, but are related to or in the same genera as those found at high latitudes (Levi and Levi, 1951, 1955; Swann and Robey, 1975).

It should be noted that areas marked by extreme continental seasonality in climate can have a sizeable jumping spider fauna. For example, there are over 60 species known from Minnesota (Cutler, 1977). Extreme cold alone is not a sufficient condition for restricting salticid colonization, as the high-altitude salticid fauna demonstrates. In the Himalayas, salticids are permanent residents of the Ae-

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TABLE 1. Extreme northern distribution records of Salticidae in North America

Area	Locality	Coordinates	Species
Alaska	Circle and vicinity	144°-145°W 65°N	<i>Metaphidippus aeneolus</i> (Curtis) <i>Evarcha hoyi</i> (Peckham and Peckham) (Chamberlain and Ivie, 1947)
Alaska	Sheenjek River Valley	143°W 68°30' N	<i>Sitticus lineolatus</i> (Grube) (Prószyński, 1971)
Yukon	North Fork Pass	138°W 65°N	<i>S. lineolatus</i>
NWT	Mackenzie, Aklavik	136°W 68°N	<i>Chalcoscirtus</i> sp.
NWT	Mackenzie, Reindeer Station	134°W 68°30' N	<i>Eris marginata</i> (Walckenaer)
NWT	Mackenzie, Tuktoyaktuk	133°W 69°20' N	<i>S. lineolatus</i>
NWT	Mackenzie, Sawmill Bay	119°W 66°N	<i>Metaphidippus montanus</i> (Emerton)
NWT	Mackenzie, Salmita	111°W 64°N	<i>S. lineolatus</i>
Manitoba	Churchill	94°W 59°N	<i>S. palustris</i> (Peckham and Peckham)
Quebec	Fort Chimo	68°W 59°N	<i>Eris nigromaculatus</i> (Keyserling)
Quebec	Indian House Lake	65°W 56°N	<i>Sitticus</i> sp.
Newfoundland	Goose Bay	61°W 52°N	<i>S. palustris</i>
Newfoundland	Cartwright	57°W 53°N	<i>S. striatus</i> Emerton
Greenland	Frederikshaab	49°W 62°N	<i>Salticus scenicus</i> (Clerck) (Sorensen, 1898), formerly feral, now extirpated.

All specimens not referenced are in the Canadian National Collections.

lian zone (above the Alpine zone) (Wanless, 1975). Bristowe (1958) has probably correctly identified the meteorological conditions responsible, in this quotation offering an explanation for the rapid fall-off in salticid diversity from southern England to southern Scotland: "Extreme temperatures in winter may be intolerable to some species; but more important may be the number of hot sunny days in spring and summer that enable them to hunt, prosper and complete their life cycle." Wanless (1975) has similar comments on the Mt. Everest species. Unfortunately, we lack the ecophysiological studies necessary to confirm this opinion.

There are no obvious morphological characteristics that distinguish extreme northern salticids from their temperate relatives: if anything, absence of characteristics predominates. Northern salticids are not flamboyantly colored, are about median size for salticids, do not have elaborate setal fringes, spines, or raptorial modifications of the first legs, and do not exhibit antlike or beetlelike facies like some of the more southern representatives of the family. They are simply average-appearing jumping spiders.

The taxonomic status of the Salticidae is still in a state of flux, with generic relationships particularly confused. We can say that *Sitticus*, *Eris* and *Metaphidippus* (the last two

are placed in the genus *Dendryphantas* by some authors) are represented in both tropical and temperate areas of both Gondwanan and Laurasian origin (Peckham and Peckham, 1903; Prószyński, 1971, 1973, 1978; Richman and Cutler, 1977). Beyond these general statements little can be said concerning zoogeographical relationships. The northern species turn out to be certain species from morphologically generalized, widely distributed genera. Cold hardiness and a possible extension of the life cycle are two physiological adaptations which come to mind, but there are no data to support even these conclusions. Three of the species (*M. aeneolus*, *E. marginata* and *S. palustris*) have widespread distributions in the United States and Canada; the others either are montane, or reach their southern limits in the northern United States (Richman and Cutler, 1977). None of the species is restricted to the forest-tundra ecotone.

The failure of salticids to colonize most of the polar tundra is difficult to explain, in light of the success of the group in nearly all other terrestrial environments. It is probably related to some physiological attributes as yet unascertained.

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