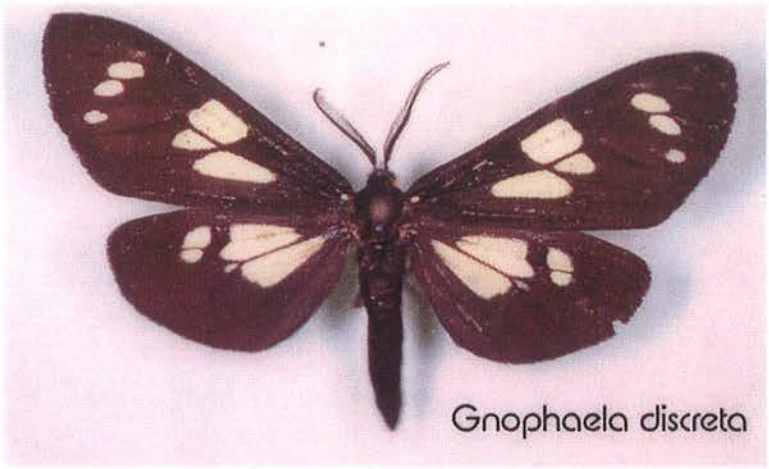
Moths of Western North America

3. Arctiidae of Western North America. Part 1



Contributions of the
C.P. Gillette Arthropod Biodiversity Museum
Colorado State University

Moths of Western North America
3. Distribution of Arctiidae of Western North America. Part 1. Text, maps, and references

by

Douglas C. Ferguson
Systematic Entomology Laboratory, U.S.D.A.
National Museum of Natural History
Washington, D.C. 20560

Paul A. Opler
Department of Bioagricultural Sciences
Colorado State University
Fort Collins, Colo. 80523

Michael J. Smith
Research Associate, Nevada State Museum
Las Vegas, Nev. 89107

and

Julian P. Donahue
Natural History Museum of Los Angeles County
900 Exposition Boulevard
Los Angleles, Calif. 90007-4057

2000

This publication and others in the series may be ordered from the C.P. Gillette Arthropod Biodiversity Museum, Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, Colo. 80523

Cover illustration: ***Gnophaela discreta*** **(upper),** ***Platarctia parthenos*** **(lower).**
Photos by Paul A. Opler.

ISBN 1084-8819

Copies of this publication may be ordered from Gillette Museum of Arthropod Biodiversity, Department of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO 80523. Make check to Gillette Museum Publications.
See inside back cover for other available publications.

Contents

Introduction to the Series

This is the third of a series of atlases detailing the distributional occurrence of the moths of western North America. Part 1 of the atlas of western Arctiidae covers the documented distribution of a group of Lepidoptera with many well-known and brightly colored species. Yet despite their bright colors the taxonomic relationships in some genera are unclear and there are undescribed North American species in at least four genera (*Crambidia, Euchaetes, Holomelina,* and *Grammia*).

Part 2 will be a collection of color plates of western Arctiidae. Its appearance is anticipated later in 2000.

Knowledge about western moths has accumulated rapidly, but is not generally available. Such knowledge exists in the form of collected specimens in curated institutional and private collections, and has not usually been synthesized except in the form of sporadic papers and a few monographs on specific species groups, genera, and subfamilies. Family treatments are rare.

In this atlas the presence of a dot in a county, Mexican state, or Canadian province is based on a specimen in an institutional collection or private collection or reliable literature record such as a citation in an original description, a monograph, or a state compilation. Records may represent either resident or stray status, although the vast majority, if not all, of the Arctiidae records are resident. Although many dots represent recent collections, some may be quite old. Hence the presence of a dot does not necessarily imply current residence.

The purpose of the series is to provide in an expedient manner at least a draft synthesis of the distributional status of as many moth families as possible. For the families already covered in the *Moths of America north of Mexico*, these atlases may be considered an appendix or update. In some cases, North American species additional to those treated in the most recent works are included. In other cases, authors of an atlas may decide to include moths that occur in Mexico or Canada, but not in the contiguous United States.

It is anticipated that these atlases might be used for many purposes. These include, but are probably not limited to (1) compiling state of regional lists of moths, (2) curating a collection of western species, (3) initial inventory of species that might be of conservation concern, or (4) for use in National or state Geographic Information System

assessments such as GAP.

Persons interested in contributing or authoring atlases for specific moth groups should contact Dr. Paul A. Opler, Department of Bioagricultural Sciences, Colorado State University, Fort Collins, CO 80523, phone 970/667-8448, FAX 970/491-3862, e-mail paulevi@webaccess.net for preparation instructions and further information.

Introduction to Arctiidae

This is an annotated atlas to the described species formally assigned to the family Arctiidae (Franclemont *in* Hodges 1983) that occur in the western United States and southern portions of the western Canadian provinces. Some records for the northern states of Mexico are included; species that occur in Mexico but not in the U.S. are excluded. Most of North American genera of Arctiidae have not been the subject of published modern systematic work. In fact, several moderately-sized genera (e.g. *Crambidia* and *Euchaetes*) have never been revised. Because species of western Arctiidae are not well-illustrated in readily available works, and have not been covered in one of *Moths of America north of Mexico* fascicles, we plan to illustrate most of the species in color in a supplement to this atlas.

The family Arctiidae is unified by the presence of a tymbal organ on the adult metepisternum (sometimes lost secondarily) and the presence of two subventral setae on the larval meso- and metathorax (Scoble 1992).

Geographical Distribution

We include the subfamilies, Lithosiinae, Arctiinae, and Syntominae. Pericopinae, treated as a subfamily by Franclemont *in* Hodges (1983) is here treated as a subfamily of Arctiinae following findings by Kitchings and Rawlings (1999). All of the above belong to the superfamily Noctuoidea, but their position in the group in relation to other noctuoid higher categories is not well understood (Kitchings and Rawlings 1999).

The Lithosiinae are primarily tropical, but are rich in the West, especially in areas adjacent to the Mexican boundary. Nevertheless, *Eilema bicolor* and species of *Crambidia, Cisthene,* and *Hypoprepia* range throughout much of western North America. One species, *Acsala anomala*, is adapted to life in the Arctic.

The Arctiinae, found on all continents except Antarctica, is the largest subfamily in

our area with many species. Genera with many western species include *Spilosoma, Grammia, Lophocampa, Euchaetes,* and *Pygarctia.* As for other subfamilies, the richest array of species is found in states adjoining the Mexican boundary with a few counties in southeastern Arizona harboring the most species—97 (Opler, 1996). Surprisingly, the Rocky Mountain front in Colorado—away from the boundary area—is extremely rich with x species of Arctiinae (Opler 1996). Several genera occur only in alpine or arctic environments (*Neoarctia, Pararctia,* and *Dodia*).

The Pericopini, sometimes treated as a subfamily, are limited to the New World and most species occur in the tropics (Goodger and Watson 1986). Several *Gnophaela, i.e. G. latipennis* and *G. vermiculata* are widespread in western North American mountains, but most recorded species are found only near the Mexican boundary, some as rare strays.

The Syntominae (often Ctenuchinae in the literature) are distributed widely in the World but are richest in the New World tropics. In western North America, species of *Ctenucha* and *Cisseps fulvicollis* are widespread, but most species are found in states adjoining the Mexican boundary—some resident and some as rare strays from Mexico.

Life History

Larval biology and host plants.—Larvae of Arctiidae are typically densely setose with setae arising in clumps from verrucae (wart-like structures) circling each body segment (Habeck *in* Stehr 1987; Scoble 1992). The density of the setae and their length varies between subfamilies. The larvae of Arctiinae are densely setose and are known as woolly bears, while larvae of Lithosiinae are much less setose and are often cryptically marked (Habeck *in* Stehr 1987).

Host preference in North American Arctiidae are variable as in most Lepidoptera higher categories. Larvae of Lithosiinae species ("lichen moths") feed on algae or the blue-green bacterial component of lichens (Habeck *in* Stehr 1987). Often, species of Arctiinae have larvae that are polyphagous, especially on herbaceous plants of several families, although some feed on tree foliage, e.g. *Hyphantria cunea* and *Lophocampa* species. Some Arctiinae are quite specific in feeding on plants of a single genus or family, e.g. *Lophocampa argentata* and its near relatives on pines, and *Euchaetes* on milkweeds. Larvae of Pericopinae are brightly colored and are relatively specific on plants in the Apocynaceae, Asclepiadaceae, Asteraceae, Boraginaceae, and Fabaceae (Scoble 1992).

Taxonomy and Identification

Although not intended as a taxonommic treatise, we wish to make a few comments here on the taxonomy and identification of Arctiidae. Despite the fact that many family members are relatively large and brightly colored, there remain a number of undescribed taxa and poorly understood species in North America. In addition, genera whose distribution extends south into Mexico and Central america may require revisionb of large tropical assemblages in order to understand which names may apply to our North American representatives. The family placement of some species within the Arctiidae is even uncertain, e.g. *Afrida* species.

Genera that include one or more undescribed North American species include *Crambidia, Holomelina, Grammia*, and *Euchaetes.* Revisions of these genera are in preparation or the undescribed taxa may soon be described. In this atlas, we have generally excluded mention of these undescribed species even though some are well known. In some cases we are aware that a species complex comprises more than a single species, some of which are unnamed or not well delimited we have taken the conservative approach by just mapping the complex as a single species. Examples of this approach include the *Arctia caja* and *Grammia nevadensis* groups.

Identification of these mostly brightly colored moths might seem relatively simple, and it is for many readily recognized taxa. Nonetheless, the identification of species in some genera requires examination of genitalia, forewing underside color, foreleg color, or spination of legs. The most recent treatment that provides identification keys to many North American species is Forbes (1960). Where several similar species occur in the same region, identification to the species level should not be based on this atlas alone. The references should be obtained and employed where appropriate.

Some new concepts are represented by some of the names and combinations presented here, and more detailed explanations of many of these are included in manuscripts in preparation (Ferguson, unpublished). D.C. Ferguson is responsible for the checklist of species and its order, while P.A. Opler is mainly responsible for any errors in name interpretation and mapping.

Conservation

This atlas provides the first detailed compendium of the distribution of western species and several comments on the conservation of the included species are appropriate. First, we should point out the obvious high species richness and geographic restriction of a number of species that occur in southeastern Arizona and the lower Rio Grande Valley of Texas. Although some of these species probably extend south into adjacent Mexico, their distributions there are either unknown or poorly documented. Proper management of public lands in these species-rich areas is critical to the maintenance of healthy populations in their nativ habitats. In particular, the Coronado National Forest and Fort Huachuca of southeastern Arizona together with the Rio Grande Valley National Wildlife Refuge and the Audubon Society's Sabal Palmetto Preserve (Bordelon and Knudson 1998) should be managed with a view to maintaining critical habitats and the restricted species that reside therein.

Our limited knowledge of the distribution and ecological circumstances of the included species prevents us from poionting out species in urgent need of protection, but two western Arctiidae appear to be extinct-- *Grammia edwardsi* (Stretch), formerly of San Francisco, California nd *Grammia behrii* of Vancouver Island, British Columbia.

Species of geographically restricted western Arctiidae should be monitored and studied to determine if any of their populations require specific management or conservation actions.

Systematic list of moths

Superfamily Noctuoidea

Family Arctiidae

Subfamily Lithosiinae
Tribe Lithosiini
Eilema bicolor (Grote)
Crambidia lithosioides Dyar
Crambidia pallida Packard
Crambidia uniformis Dyar
Crambidia dusca Barnes and McDunnough
Crambidia myrlosea Dyar
Crambidia suffusa Barnes and McDunnough
Crambidia impura Barnes and McDunnough
Crambidia casta (Packard)
Crambidia pura Barnes and McDunnough
Crambidia cephalica (Grote and Robinson)
Agylla septentrionalis Barnes and McDunnough
Inopsis modulata Hy. Edwards
Inopsis funerea (Grote)
Gnamptonychia ventralis Barnes and Linsey
Gardinia anopla Hering
Cisthene subrufa (Barnes and McDunnough)
Cisthene unifascia Grote and Robinson
Cisthene kentuckiensis (Dyar)
Cisthene liberomacula (Dyar)
Cisthene deserta (Felder)
Cisthene faustinula (Boisduval)
Cisthene dorsimacula (Dyar)
Cisthene tenuifascia Harvey
Cisthene plumbea Stretch
Cisthene perrosea (Dyar)
Cisthene angelus (Dyar)

Cisthene subjecta Walker
Cisthene packardii (Grote)
Cisthene conjuncta (Barnes and McDunnough)
Cisthene barnesii (Dyar)
Cisthene picta (Barnes and McDunnough)
Cisthene juanita Barnes and Benjamin
Cisthene coronado C. Knowlton
Cisthene martini C. Knowlton
Ptychoglene coccinea (Hy. Edwards)
Ptychoglene phrada Druce
Ptychoglene sanguineola (Boisduval)
Lycomorpha grotei (Packard)
Lycomorpha regulus (Grinnell), mapped with *L. grotei*
Lycomorpha fulgens (Hy. Edwards)
Lycomorpha splendens Barnes and McDunnough
Lycomorpha pholus (Drury)
Lycomorpha desertus Hy. Edwards?
Hypoprepia miniata (Kirby)
Hypoprepia fucosa Huebner
Hypoprepia cadaverosa Strecker
Hypoprepia inculta Hy. Edwards
Haematomis possibly *uniformis* Schaus, not *H. mexicana* (Druce)
Rhabdatomis laudamia (Druce)
Lycomorphodes sordida (Butler)
Bruceia pulverina Neumoegen
Bruceia hubbardi Dyar
Eudesmia arida (Skinner)
Eudesmia menea (Druce)
Clemensia albata Packard
Pagara simplex Walker
Pagara fuscipes (Grote)
Neoplynes eudora (Dyar)

Tribe Afridini

Afrida ydatodes Dyar
Afrida minuta (Druce)
The above two species are likely Noctuidae
"Afrida" exegens Dyar

Tribe Acsalini

Acsala anomala Benjamin

Arctiinae

Callimorphini

Dodia albertae Dyar
Dodia kononenkoi Tschiakov and Lafontaine
Dodia verticalis Lafontaine and Troubridge
Haploa clymene (Brown)
Haploa contigua (Walker)
Haploa colona (Huebner)
Haploa lecontei (Guerin-Meneville)
Haploa reversa (Stretch)
Haploa confusa (Lyman)
Tyria jacobaeae (Linnaeus)
Utetheisa ornatrix (Linnaeus), includes *U. bella* (Linnaeus)

Arctiini

Holomelina laeta (Guerin-Meneville)
Holomelina costata (Stretch)
Holomelina ostenta (Hy. Edw.)
Holomelina opella (Grote)
Holomelina lamae (Freeman)
Holomelina ferruginosa (Walker)
Holomelina aurantiaca (Huebner)
Holomelina fragilis (Strecker)
Holoarctia cervini (Fallou)
Holoarctia fridolini (Tortensius)
Neoarctia beanii (Neumoegen)
Neoarctia brucei (Hy. Edw.)
Neoarctia lafontainei Ferguson
Hyperborea czekanowskii Grum-Grshimailo
Grammia quenseli (Paykull)
Grammia obliterata (Stretch)
Grammia speciosa (Moeschler), ?Can
Grammia phillipiana Ferguson
Grammia parthenice (W. Kirby)
Grammia virgo (Linnaeus)
Grammia doris (Boisduval)
Grammia arge (Drury)
Grammia ornata (Packard)
Grammia edwardsi (Stretch), revised status by Ferguson
Grammia complicata (Walker), revised status by Ferguson

Grammia blakei (Grote)
Grammia cervinoides (Strecker)
Grammia elongata (Stretch)
Grammia williamsii (Dodge)
Grammia allectans Ferguson
Grammia nevadensis (Grote and Robinson) Complex
Grammia behrii (Stretch)
Grammia phyllira (Drury), mapped with *G. favorita*
Grammia favorita (Neumoegen)
Grammia celia (Saunders)
Grammia figurata (Drury)
Grammia f-pallida (Strecker)
Notarctia proxima (Guerin-Meneville)
Notarctia arizoniensis (Stretch), new status by Ferguson, mapped with *N. proxima*
Apantesis phalerata (Harris)
Apantesis vittata (Fabricius)
Apantesis nais (Drury)
Apantesis carlotta Ferguson
Parasemia plantaginis (Linnaeus)
Acerbia alpina (Quensel)
Pararctia lapponica (Thunberg)
Pararctia yarrowii (Stretch), revised status by Ferguson
Pararctia subnebulosa (Dyar)
Platyprepia virginalis (Boisduval)
Arctia caja (Linnaeus)
ssp. *americana* Harris
ssp. *waroi* Barnes and Benjamin
Arctia opulenta (Henry Edwards)
Arctia brachyptera (Troubridge and Lafontaine)
Platarctia parthenos (Harris)
Phragmatobia fuliginosa (Linnaeus)
Phragmatobia assimilans Walker
Sonorarctia fervida (Walker)
Leptarctia californiae (Walker)
Kodiosoma fulvum Stretch
Pyrrharctia isabella (J.E. Smith)
Estigmene acrea (Drury)
Estigmene albida (Stretch)

Hyphantria cunea (Drury)
Spilosoma congrua Walker
Spilosoma dubia (Walker)
Spilosoma virginica (Fabricius)
Spilosoma vestalis Packard
Spilosoma vagans (Boisduval)
Spilosoma pteridis Hy. Edwards
Spilosoma danbyi (Neumoegen & Dyar), revised status by Ferguson
Euerythra phasma Harvey
Euerythra trimaculata Smith
Alexicles aspersa Grote
Hypercompe suffusa (Schaus)
Hypercompe oslari Rothschild
Hypercompe permaculata (Packard)
Hypercompe scribonia (Stoll)
Hypercompe caudata (Walker)
Arachnis picta Packard
Arachnis nedyma Franclemont
Arachnis citra Neumoegen & Dyar, *A. apachea* J.F.G. Clarke is a synonym
Arachnis aulaea Geyer
Arachnis zuni Neumoegen
Hypocrisias minima (Neumoegen)
Halysidota tessellaris (J.E. Smith)
Halysidota harrisii Walsh
Halysidota davisii Hy. Edwards
Halysidota schausi Rothschild
Lophocampa significans (Hy. Edwards)
Lophocampa roseata (Walker)
Lophocampa ingens (Hy. Edwards)
Lophocampa argentata (Packard)
Lophocampa sobrina (Stretch)
Lophocampa caryae Harris
Lophocampa mixta (Neumoegen)
Lophocampa pura (Neumoegen)
Lophocampa maculata Harris
Lophocampa annulosa (Walker)
Lophocampa catenulata (Huebner)
Leucanopsis longa (Grote)
Leucanopsis perdentata (Schaus)

Leucanopsis lurida (Hy. Edwards)
"Aemilia" ambigua (Strecker)
Apocrisias thaumasta Franclemont
Hemihyalea mansueta (Hy. Edwards), ?U.S.
Hemihyalea edwardsii (Packard)
Hemihyalea labecula (Grote)
Hemihyalea splendens Barnes & McDunnough
Calidota laqueata (Hy. Edwards)
Opharus muricolor (Dyar)
Carales arizonensis (Rothschild)
Pareuchaetes insulata (Walker)
Cycnia inopinatus (Hy. Edwards)
Cycnia collaris (Fitch)
Cycnia tenera Huebner
Cycnia oregonensis (Stretch)
Biturix venosata Walker
Euchaetes zella (Dyar)
Euchaetes perlevis Grote
Euchaetes fusca (Rothschild)
Euchaetes helena (Cassino)
Euchaetes castalla (Barnes & McDunnough)
Euchaetes elegans Stretch
Euchaetes egle (Drury)
Euchaetes gigantea (Barnes & McDunnough)
Euchaetes polingi (Cassino)
Euchaetes bolteri Stretch
Euchaetes expressa (Edwards), U.S.?
Euchaetes antica (Walker)
Euchaetes albicosta (Walker)
Pygoctenucha terminalis (Walker)
Pygoctenucha pyrrhoura (Hulst)
Lerina incarnata Walker
Ectypia bivittata Clemens
Ectypia mexicana (Dognin)
Ectypia clio (Packard)
Pygarctia murina (Stretch)
Pygarctia neomexicana Barnes
Pygarctia lorula Dyar
Pygarctia roseicapitis (Neumoegen & Dyar)

Pygarctia flavidorsalis Barnes & McDunnough
Pygarctia spraguei (Grote)
Pygarctia abdominalis Grote
Pygarctia eglensis (Clemens)
Pygarctia pterygostigma Dyar
Bertholdia trigona (Grote)
Neritos prophaea (Schaus), ?U.S.

Tribe Pericopini
Gnophaela clappiana Holland
Gnophaela latipennis (Boisduval)
Gnophaela aequinoctialis (Walker)
Gnophaela discreta Stretch
Gnophaela vermiculata (Grote)
Dysschema leucophaea (Walker)
Dysschema howardi Hy. Edwards
Pteroodes species near *longipennis* (Walker) M.J. Smith
Phaloesia saucia Walker

Syntominae (=Ctenuchinae)
Ctenucha venosa Walker
Ctenucha cressonana Grote
Ctenucha virginica (Esp.)
Ctenucha multifaria (Walker)
Ctenucha rubroscapus (Menetries)
Ctenucha brunnea Stretch
Dahana atripennis Grote
Cisseps fulvicollis (Huebner)
Cisseps packardii (Grote), mapped with *C. fulvicollis*
Cisseps wrightii (Stretch), mapped with *C. fulvicollis*
Eucereon erythrolepis Dyar
Eucereon myrina Druce
Nelphe carolina (Hy. Edwards)
Nelphe relegatum (Schaus)
Eucereon undescribed species near *moeschleri* (Texas)
Macrocneme chrysitis (Guerin-Meneville)
Apeplopoda mecrida (Druce)
Episcepsis inornata (Walker)
Psilopleura vittatum (Walker)
Pseudosphex leovasquezae (Perez and Sanchez)

Mymecopsis strigosa (Druce)
Cosmosoma festivum (Walker)
Cosmosoma teuthras (Walker),**?west**
Cosmosoma myrodora Dyar
Syntomeida melanthus (Cramer)
Syntomeida epilais (Walker)
Syntomeida hampsonii Barnes
Poliopastea clavipes (Boisduval)
Horama panthalon (Fabricius)
Horama plumipes (Drury)

Acknowledgments

We examined Arctiidae material at the following museums and thank the curators for their kindness and efforts on our behalf: American Museum of Natural History (James S. Miller); California Academy of Science (Ron Robertson), Chadron State College, Chadron, Nebraska (Richard C. Rosche), Colorado State University, Fort Collins (Boris Kondratieff); Denver Museum of Natural History (Richard Peigler); Hays State University, Hays, Kansas (Charles Ely), National Museum of Natural History, Washington, D.C. (Douglas C. Ferguson); Natural History Museum, London (Philip Ackery); Natural History Museum of Los Angeles County (Julian Donahue); New Mexico State University (Greg Forbes); Oregon State University, Corvallis (Paul Hammond), Pikes Peak Research Station, Florissant, Colo. (Boyce Drummond); Royal Ontario Museum, Toronto (Christopher Darling); University of California, Berkeley (Jerry A. Powell); San Jose State University (Ronald E. Stecker); University of California, Davis (Robert Schuster-deceased); University of Colorado (Virginia Scott); University of Nebraska, Lincoln (Brett Ratcliffe); and University of Wyoming, Laramie (Scott Shaw); and Yale University, New Haven (Lawrence Gall).

We thank the following individuals for permitting us to include data from their private collections or for other assistance: James K. Adams, Dalton, Georgia; Donald E. Bowman, Golden, Colo.; Lars Crabo, Bellingham, Wash.; Charles Ely, Nacogdoches, Texas; Clifford D. Ferris, Laramie, Wyo.; Chuck Harp, Golden, Colo.; Richard Holland, Albuquerque, N. Mex.; Samuel A. Johnston, Colorado Springs, Colo.; Roy O. Kendall, San Antonio, Tex.; Edward C. Knudson, Houston, Texas; Ronald Leuschner, Manhattan Beach, Calif.; Stephanie McCown, Camas, Wash.; Noel McFarland, Sierra Vista, Ariz.;

Robert C. Mower, Orem, Utah; Scott Miller, Bishop Museum, Honolulu, Hawaii; Ray B. Nagle, Tucson, Ariz.; John Nordin, Laramie, Wyo.; Richard C. Rosche, Chadron, Nebr.; Jon Sheppard and contributors, Nelson, Brit. Col.; Charles Slater, Denver, Colo.; Ray E. Stanford, Denver, Colo.; Andrew J. Warren, Littleton, Colo.

John Rawlins, Carnegie Museum of Natural History, provided records for the genus Bertholdia. Donald E. Bowman allowed specimens in his collection to be photographed for part 2 and provided advice on difficult taxonomic questions.

References

Adams, James K. 1992. A new lichen moth record for the United States: *Lycomorphodes sordida* (Arctiidae: Lithosiinae) from south Texas. Journal of the Lepidopterists' Society 46: 160-161.

Beutelspacher, Carlos R. 1981. Catalogo de Lepidopteros de Mexico. Familia Arctiidae (II Parte) (Insecta: Lepidoptera). SHILAP Revista Lepidopterologica 23(92): 379-409.

Beutelspacher, Carlos R. 1995. Nuevos registros de las familias Sphingidae y Arctiidae (Lepidoptera) por Mexico. An. Inst. Biol. Univ. Nat. Auton. de Mexico 51, Ser. Zool. 1: 695-698.

Bordelon , Charles jr. and Ed Knudson. 1998a. Checklist of Lepidoptera of the Audubon Palm Grove Sanctuary. Texas Lepidoptera Survey #1, 34 pages.

Bordelon , Charles jr. and Ed Knudson. 1998b. Moths of southeastern Arizona. Beaumont and Houston, Texas. 4 plates.

Bordelon , Charles jr. and Ed Knudson. 1999. Checklist of Lepidoptera of the Big Thicket National Preserve, Texsas. Texas Lepidoptera Survey #2, 45 pages, 15 color plates

Carde, Ring T. 1965. Some taxonomic notes on the Nearctic *Holomelina* (Arctiidae) with a partial key to the species. Journal of the Lepidopterists' Society 19: 69-76, 1 pl.

Carde, Ring T. 1968. A revision of the *Holomelina aurantiaca* species group (Lepidoptera: Arctiidae). Masters thesis, Cornell University, Ithaca, N.Y. 94 pp.

Clarke, J.F.G. 1941. The North American moths of the genus *Arachnis,* with one new species. Proceedings of the U.S. National Museum 91: 59-70, 9 figs. (on pls. 10-12). [Keys to species based on coloration, male genitalia, and female genitalia; describes *A. apachea* as new; no figures of adults.]

Covell, Charles V., Jr. 1991. An annotated list of moths recorded at Florissant Fossil Beds National Monument, Colorado. Journal of the Research on the Lepidoptera 30 (1-2): 38-44.

Donahue, Julian P. 1993a. Six species of tiger moths (Arctiidae: Lithosiinae, Ctenuchinae) new to the United States fauna, with notes on their nomenclature and distribution in Middle America. Journal of the Lepidopterists' Society 47: 199-210.

Donahue, Julian P. 1993b. New distribution records of the tiger-moth genus *Phragmatobia* in North America (Lepidoptera: Arctiidae: Arctiinae). Great Lakes Entomologist 26: 21-30.

Donahue, Julian P. and J.H. Newman. 1966. The genus *Phragmatobia* in North America, with the description of a new species (Lepidoptera: Arctiidae). Michigan Entomologist 1: 35-74.

Drew, W.A. 1961. Oklahoma Arctiidae (Lepidoptera). Proceedings of the Oklahoma Academy of Sciences 1961: 93-100.

Ferguson, Douglas C. 1984. Two new generic names for groups of holarctic and palearctic Arctiini (Lepidoptera: Arctiidae). Proceedings of the Entomological Society of Washington 86: 452-459.

Ferguson, Douglas C. 1985. Contributions toward reclassification of the world genera of the tribe Arctiini, Part 1 Introduction and a revision of the *Neoarctia - Grammia* group (Lepidoptera: Actiidae: Arctiinae). Entomography 3: 181-275.

Ferguson, Douglas C. 1991. The identity of *Arctia obliterata* Stretch (Lepidoptera: Arctiidae). Proceedings of the Entomological Society of Washington. 93(4): 828-833.

Forbes, William T.M. 1960. Lepidoptera of New York and neighboring states. Part IV. Agaristidae through Nymphalidae including butterflies. Cornell University Agricultural Experiment Station Memoir 371: 188 pp., 188 figs. [Arctiidae: Arctiinae on pp. 12-41; Lithosiinae on pp. 41-50. Has keys to genera and species of eastern North America, many of which are also western.]

Franclemont, John G. 1966. Two new species of Arctiidae from southern Arizona (Lepidoptera, Arctiidae, Arctiinae). Proceedings of the Entomological Society of Washington 68: 250-257, 10 figs. [Describes *Arachnis nedyma* and *Apocrisias thaumasta*, with figures of adults, male and female genitalia].

Franclemont, John G. 1983. Arctiidae. *In*: R.W. Hodges, Editor. Check list of the

Lepidoptera of America north of Mexico. E.W. Classey Limited and the Wedge Entomological Research Foundation, London. 284 pp.

Habeck, Dale H. 1987. Pericopidae, Arctiidae, and Ctenuchidae (Noctuoidea). Pages 536-543 *in* F.W. Stehr, editor. Immature insects. Kendall/Hunt Publishing Co., Dubuque, Ia.

Hampson, George F. 1898. Catalogue of the Lepidoptera Phalaenae in the British Museum. Vol. 1. Catalogue of the Syntomidae in the collection of the British Museum. Trustees Brit. Mus. (Nat. Hist.), London. xxi + 559 p., 285 figs., pls. 1-17. [Keys to genera and species of Syntominae of the world, with a line drawing (showing venation, antennae, palpi, etc.) of at least one member of each genus, and color illustrations of numerous species.]

Hampson, George F. 1900. Catalogue of the Lepidoptera Phalaenae in the British Museum. Vol. 2. Catalogue of the Arctiadae [sic] (Nolinae, Lithosianae) in the collection of the British Museum. Trustees Brit. Mus. (Nat. Hist.), London. xx + 589 p., 411 figs., pls. 18-35. [Keys to genera and species of Nolidae and Lithosiinae of the world, with a line drawing (showing venation, antennae, palpi, etc.) of at least one member of each genus, and color illustrations of numerous species.]

Hampson, George F. 1901. Catalogue of the Lepidoptera Phalaenae in the British Museum. Vol. 3. Catalogue of the Arctiadae [sic] (Arctianae) and Agaristidae in the collection of the British Museum. Trustees Brit. Mus. (Nat. Hist.), London. xix + 690 p., 294 figs., pls. 36-54. [Keys to genera and species of Arctiinae and Agaristinae (Noctuidae) of the world, with a line drawing (showing venation, antennae, palpi, etc.) of at least one member of each genus, and color illustrations of numerous species.]

Hampson, George F. 1914. Catalogue of the Lepidoptera Phalaenae in the British Museum. Supplement. Vol. 1. Catalogue of the Amatidae and Arctiadae [sic] (Nolinae and Lithosianae) in the collection of the British Museum. Trustees Brit. Mus. (Nat. Hist.), London. xxviii + 858 p., 276 figs., pls. 1-41. [Additions and corrections to Vols. 1-2 (Syntominae, Lithosiinae, Nolidae); full descriptions and numerous illustrations, but no keys.]

Hampson, George F. 1920. Catalogue of the Lepidoptera Phalaenae in the British Museum. Supplement. Vol. 2. Catalogue of the Lithosiadae (Arctianae)

and Phalaenoididae in the collection of the British Museum. Trustees Brit. Mus. (Nat. Hist.), London. xxiii + 619 p., 112 figs., pls. 42-71. [Additions and corrections to Vol. 3 (Arctiinae, Agaristinae); full descriptions and numerous illustrations, but no keys.]

Horning, Donald S., Jr. and William F. Barr. 1970. Insects of Craters of the Moon National Monument Idaho. Univ. Idaho Coll. Agric., Misc. Ser. No. 8: 118 p., 8 figs., 1 table. [3 spp. of Arctiidae on p. 45.]

Kitching, Ian.J. and John E. Rawlins. 1999. 19. Noctuoidea. Pages 355-401 *in:* N.P. Kristensen, editor. Lepidoptera, moths and butterflies. Volume 1. Evolution, systematics, and biogeography. Handbuch der Zoologie 4(35), Walter de Gruyter, Berlin, New York.

Knowlton, Carroll Babbidge, Jr. 1961. A revision of the species of Halysidota Huebner known to occur north of the Isthmus of Tehuantepec (Lepidoptera, Arctiidae, Arctiinae). v + 205 p., 94 figs. on 12 pls. [73 line drawings of venation & genitalia on pls. 1-11, 21 photos of adults on pl. 12]. Ph.D. Thesis, Cornell University, Ithaca, N.Y. [Includes all North American species now placed in *Halysidota* (subsequently revised by Watson, 1980), *Lophocampa,* and *Leucanopsis*. Microfilm-xerography copy in LACM Research Library, purchased in 1973 from University Microfilms, Ann Arbor, Michigan, negative microfilm No. 61-6752.]

Knowlton, Carroll B. 1967. A revision of the species of Cisthene known to occur north of the Mexican border (Lepidoptera: Arctiidae: Lithosiinae). Transactions of the American Entomological Society 93:41-100, 33 figs. [Keys to species groups and species, with figures of male and female genitalia; no illustrations of adults.]

Knudson, Ed and Charles Bordelon, jr. 1999a. Checklist of the Lepidoptera of Big Bend National Park, Texas. Texas Lepidoptera Survey #3, 66 pages, 12 plates.

Knudson, Ed and Charles Bordelon, jr. 1999b. Checklist of the Lepidoptera of the Guadalupe Mountains National Park, Texas. Texas Lepidoptera Survey #4, 82 pages.

Knudson, Ed and Charles Bordelon, jr. 1999c. Checklist of the Lepidoptera of the Caprock Canyonlands, Texas. Texas Lepidoptera Survey #5, 39 pages, 12 plates.

Knudson, Ed and Charles Bordelon, jr. 1999d. Checklist of the Lepidoptera of Texas.

Texas Lepidoptera Survey #6, 56 pages, 10 plates.

Lafontaine, J.Don, John G. Franclemont and Douglas C. Ferguson. 1982. Classification and life history of *Ascala anomala* (Arctiidae: Lithosiinae). Journal of the Lepidopterists' Society 36: 218-226.

Lafontaine, J.Don and J.T Troubridge. 1999 [2000]. Two new species of Arctiidae (Lepidoptera) from the Yukon Territory, Canada. Journal of the Entomological Society of British Columbia 96: 89-93. [Raise *Arctia opulenta* Henry Edwards to species status. Describe *Arctia brachyptera* and *Dodia verticalis* as new.]

McFarland, Noel. 1967. Spring moths (Macroheterocera) of a natural area in northeastern Kansas. Journal of the Research on the Lepidoptera 6:1-18.

McFarland, Anthony Noel. 1963. The Macroheterocera (Lepidoptera) of a mixed forest in western Oregon. 152 p., 4 unnumbered halftone photos. M.S. Thesis, Oregon State University. [Results of a 20-month survey in Benton Co., Oregon. Ctenuchinae on pp. 48-49 (1 sp.), Lithosiinae on pp. 49-50 (1 sp.), Arctiinae on pp. 50-57 (13 sp., plus 5 possible sp.).]

McGugan, B.M., compiler. 1958. Forest Lepidoptera of Canada recorded by the Forest Insect Survey. Volume I--Papilionidae to Arctiidae. Canad. Dept. Agric., Forest Biology Div., Publ. 1034: 76 p., 46 figs. (maps). [Arctiidae treated on pp. 54-71.]

Miller, Jeffrey C. 1995. Caterpillars of Pacific Northwest forests and woodlands. U.S.D.A. Forest Service, FHM-NC-06-95, 80 pp. Color illustrations of caterpillars of 9 tiger moths.

Powell, Jerry A. and Charles L. Hogue. 1979. California insects. Californioa Natural history Guide 44, University of California Press, Berkeley and Los Angeles, 388 pages. Authors illustrate and discuss the commoner California species on pages 210, 223-227.

Rosche, Richard C. 1989. A partial list of Nebraska moths. Chadron, Nebr., 14 pp.

Scoble, Malcom J. 1992. The Lepidoptera: form, function, and diversity. Natural History Museum Publications, Oxford University Press, London. 404 pp.

Smith, Marion Estelle. 1938. A revision of the genus *Apantesis* Walker (Lepidoptera, Arctiidae). iv + 183 p., 14 pls. Ph.D. Thesis, University of Illinois, Urbana. [Complete revision, with figures of venation, genitalia, and adults. Donahue purchased a complete copy of the unpublished thesis in 1969 from the University of Illinois for $22; an unillustrated 11-page abstract was published]

Sotavalta, Olavi. 1963. The generic position of Hyphoraia alpina Quens. (Lep., Arctiidae). Ann. Entomol. Fenn. 29(4): 257-267, 6 figs. [Proposes new genus *Acerbia* for circumpolar *alpina*; illustrates several adults, including 4 from Alaska; rejects any subspecies.]

Sotavalta, Olavi. 1965. A revision of the genus *Hyphoraia* Huebner s. lat. (Lepidoptera, Arctiidae). Ann. Entomol. Fenn. 31(3): 159-197, 31 figs. [Figs. 1-10 are line drawings of heads, antennae, genitalia, and coremata; figs. 11-27 are photos of male genitalia and adults on 8 halftone plates. Diagnoses, figures, and maps the following North American species: *Pararctia lapponica* (ssp. *hyperborea, gibsoni, yarrowii), P. subnebulosa, Acerbia alpina, Platarctia parthenos,* and *Platyprepia guttata (*now *virginalis).*]

Tshistjakov, Y.A., and J.Don Lafontaine. 1984. A review of the genus *Dodia* Dyar (Lepidoptera: Arctiidae) with description of a new species from eastern Siberia and northern Canada. Canadian Entomologist 116: 1549-1556.

Turrent Diaz, Rafael. 1996. La fauna de las Mariposas de Mexico, Patre IV, Familia Arctiidae, Subfamilia Arctiinae (Lepidoptera Noctuoidea). Revista de la Sociedad Mexicana de Lepidopterologia 16: 65-.

Watson, Allan. 1980. A revision of the *Halysidota tessellaris* species-group (*Halysidota* sensu stricto) (Lepidoptera: Arctiidae). Bull. Brit. Mus. Nat. Hist. (Ent.) 40(1): 1-65, 106 figs. [Complete revision, with figures of adults & genitalia and citations of general and specific localities.

Watson, Allan and David T. Goodger. 1986. Catalogue of the Neotropical Tiger-moths. . Department of Entomology, British Museum (Natural History), Occasional Papers on Systematic Entomology 1, 71 pp., 4 color plates. [Includes many North American species, with new combinations and synonymies. Color plates restricted to Pericopini. Complete literature citations for all original descriptions.]

WESTERN UNITED STATES MAPS

Eilema bicolor (Grote)

Crambidia lithosioides Dyar

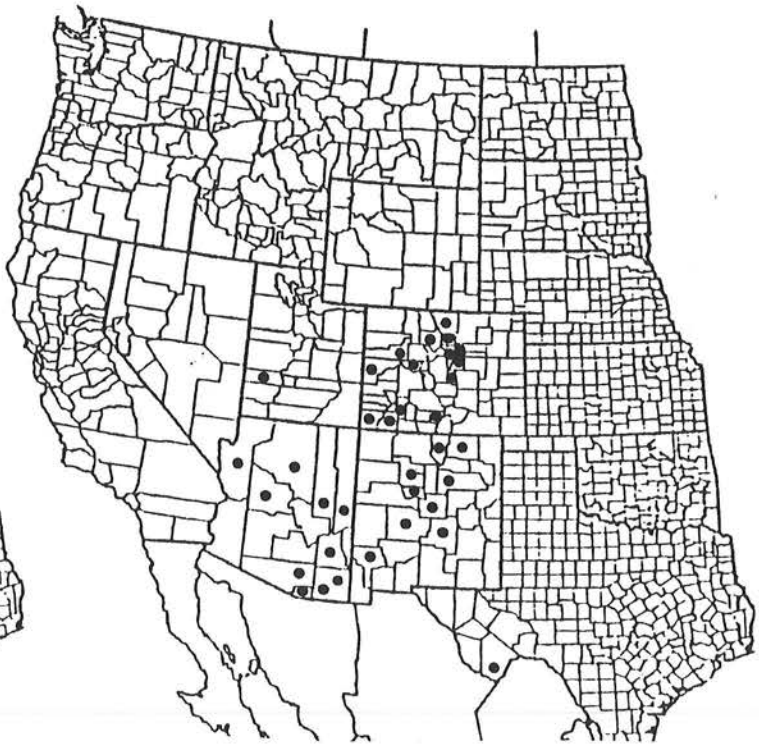
Crambidia pallida Packard

Crambidia uniformis Dyar

Crambidia dusca **Barnes and McDunnough**

Crambidia myrlosea **Dyar**

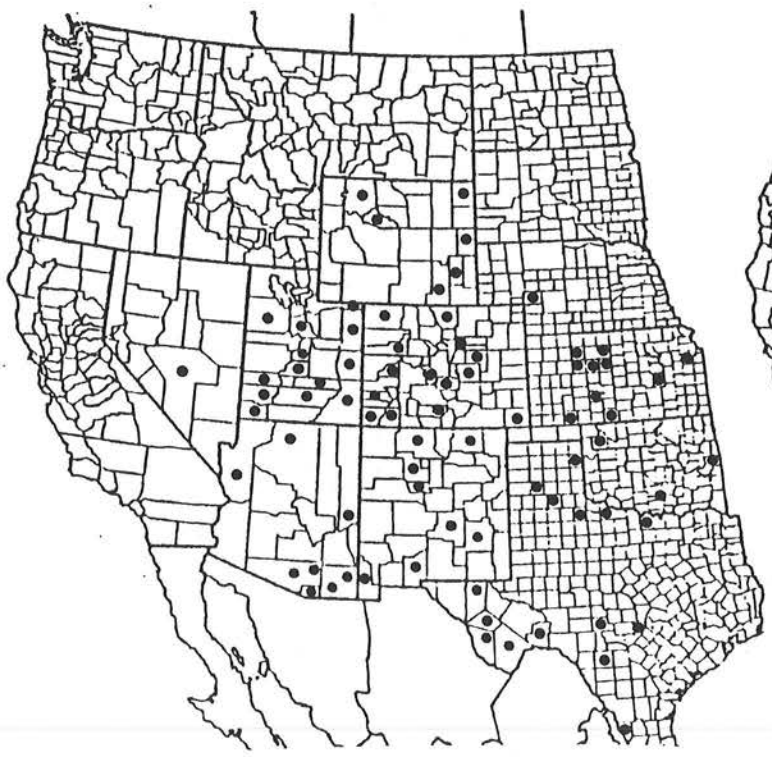
Crambidia suffusa **Barnes & McD.**



Crambidia impura **Barnes & McD**

Crambidia casta (Packard)

Crambidia pura Barnes & McD.



Crambidia cephalica (G. & R.)

Agylla septentrionalis B. & McD.

Inopsis modulata **Hy. Edwards**

Inopsis funerea **(Grote)**

Gnamptonychia ventralis **B. & L.**

Gardinia anopla **Hering**

Cisthene subrufa (B. & McD.)

Cisthene unifascia G. & R.

Cisthene kentuckiensis (Dyar)

Cisthene liberomacula (Dyar)

Cisthene deserta (Felder)

Cisthene faustinula (Boisduval)

Cisthene dorsimacula (Dyar)

Cisthene tenuifascia **Harvey**

Cisthene plumbea **Stretch**

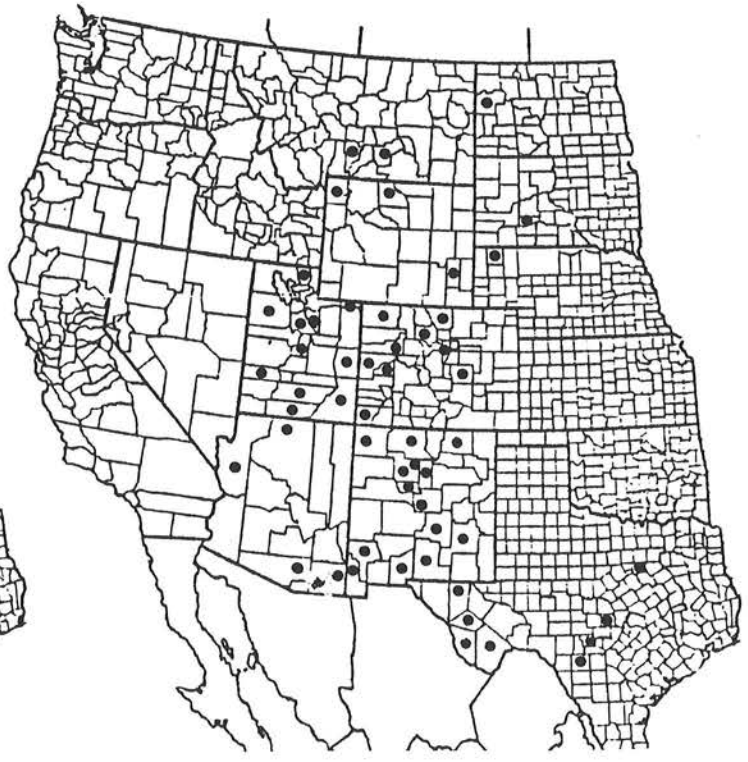
Cisthene perrosea **(Dyar)**

Cisthene angelus **(Dyar)**

Cisthene subjecta **Walker**

Cisthene packardii **(Grote)**

Cisthene conjuncta **(B. & McD.)**



Cisthene barnesii **(Dyar)**

Cisthene picta (B. McD.)

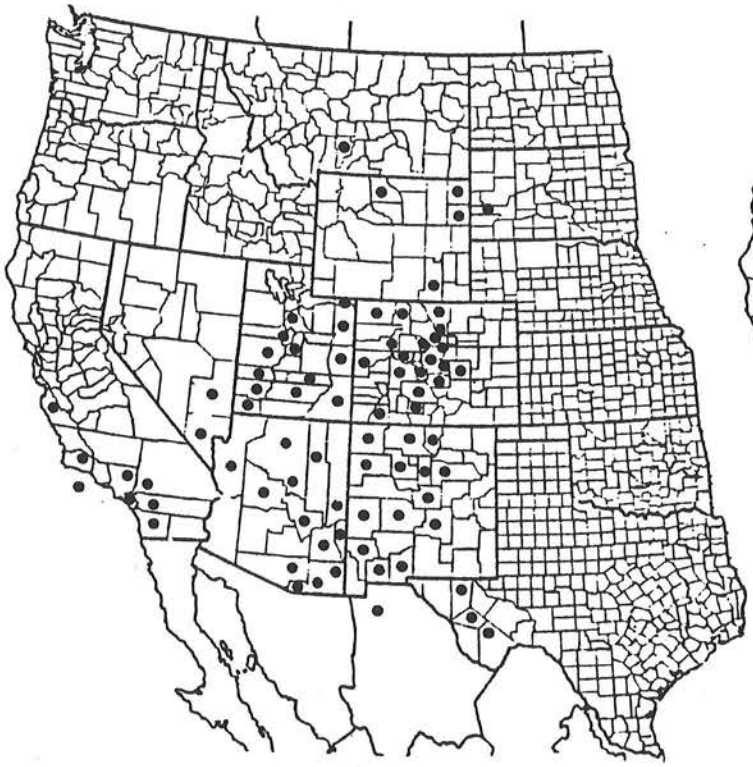
Cisthene juanita B. & B.

Cisthene coronado C. Knowlton

Cisthene martini C. Knowlton

Ptychoglene coccinea **(Hy. Edwards)** ***Ptychoglene phrada*** **Druce**

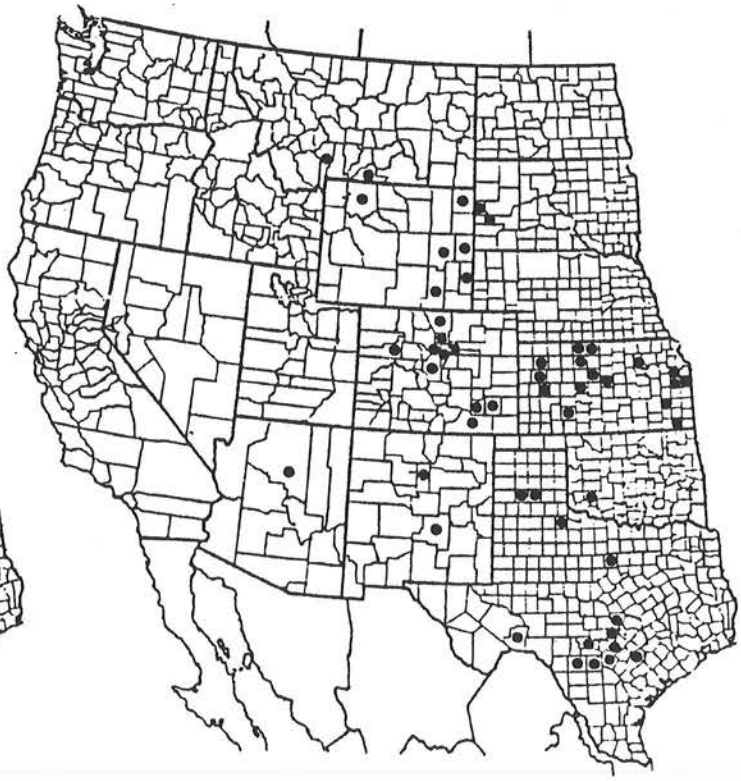
Ptychoglene sanguineola **(Boisduval)**



Lycomorpha grotei (Pack.), incl. *regulus*

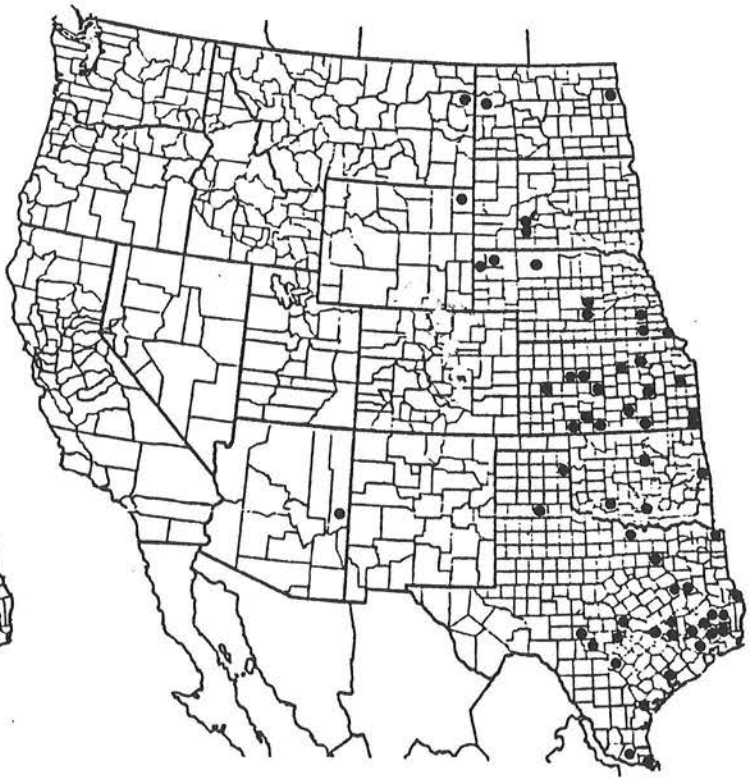
Lycomorpha fulgens (Hy. Edw.)

Lycomorpha splendens B. and McD.



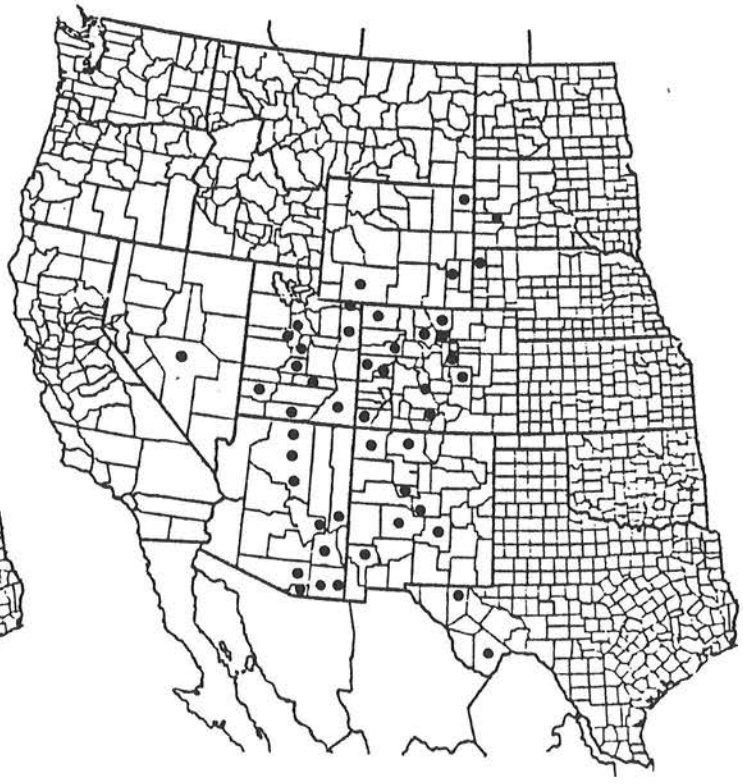
Lycomorpha pholus (Drury)

Hypoprepia miniata (Kirby)



Hypoprepia fucosa Huebner

Hypoprepia cadaverosa Strecker



Hypoprepia inculta Hy. Edw.

Haematomis **nr** *uniformis* **Schaus**

Rhabdatomis laudamia **(Druce)**

Lycomorphodes sordida **(Butler)**

Bruceia pulverina Neumoegen

Bruceia hubbardi Dyar

Eudesmia arida (Skinner)

Eudesmia menea (Druce)

Clemensia albata **Packard**

Pagara simplex **Walker**

Pagara fuscipes **(Grote)**

Neoplynes eudora (Dyar)

Afrida ydatodes Dyar

Afrida minuta (Druce)

"Afrida" exegens Dyar

Haploa clymene (Brown)

Haploa contigua (Walker)

Haploa colona (Huebner)

Haploa lecontei (Guerin-Meneville)

***Haploa reversa* (Stretch)**

***Haploa confusa* (Lyman)**

***Tyria jacobaeae* (Linnaeus)**

***Utetheisa ornatrix* (Linnaeus),**

includes *U. bella* (Linnaeus)

Holomelina laeta **(Guerin-Meneville)**

Holomelina costata **(Stretch)**

Holomelina ostenta **(Hy. Edw.)**

Holomelina opella **(Grote)**

Holomelina lamae **(Freeman)**

Holomelina aurantiaca **(Huebner)**

Holomelina fragilis **(Strecker)**

Neoarctia beanii **(Neumoegen)**

Neoarctia brucei **(Hy. Edw.)**

***Grammia quenseli* (Paykull)**

***Grammia obliterata* (Stretch)**

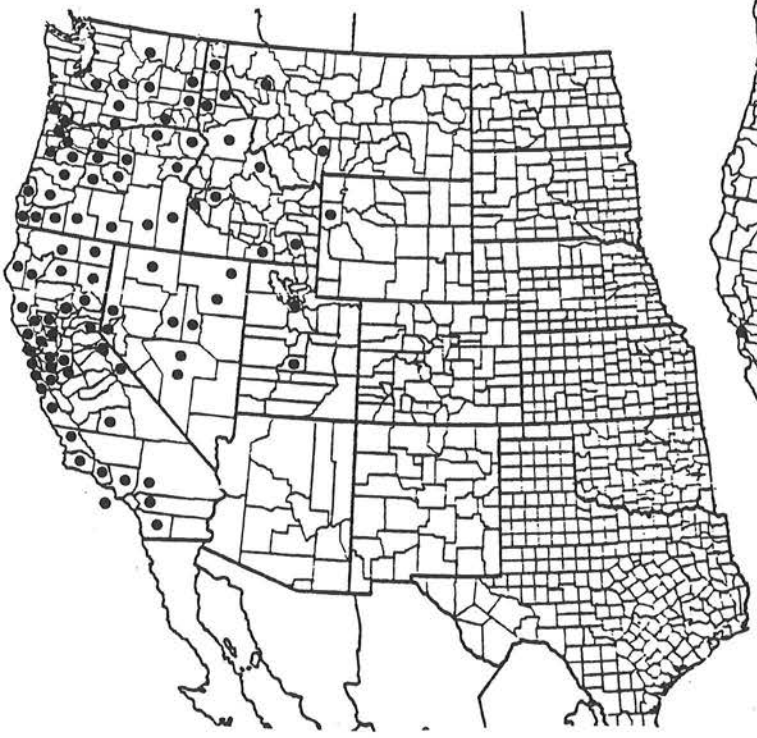
***Grammia speciosa* (Moeschler)**

Grammia parthenice **(W. Kirby)**

Grammia virgo **(Linnaeus)**

Grammia doris **(Boisduval)**

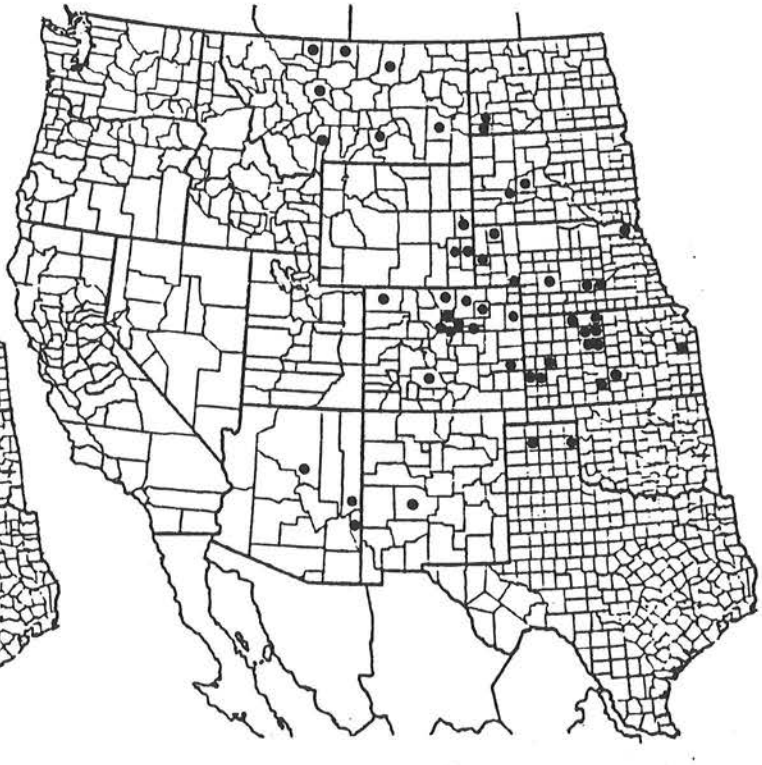
Grammia arge **(Drury)**



Grammia ornata (Packard)

Grammia edwardsi (Stretch)

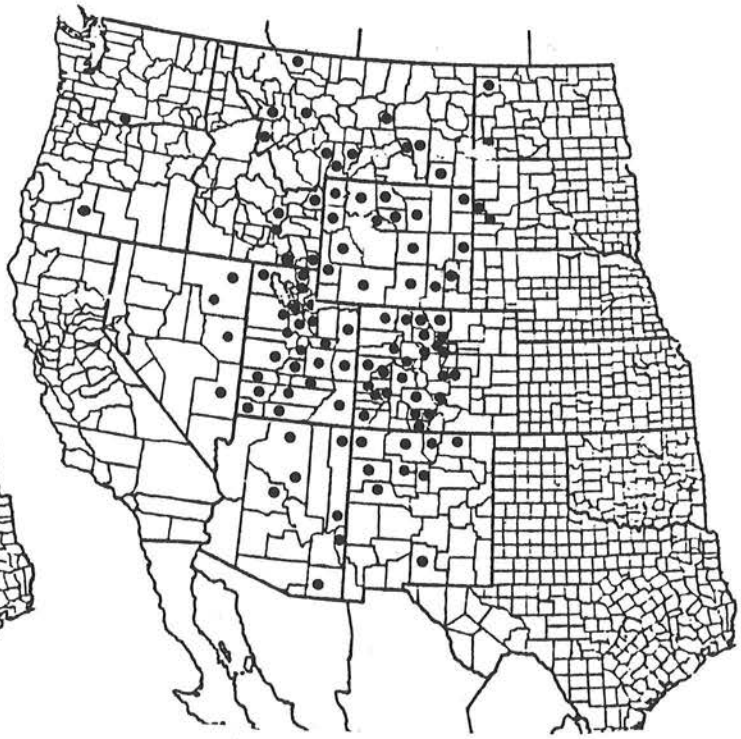
Grammia complicata (Walker)



Grammia blakei (Grote)

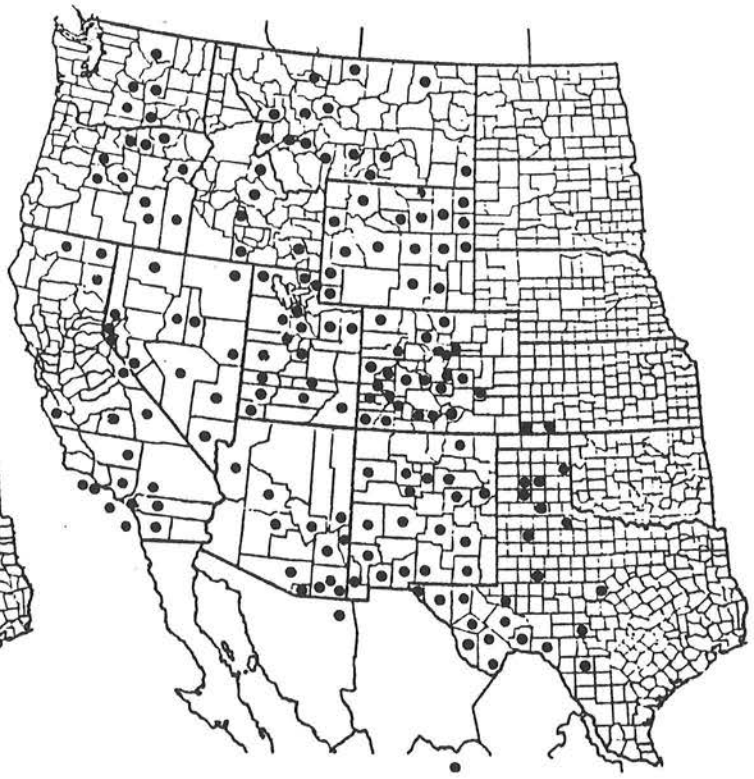
Grammia cervinoides **(Strecker)**

Grammia elongata **(Stretch)**



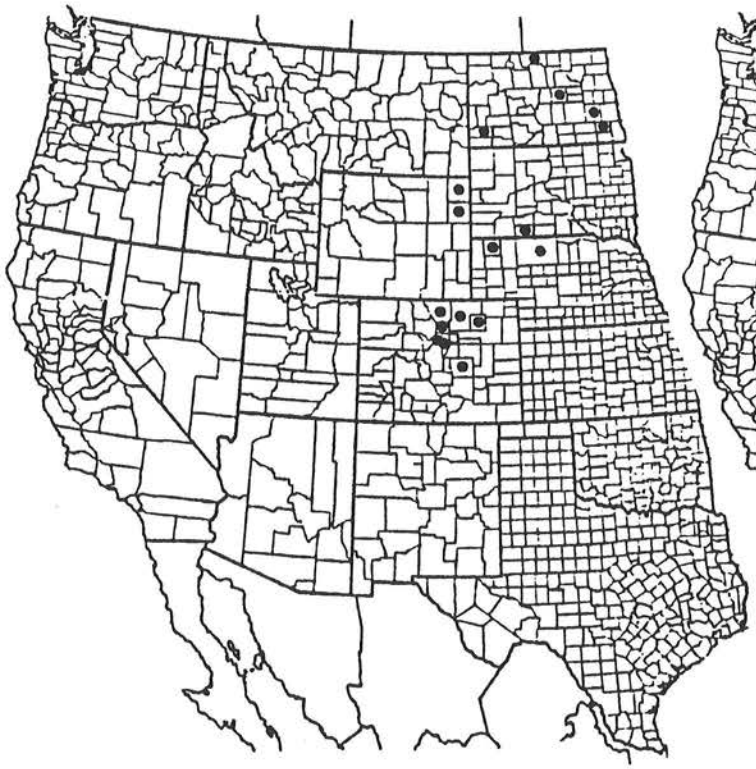
Grammia williamsii **(Dodge)**

Grammia allectans **Ferguson**



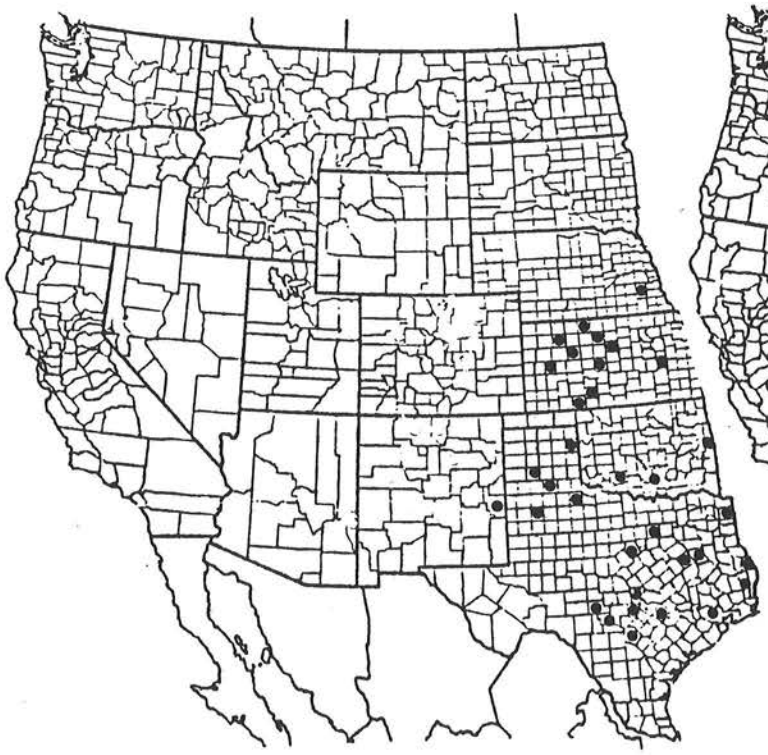
Grammia nevadensis **(G. & R.) Complex**

Grammia behrii **(Stretch)**

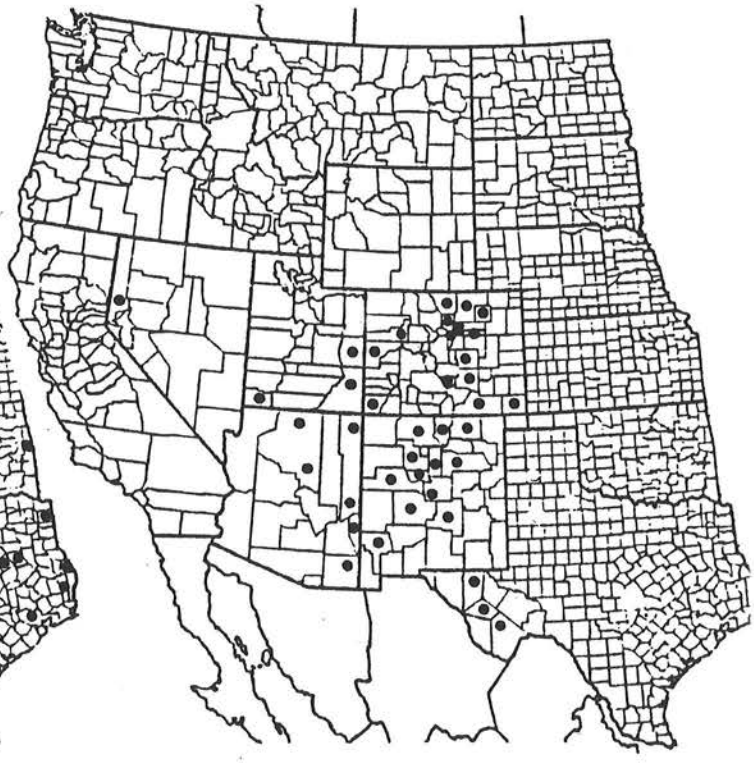


Grammia favorita **(Neumoegen)**

Grammia celia **(Saunders)**



Grammia figurata **(Drury)**



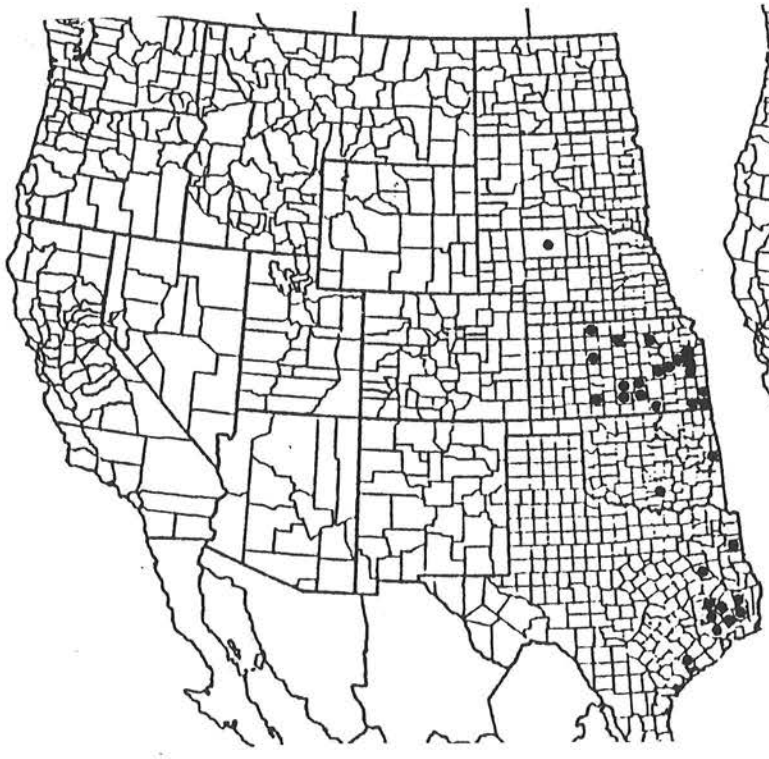
Grammia f-pallida **(Strecker)**

***Notarctia proxima* (Guerin-Meneville)**

Notarctia arizoniensis* (Stretch) mapped with *N. proxima

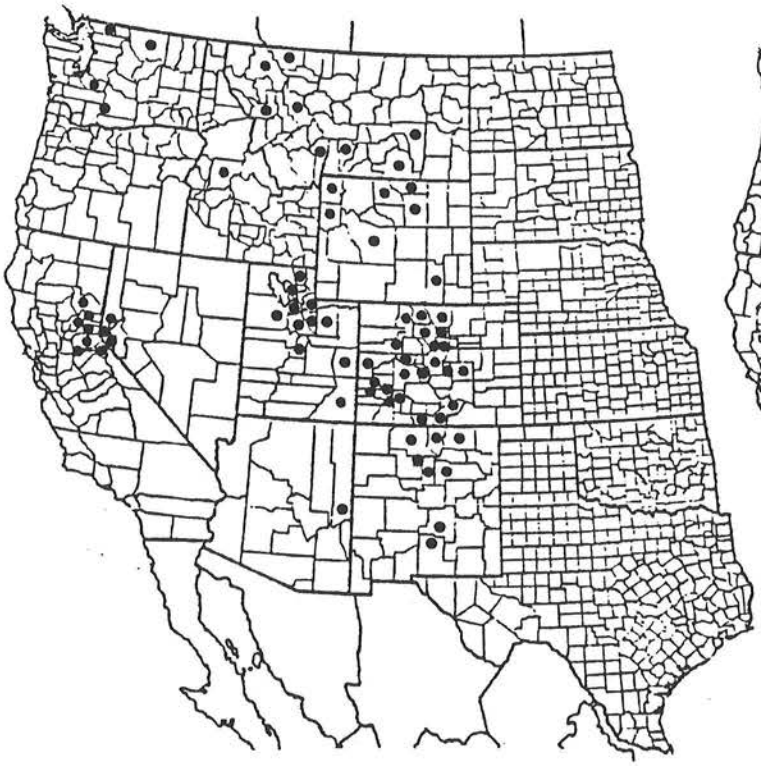
Apantesis phalerata **(Harris)**

Apantesis vittata **(Fabricius)**



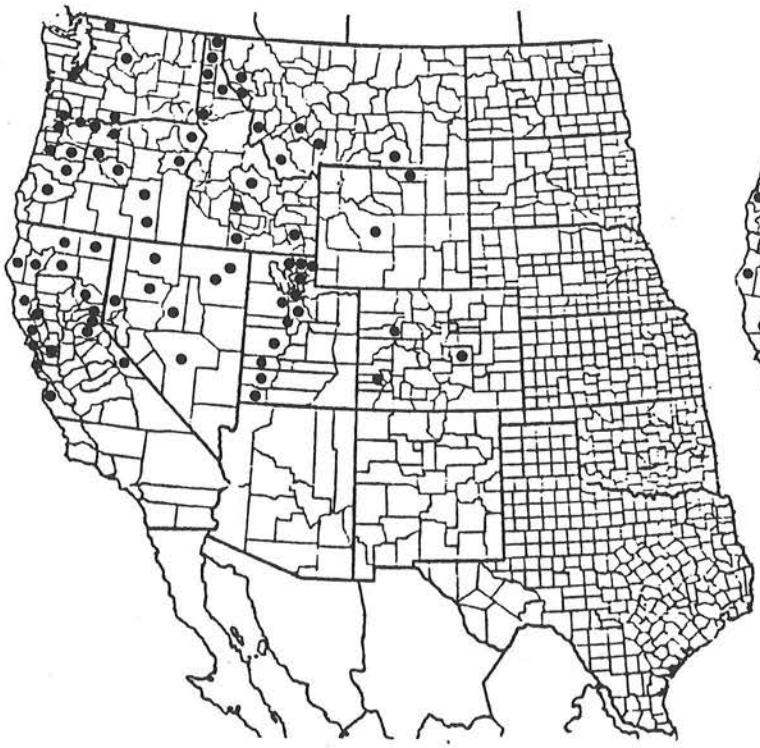
Apantesis nais **(Drury)**

Apantesis carlotta **Ferguson**

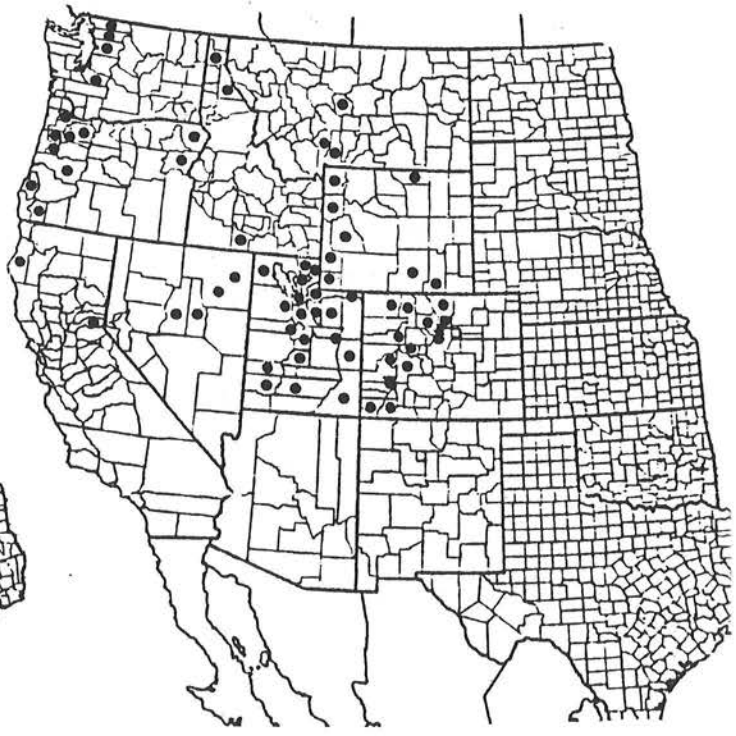


***Parasemia plantaginis* (Linnaeus)**

***Pararctia yarrowii* (Stretch)**

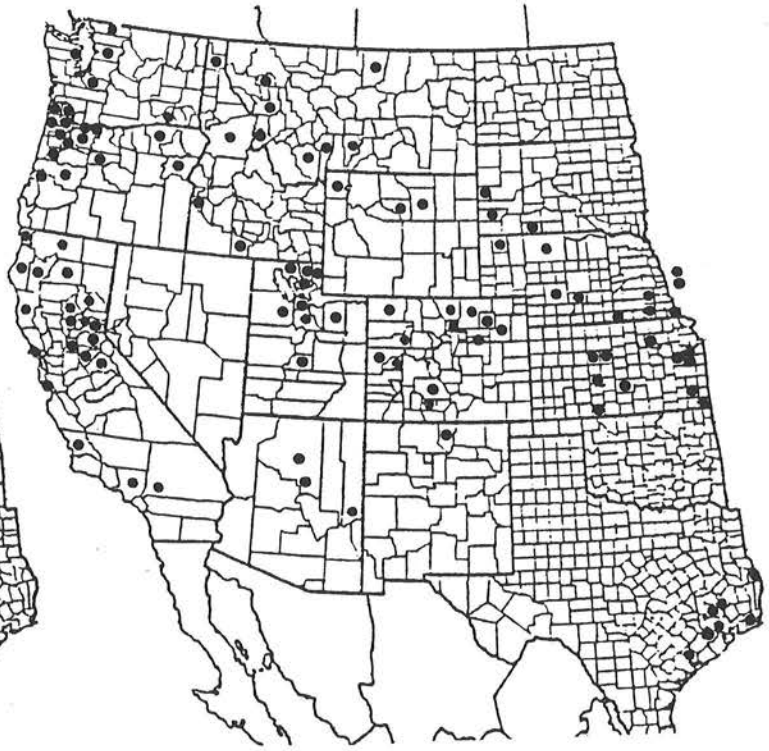


***Platyprepia virginalis* (Boisduval)**

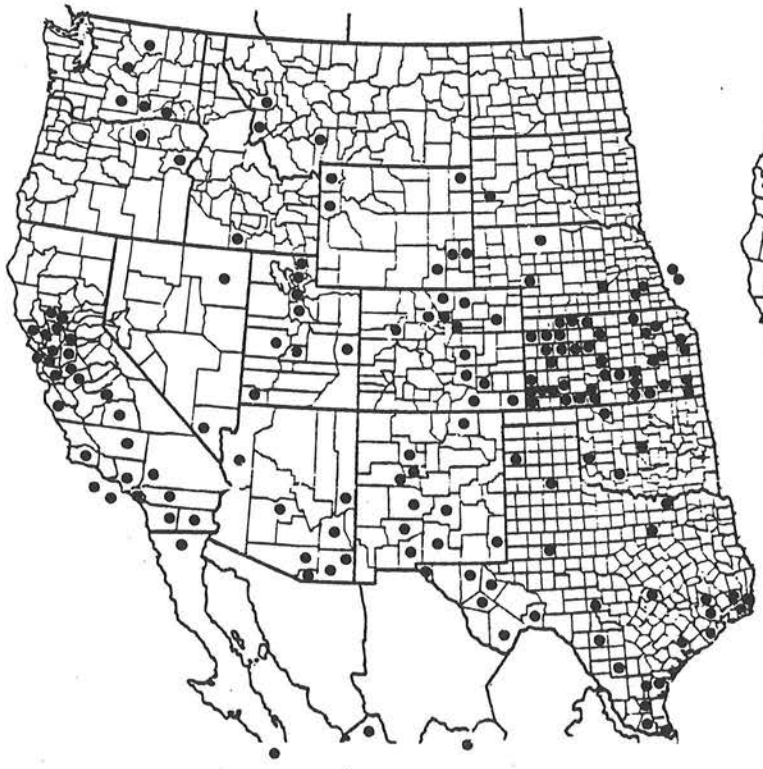


***Arctia caja* (Linnaeus)**

***Kodiosoma fulvum* Stretch**



***Pyrrharctia isabella* (J.E. Smith)**



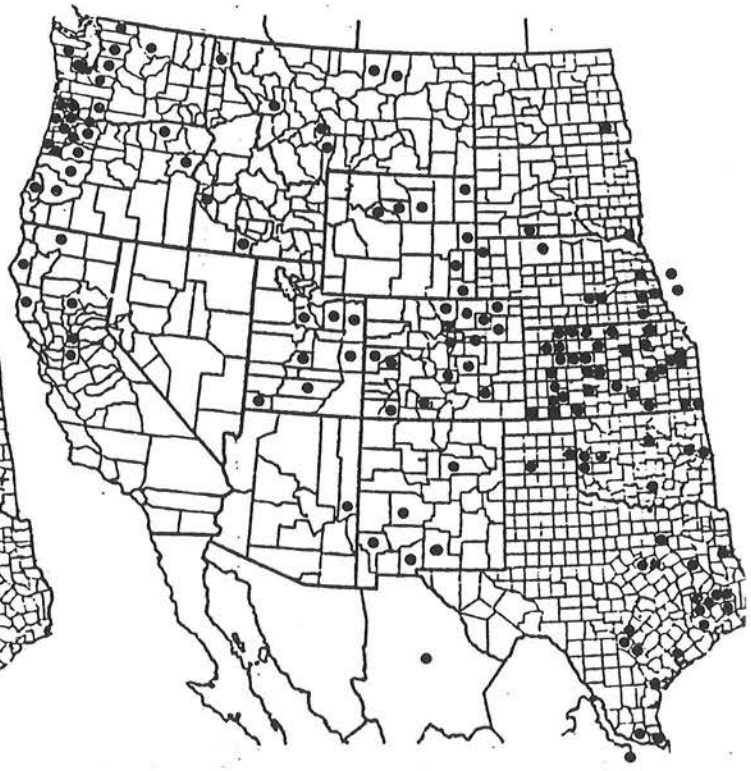
***Estigmene acraea* (Drury)**

***Estigmene albida* (Stretch)**

***Hyphantria cunea* (Drury)**

***Spilosoma congrua* Walker**

***Spilosoma dubia* (Walker)**



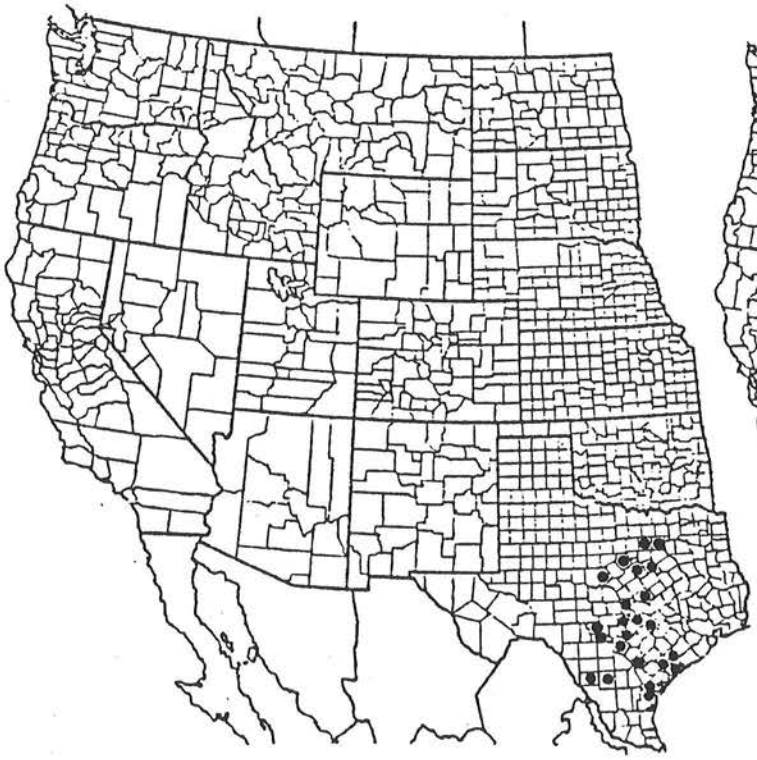
***Spilosoma virginica* (Fabricius)**

***Spilosoma vestalis* Packard**

***Spilosoma vagans* (Boisduval)**

***Spilosoma pteridis* Hy. Edward**

***Euerythra phasma* Harvey**

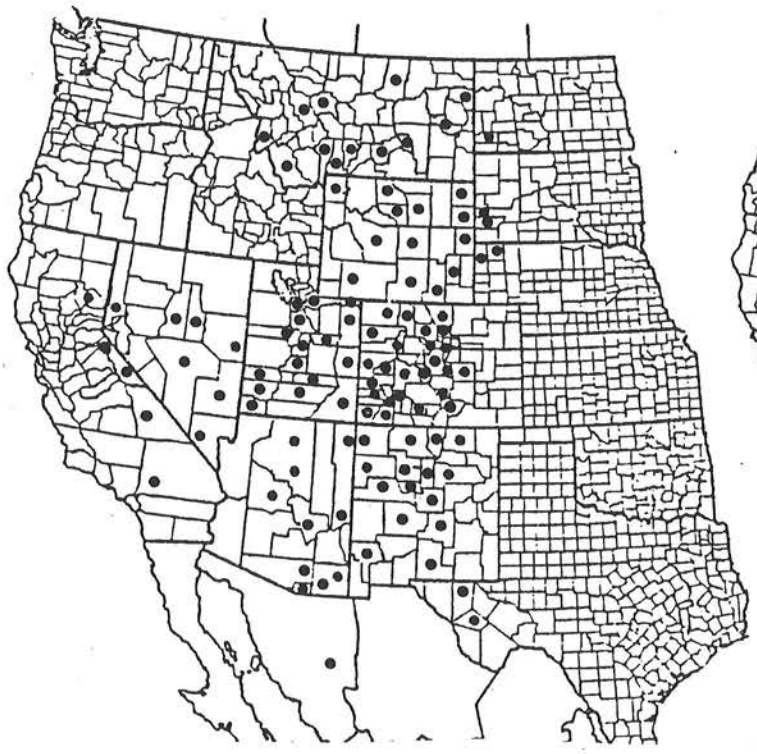


***Euerythra trimaculata* Smith**

***Alexicles aspersa* Grote**

Hypercompe suffusa (Schaus)

Hypercompe oslari Rothschild



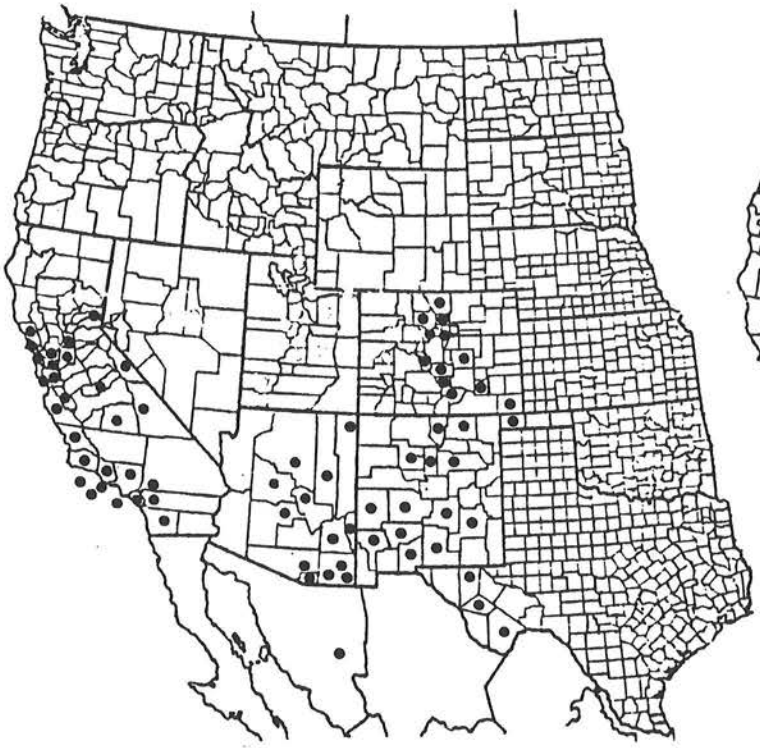
Hypercompe permaculata (Packard)

Hypercompe scribonia (Stoll)

Hypercompe confusa??

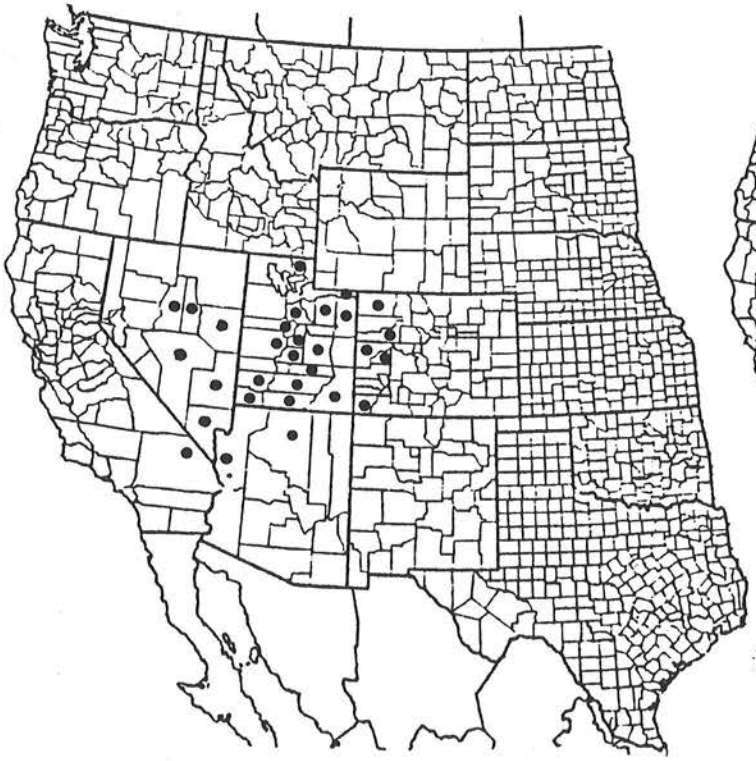
***Hypercompe caudata* (Walker)**

***Platarctia parthenos* (Harris)**



Arachnis picta **Packard**

Arachnis nedyma **Franclemont**



Arachnis citra **Neumoegen & Dyar**

Arachnis aulaea **Geyer**

***Arachnis zuni* Neumoegen**

Hypocrisias minima (Neumoegen)

Halysidota tessellaris (J.E. Sm.)

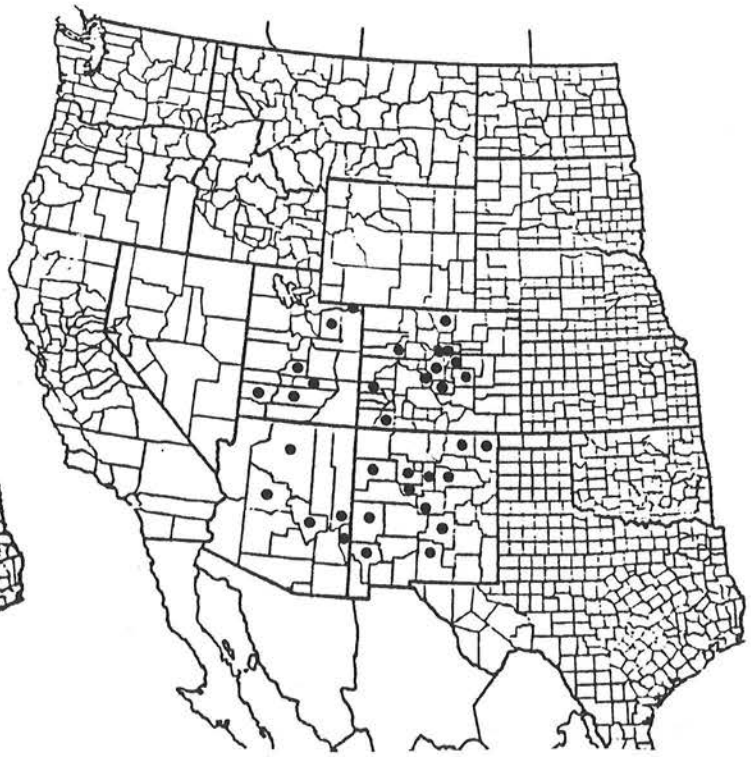
Halysidota harrisii Walsh

Halysidota davisii Hy. Edwards

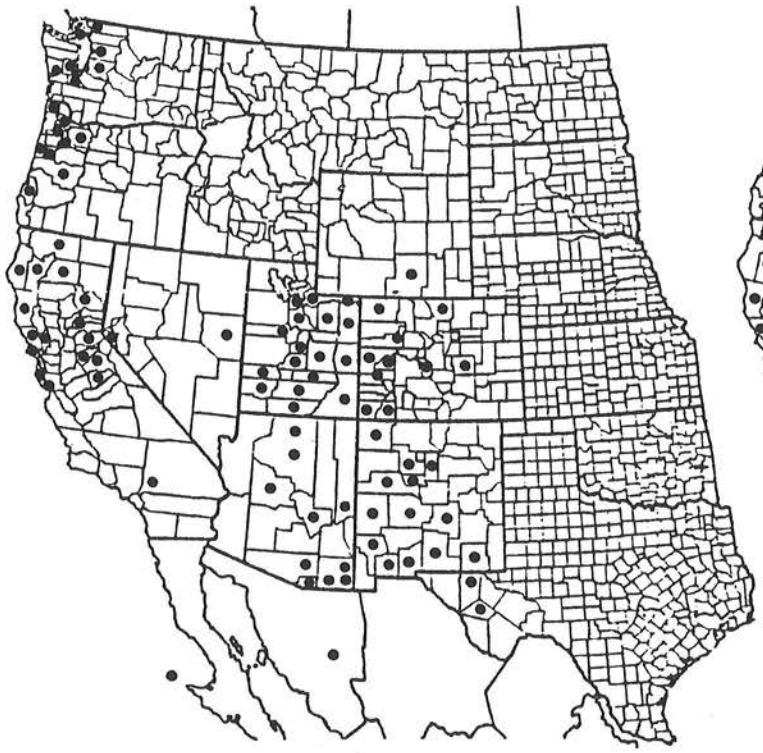
Halysidota schausi **Rothschild**

Lophocampa significans **(Hy. Edw.)**

Lophocampa roseata **(Walker)**



Lophocampa ingens **(Hy. Edw.)**



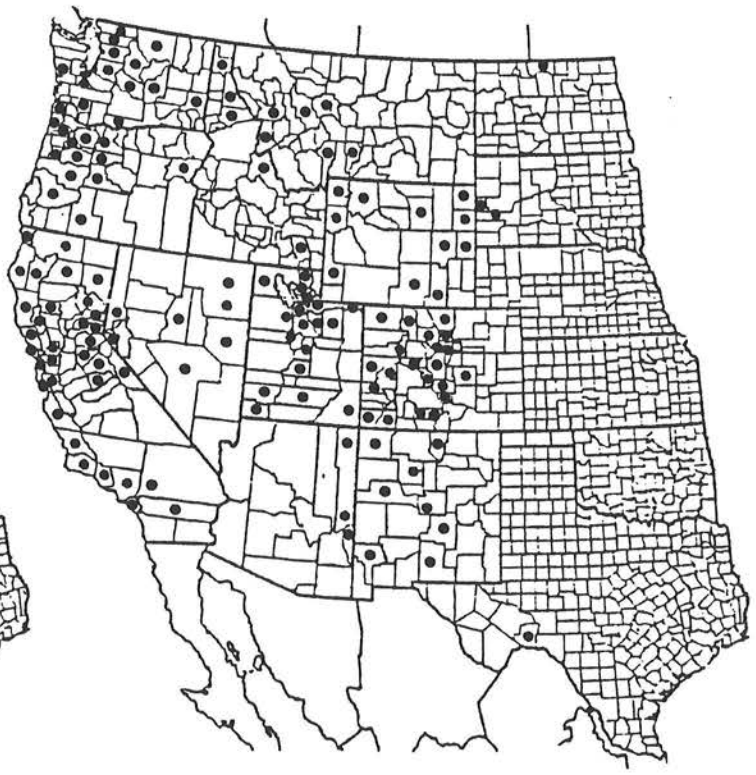
Lophocampa argentata (Packard)

Lophocampa sobrina (Stretch)

Lophocampa caryae Harris

Lophocampa mixta (Neum.)

Lophocampa pura (Neumoegen)



Lophocampa maculata Harris

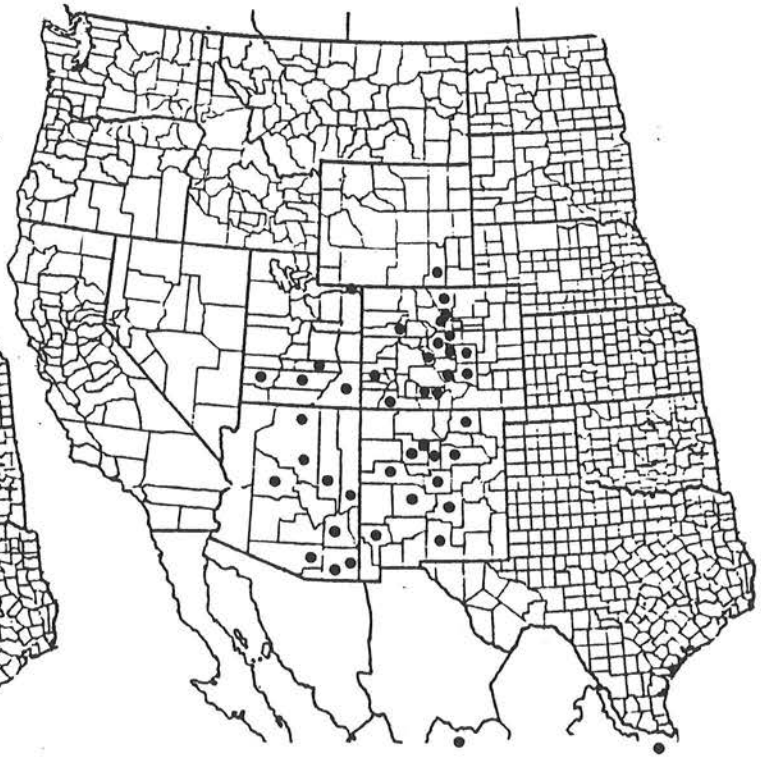
Lophocampa annulosa (Walker)

Lophocampa catenulata (Hbn.)

***Leucanopsis longa* (Grote)**

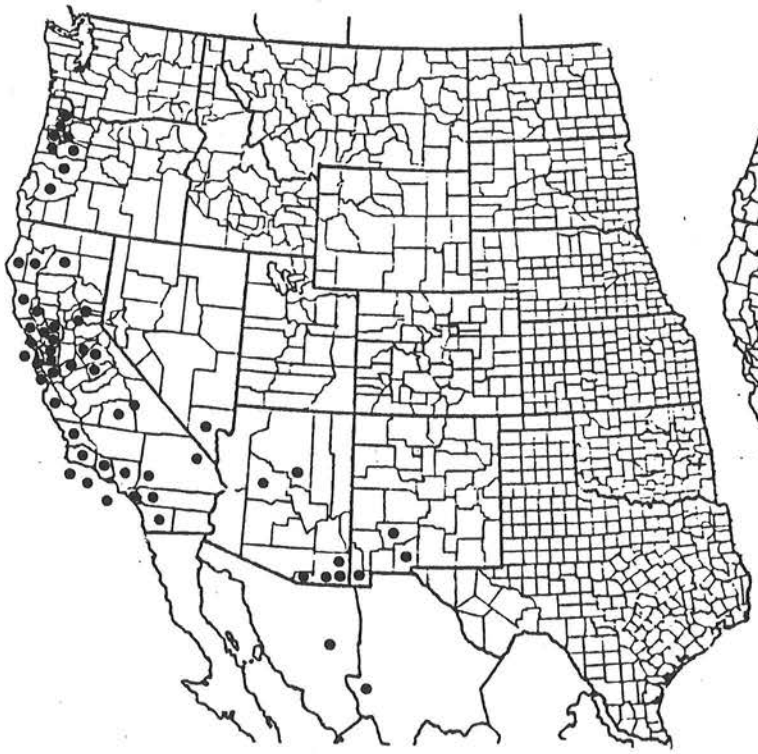
***Leucanopsis perdentata* (Schaus)**

***Leucanopsis lurida* (Hy. Edwards)**

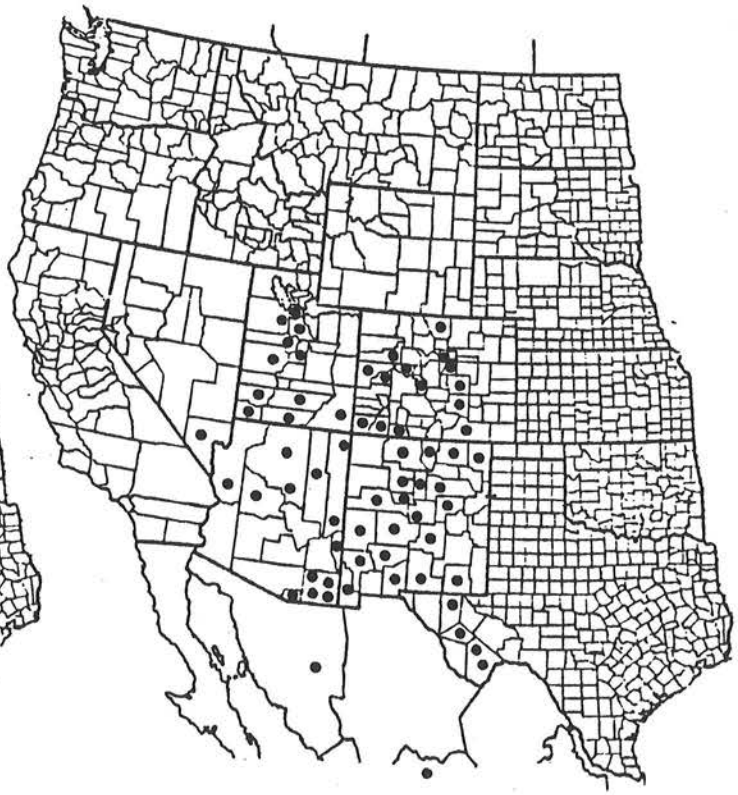


***"Aemilia" ambigua* (Strecker)**

***Apocrisias thaumasta* Franclemont**



***Hemihyalea edwardsii* (Packard)**



***Hemihyalea labecula* (Grote)**

Hemihyalea splendens **B. & McD.**

Calidota laqueata **(Hy. Edw.)**

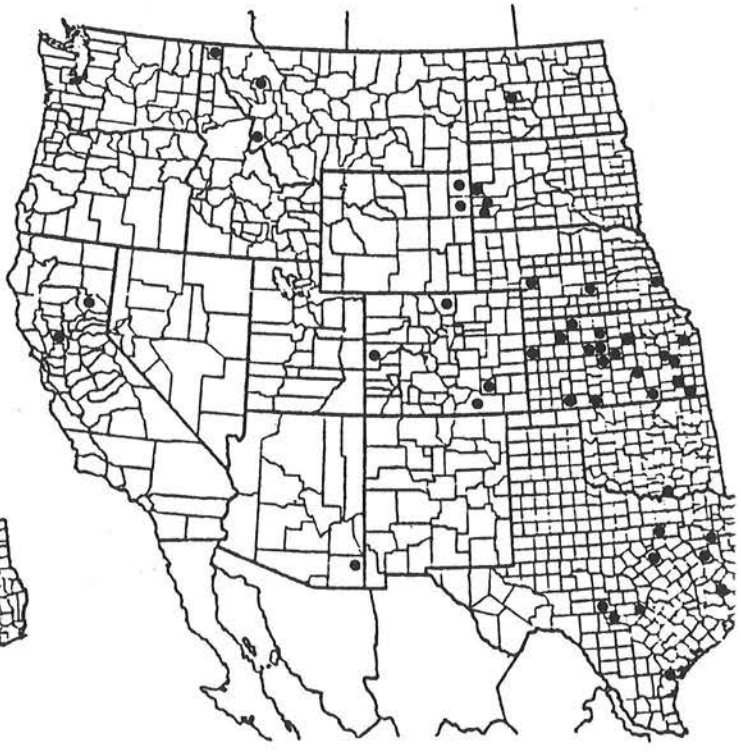
Opharus muricolor **(Dyar)**

Carales arizonensis **(Rothschild)**

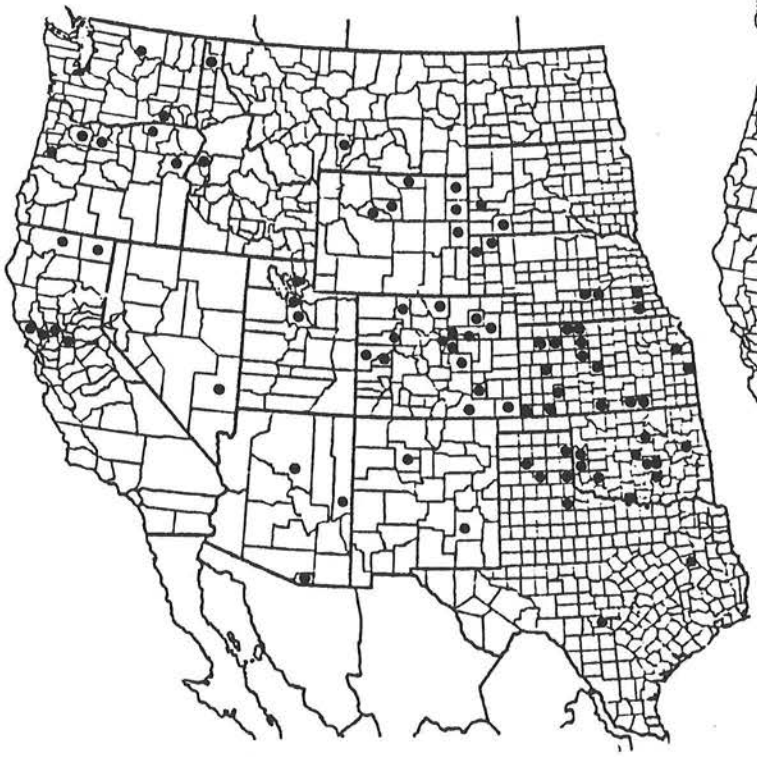
Pareuchaetes insulata (Walker)

Cycnia inopinatus (Hy. Edw.)

Cycnia collaris (Fitch)



Cycnia tenera Huebner



Cycnia oregonensis (Stretch)

Biturix venosata Walker

Euchaetes zella (Dyar)

Euchaetes perlevis Grote

Euchaetes fusca **(Rothschild)**

Euchaetes helena **(Cassino)**

Euchaetes castalla **(Barnes & McD.)**

Euchaetes elegans **Stretch**

Euchaetes egle **(Drury)**

Euchaetes gigantea **(B. & McD.)**

Euchaetes polingi **(Cassino)**

Euchaetes bolteri **Stretch**

Euchaetes antica **(Walker)**

Euchaetes albicosta **(Walker)**

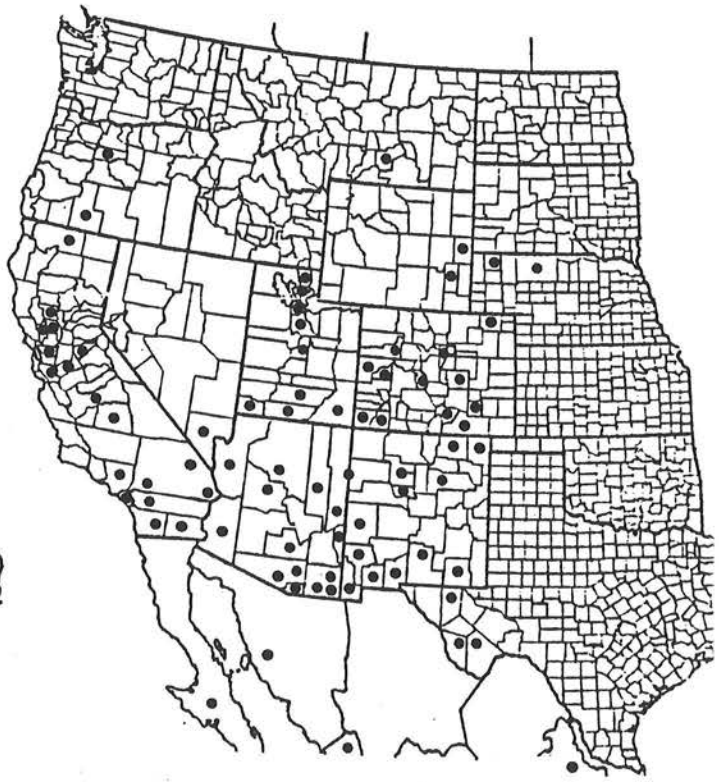
Pygoctenucha terminalis **(Walker)**

Pygoctenucha pyrrhoura **(Hulst)**

Lerina incarnata **Walker**

Ectypia bivittata **Clemens**

Ectypia mexicana **(Dognin)**



Ectypia clio **(Packard)**

Pygarctia murina (Stretch)

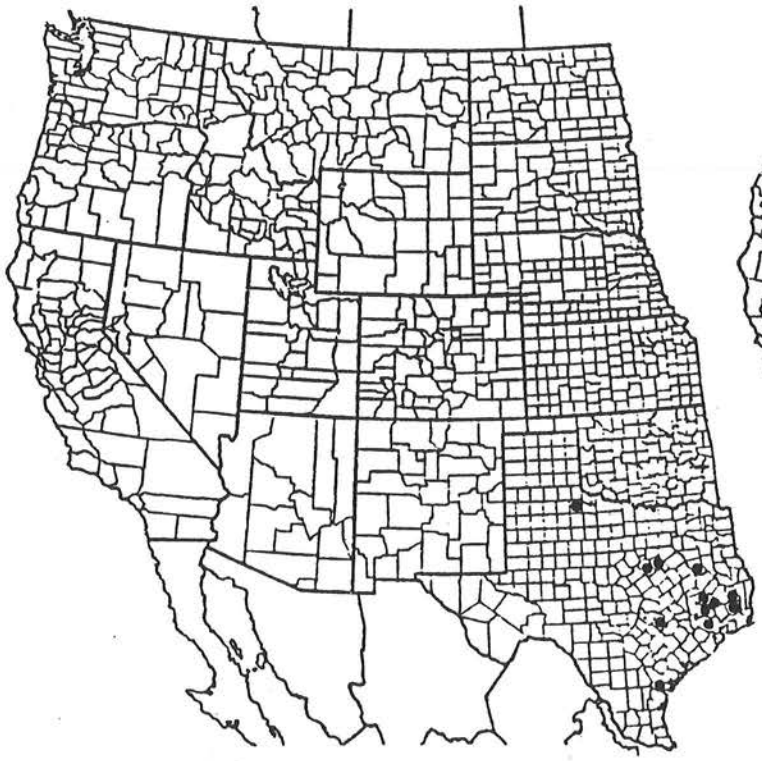
Pygarctia neomexicana Barnes

Pygarctia lorula Dyar

Pygarctia roseicapitis (Neum. & Dyar)

Pygarctia flavidorsalis B. & McD.

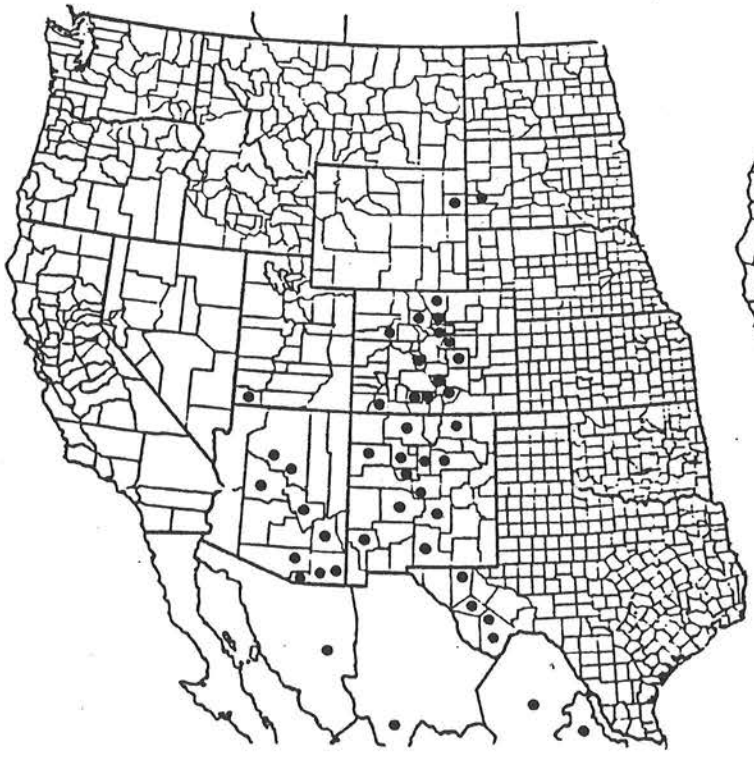
Pygarctia spraguei (Grote)



Pygarctia abdominalis Grote

Pygarctia eglensis (Clemens)

***Pygarctia pterygostigma* Dyar**



***Bertholdia trigona* (Grote)**

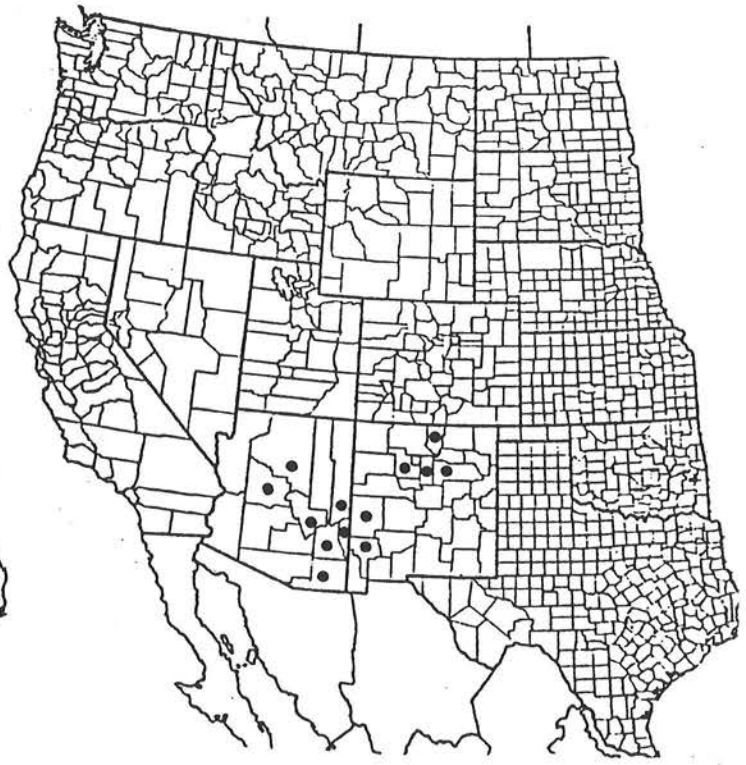
***Bertholdia* undescribed (Texas)**

***Neritos prophaea* (Schaus), ?U.S.**

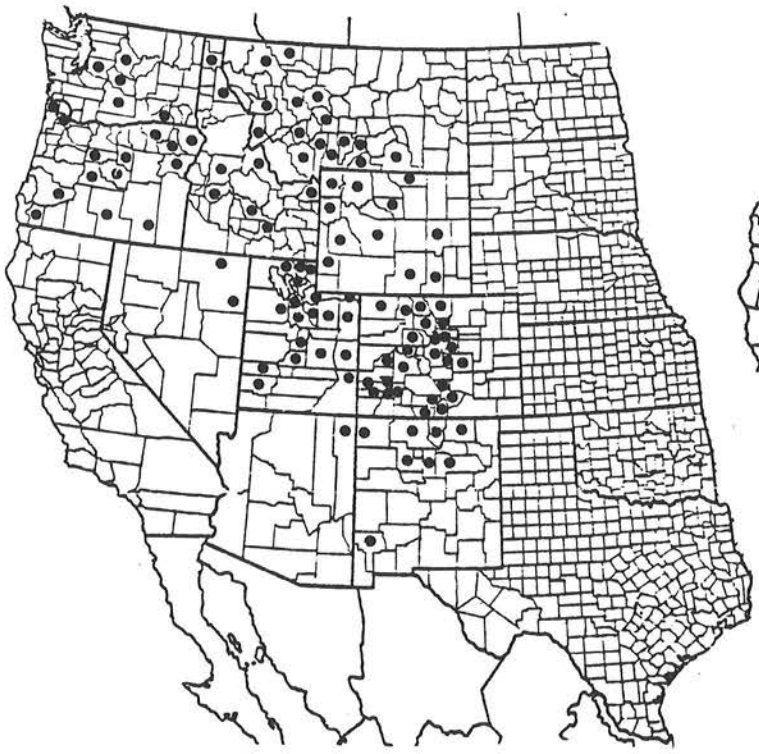
Gnophaela clappiana **Holland**

Gnophaela latipennis **(Bois.)**

Gnophaela aequinoctialis **(Wlk.)**



Gnophaela discreta **Stretch**



Gnophaela vermiculata (Grote)

Dysschema leucophaea (Wlk.)

Dysschema howardi Hy. Edwards

Pteroodes nr *longipennis* (Wlk.)

***Phaloesia saucia* Walker**

Ctenucha venosa Walker

Ctenucha cressonana Grote

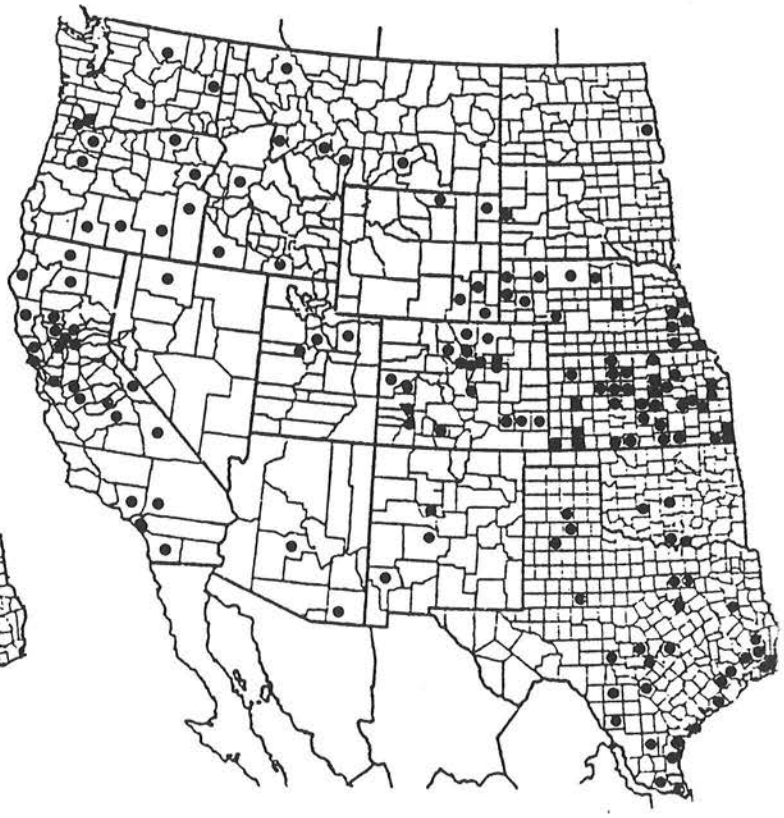
Ctenucha virginica (Esp.)

Ctenucha multifaria (Walker)

Ctenucha rubroscapus (Menetries)

Ctenucha brunnea Stretch

Dahana atripennis Grote



Cisseps fulvicollis (Huebner)

***Eucereon erythrolepis* Dyar**

***Eucereon myrina* Druce**

***Nelphe carolina* (Hy. Edwards)**

Nelphe relegatum (Schaus)

Eucereon nr *moeschleri* (Texas)

Macrocneme chrysitis (Guerin-Meneville)

Apeplopoda mecrida (Druce)

Episcepsis inornata (Walker)

Psilopleura vittatum (Walker)

Pseudosphex leovasquezae (P. & S.)

Mymecopsis strigosa (Druce)

Cosmosoma festivum (Walker)

Cosmosoma myrodora Dyar

Syntomeida melanthus (Cramer)

Syntomeida epilais (Walker)

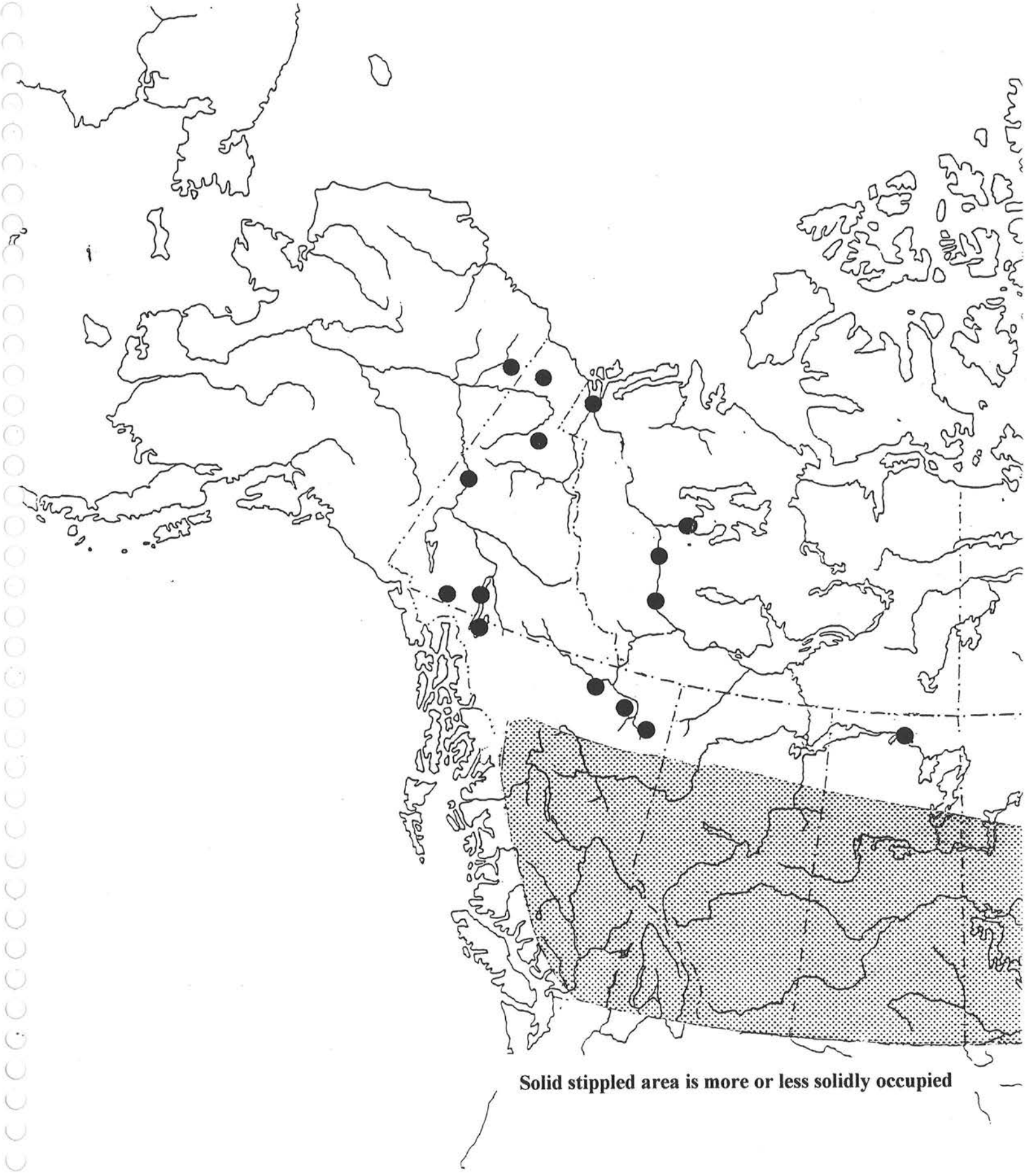
Syntomedia hampsonii Barnes

Poliopastea clavipes (Boisduval)

Horama panthelon (Fabricius)

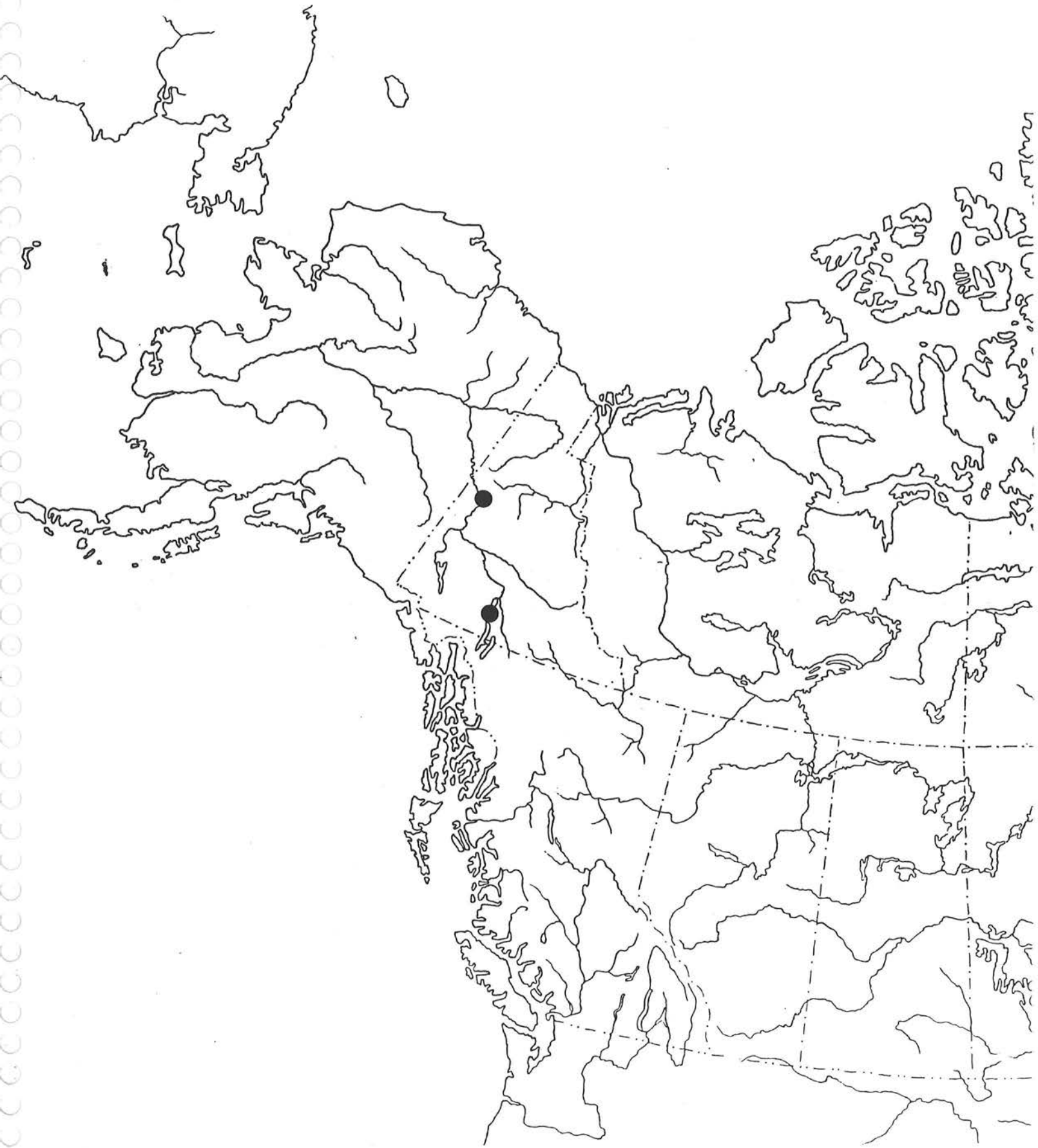
Horama plumipes (Drury)

WESTERN CANADA AND ALASKA MAPS

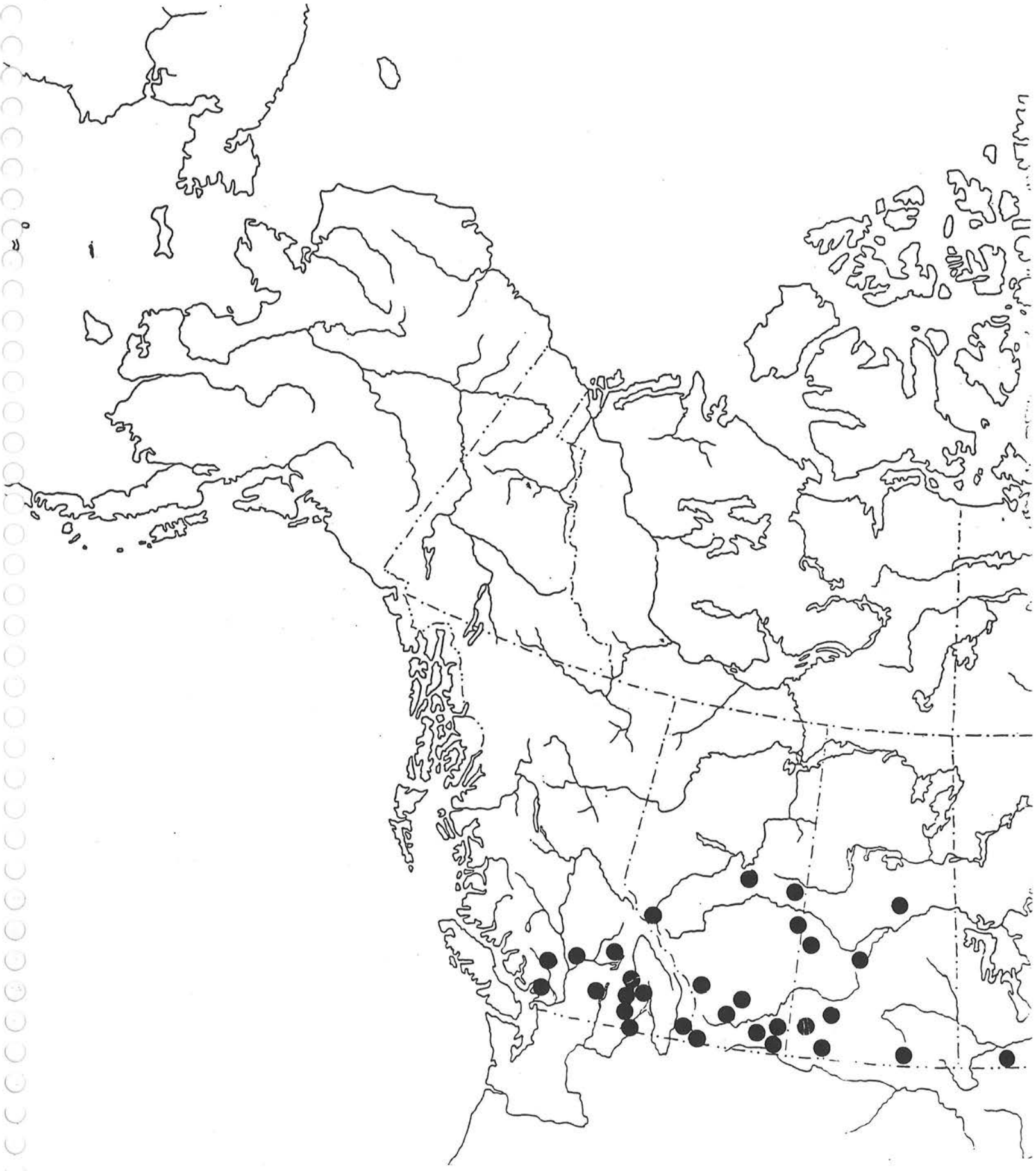


Solid stippled area is more or less solidly occupied

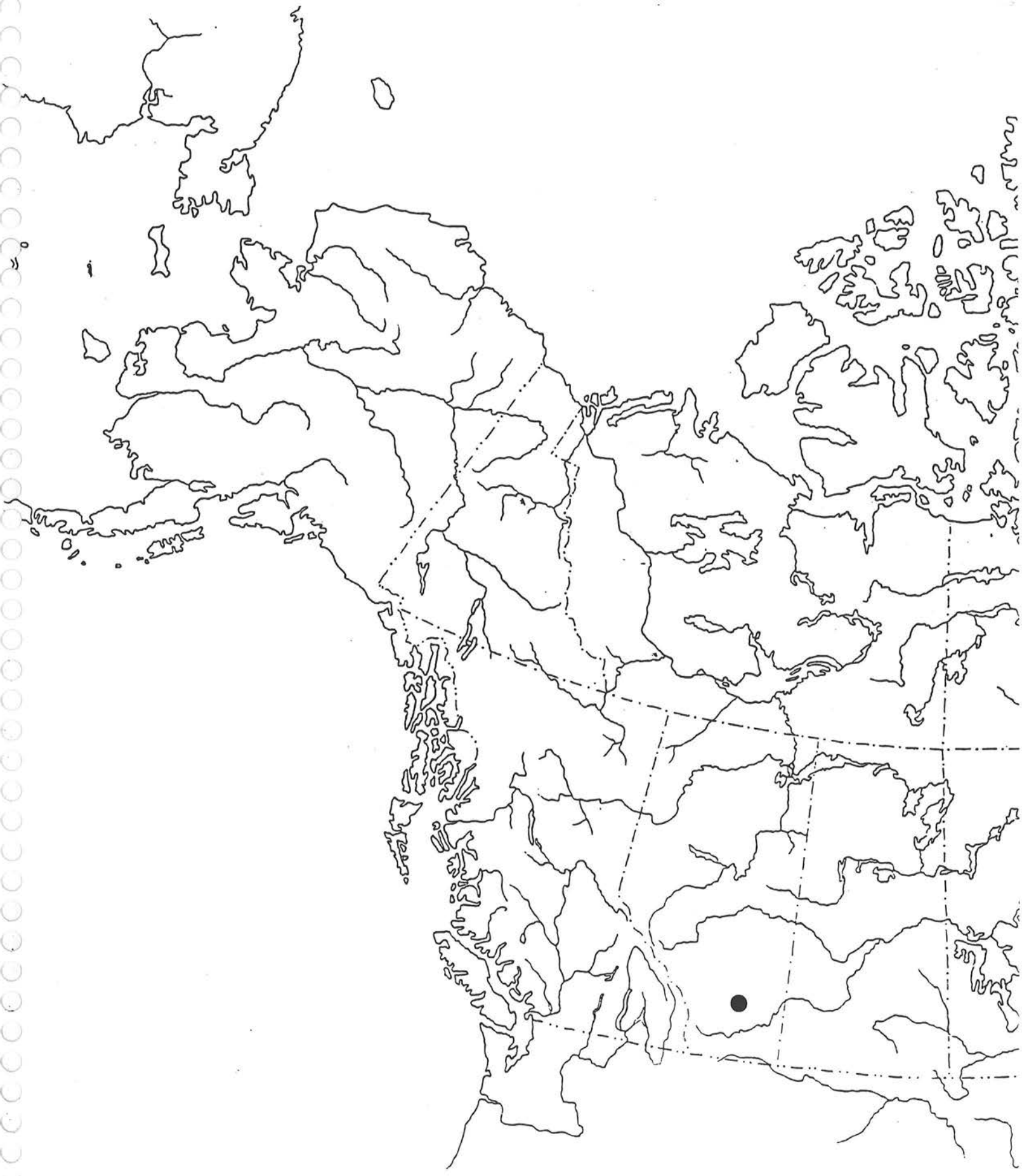
Eilema bicolor (Grote)



Crambidia impura Barnes & McD.

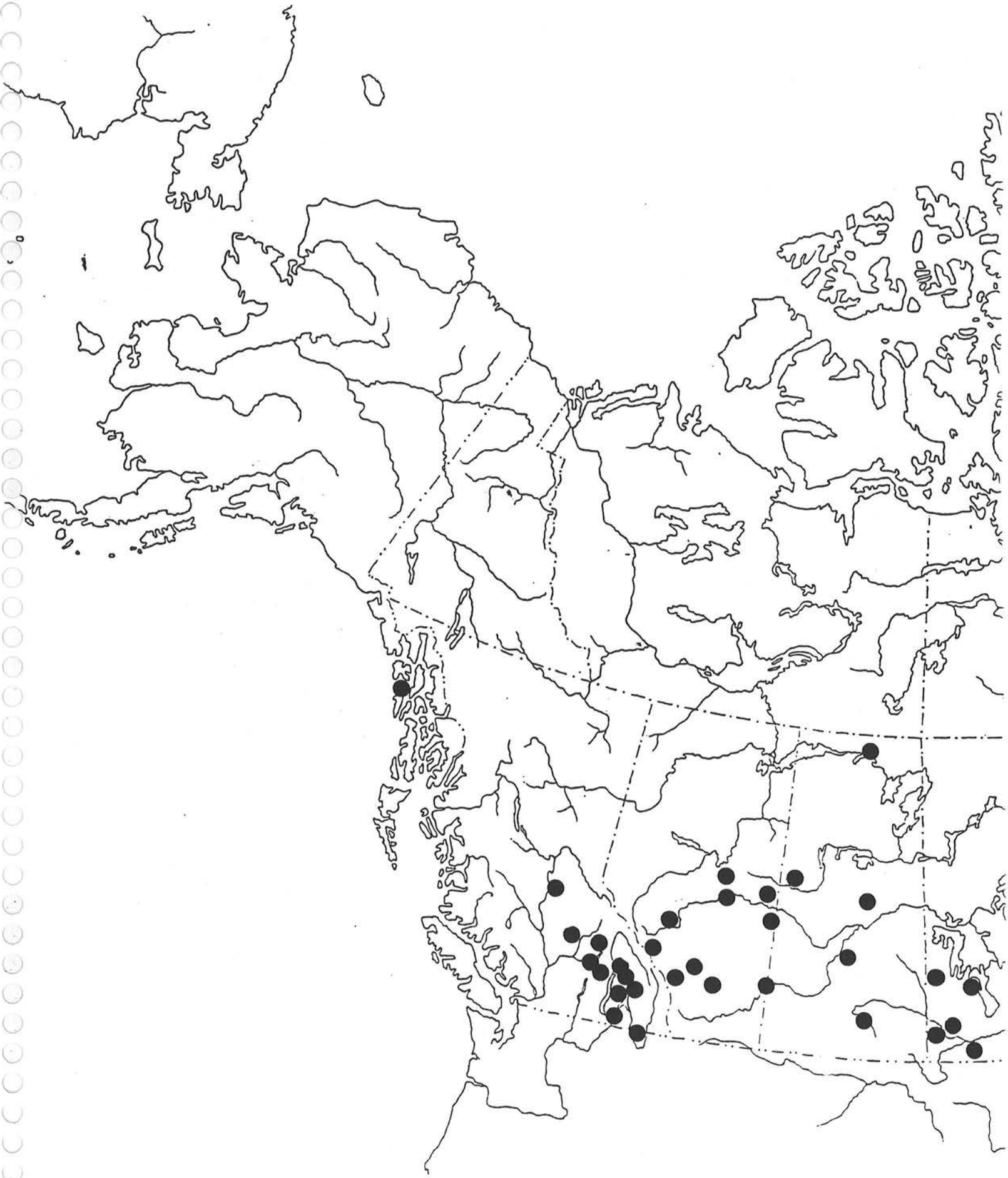


***Crambidia casta* (Packard)**



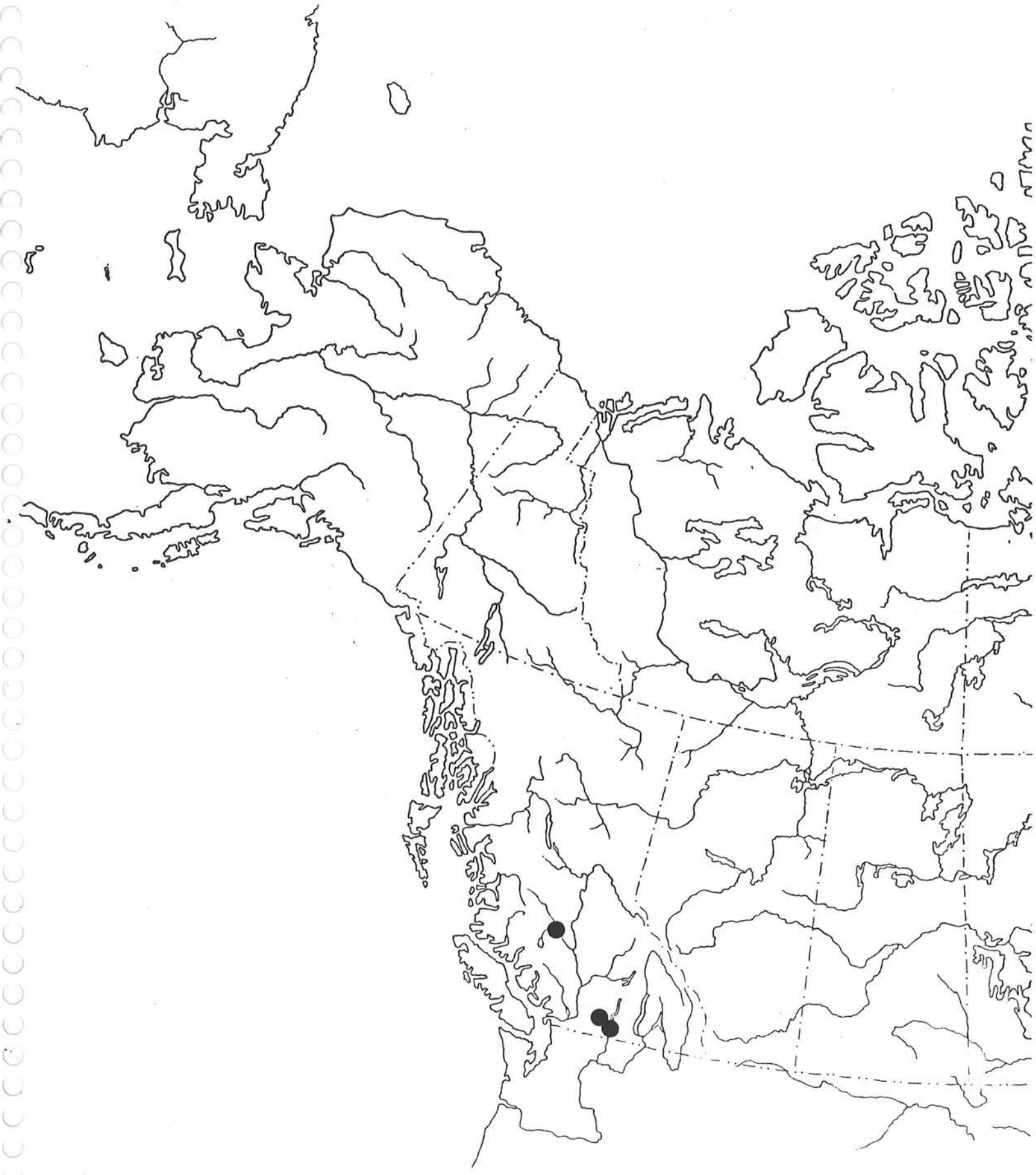
***Crambidia cephalica* (G. & R.)**

***Lycomorpha pholus* (Drury)**

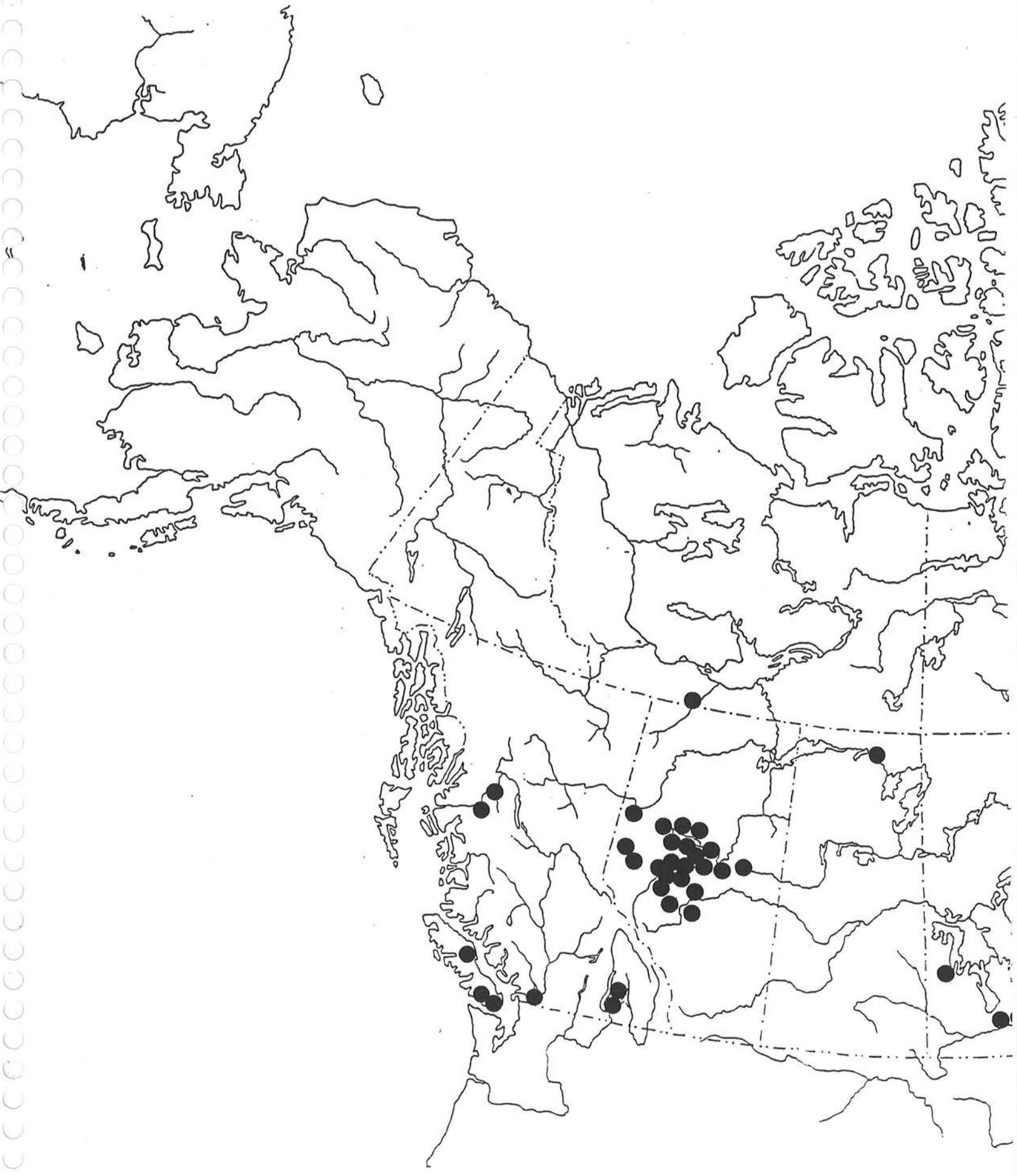


Hypoprepia miniata (Kirby)

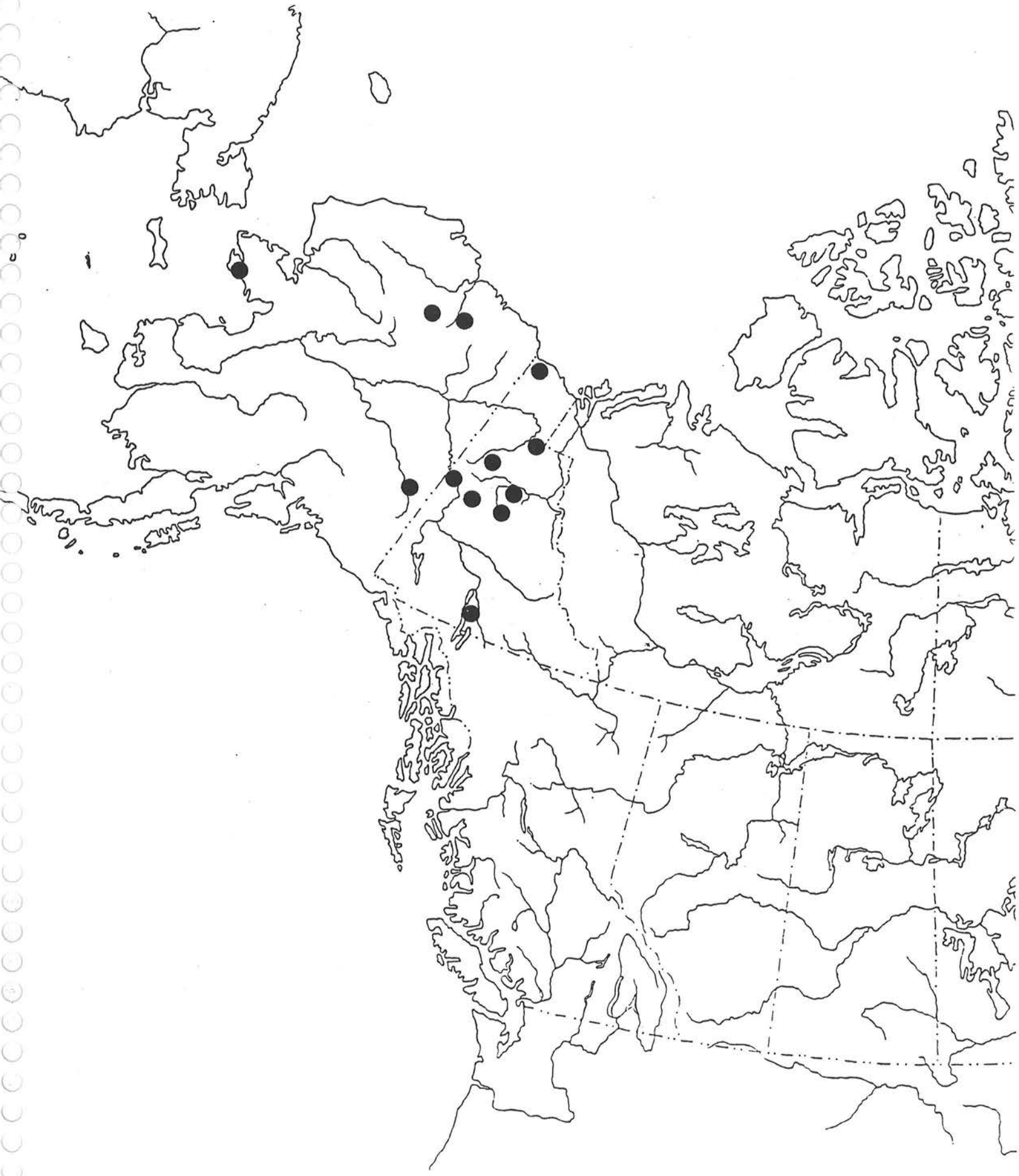
Hypoprepia fucosa Huebner



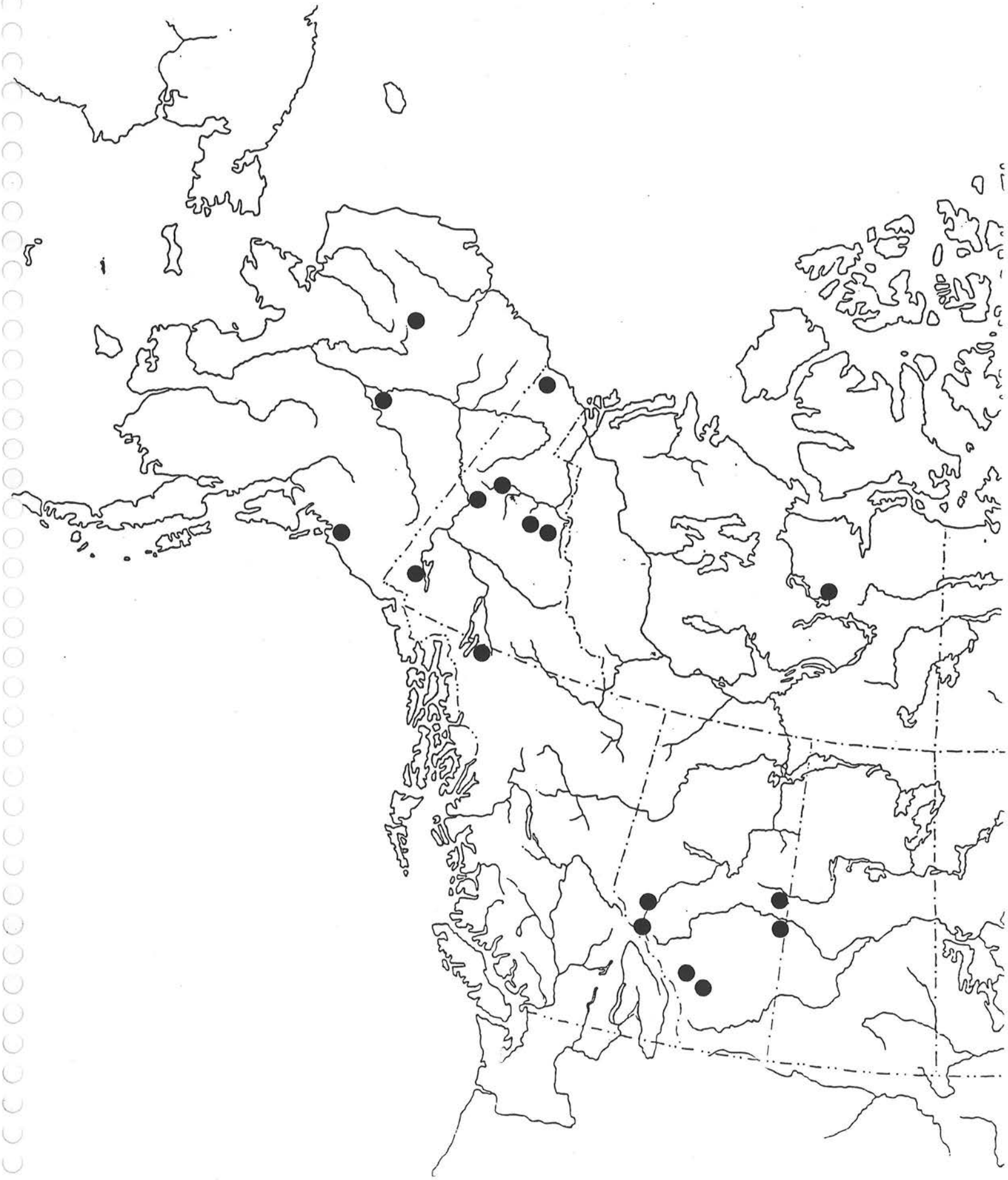
***Bruceia pulverina* Neumoegen**



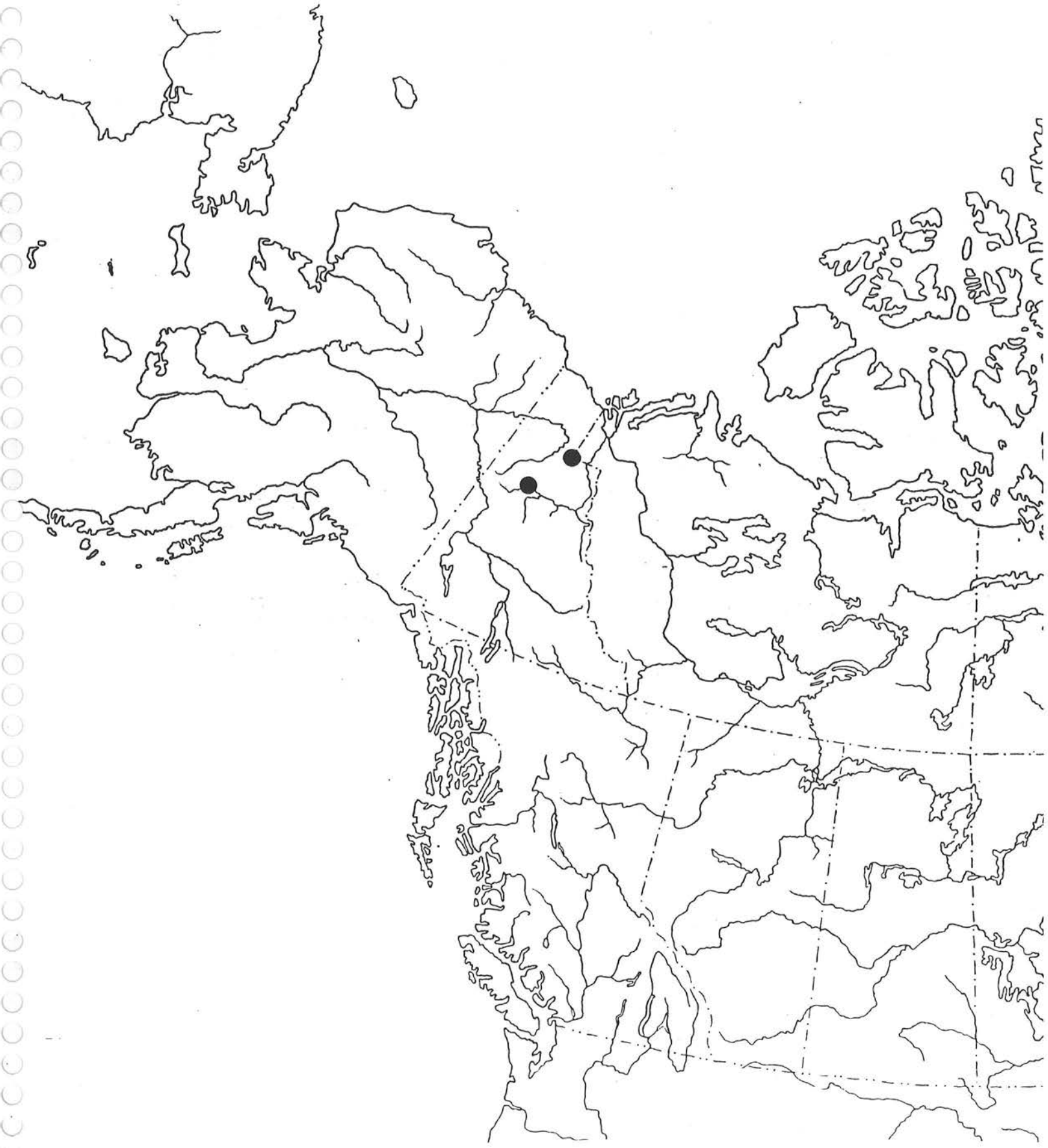
Clemensia albata Packard



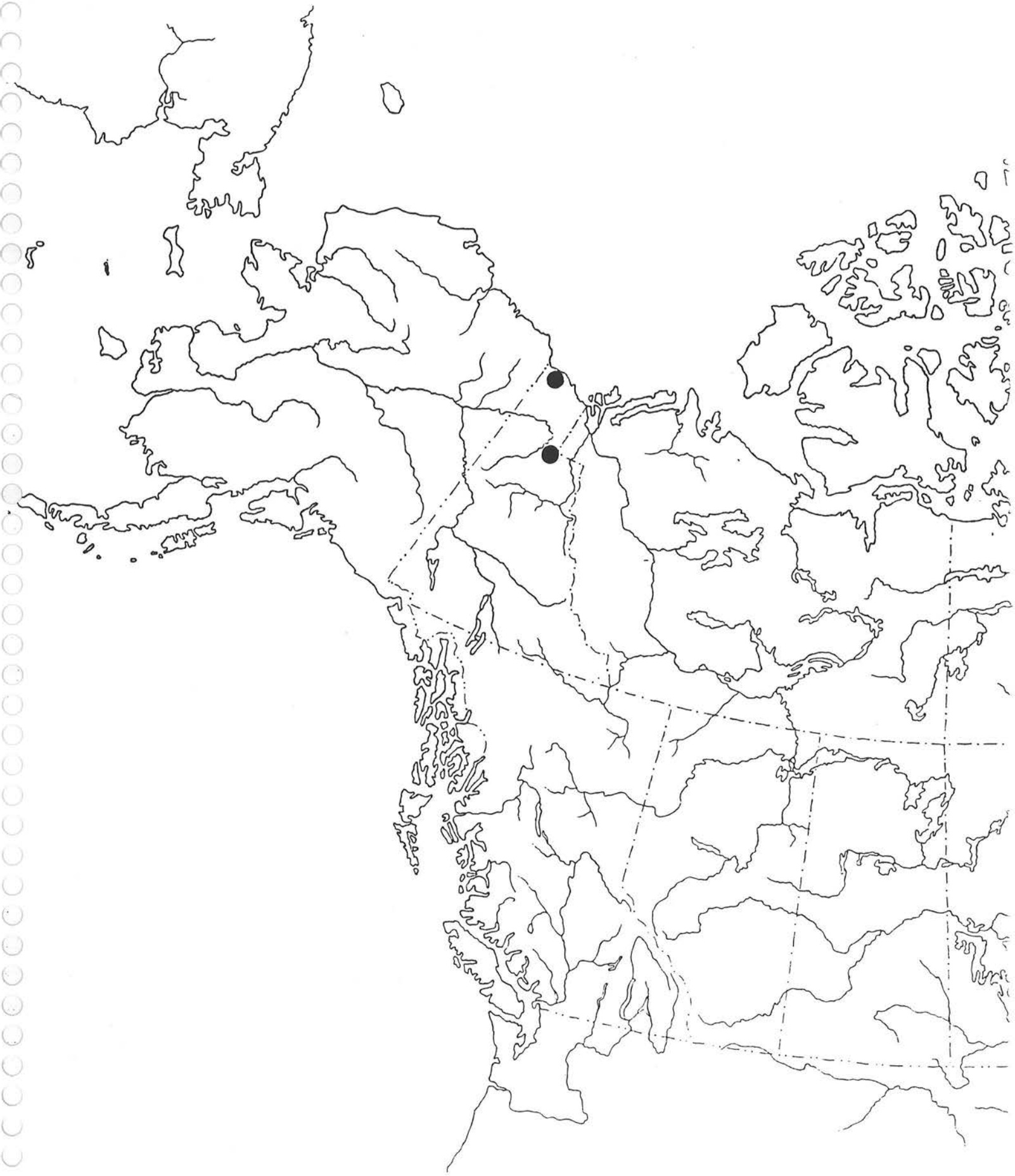
Acsala anomala **Benjamin**



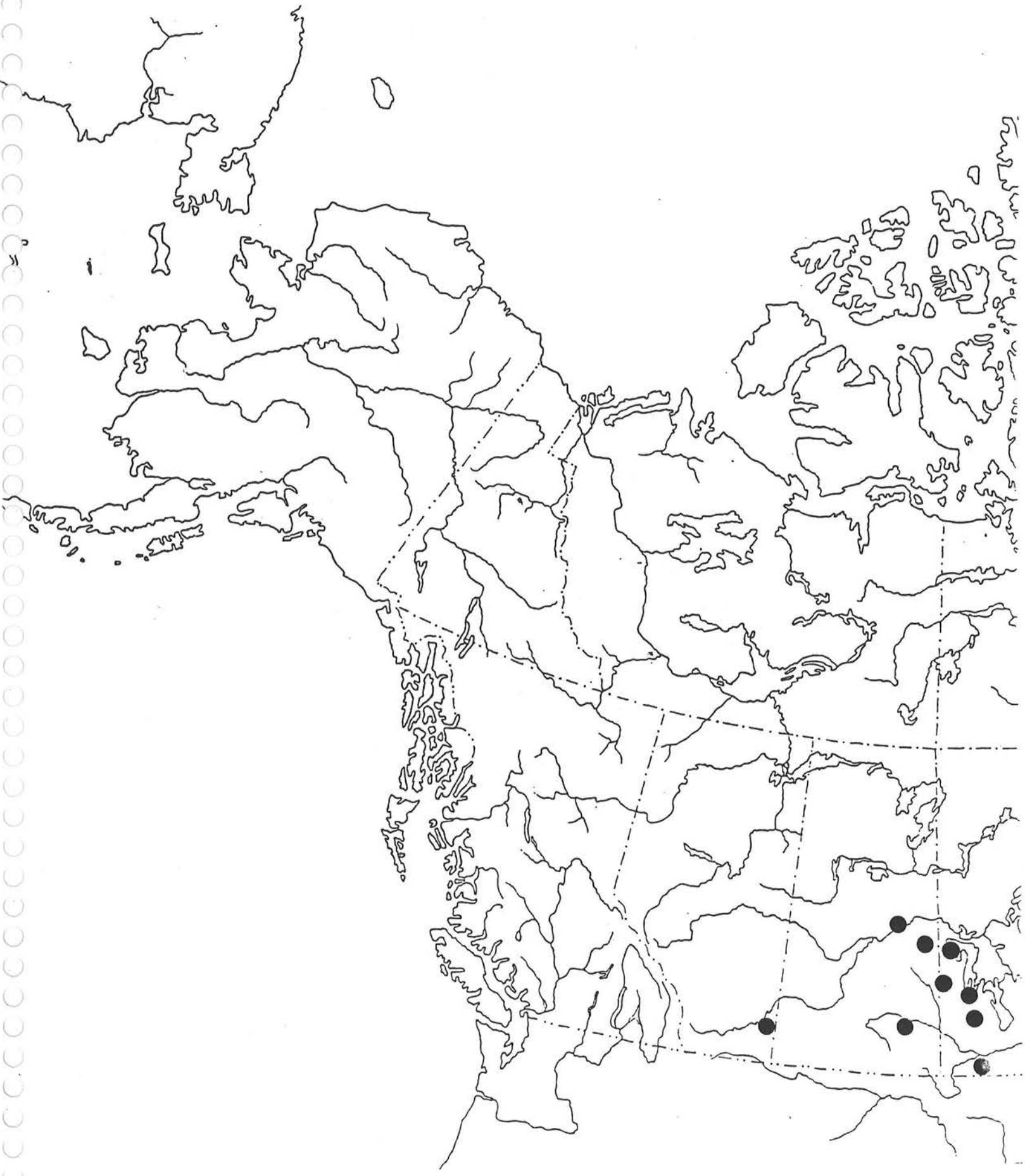
***Dodia albertae* Dyar**



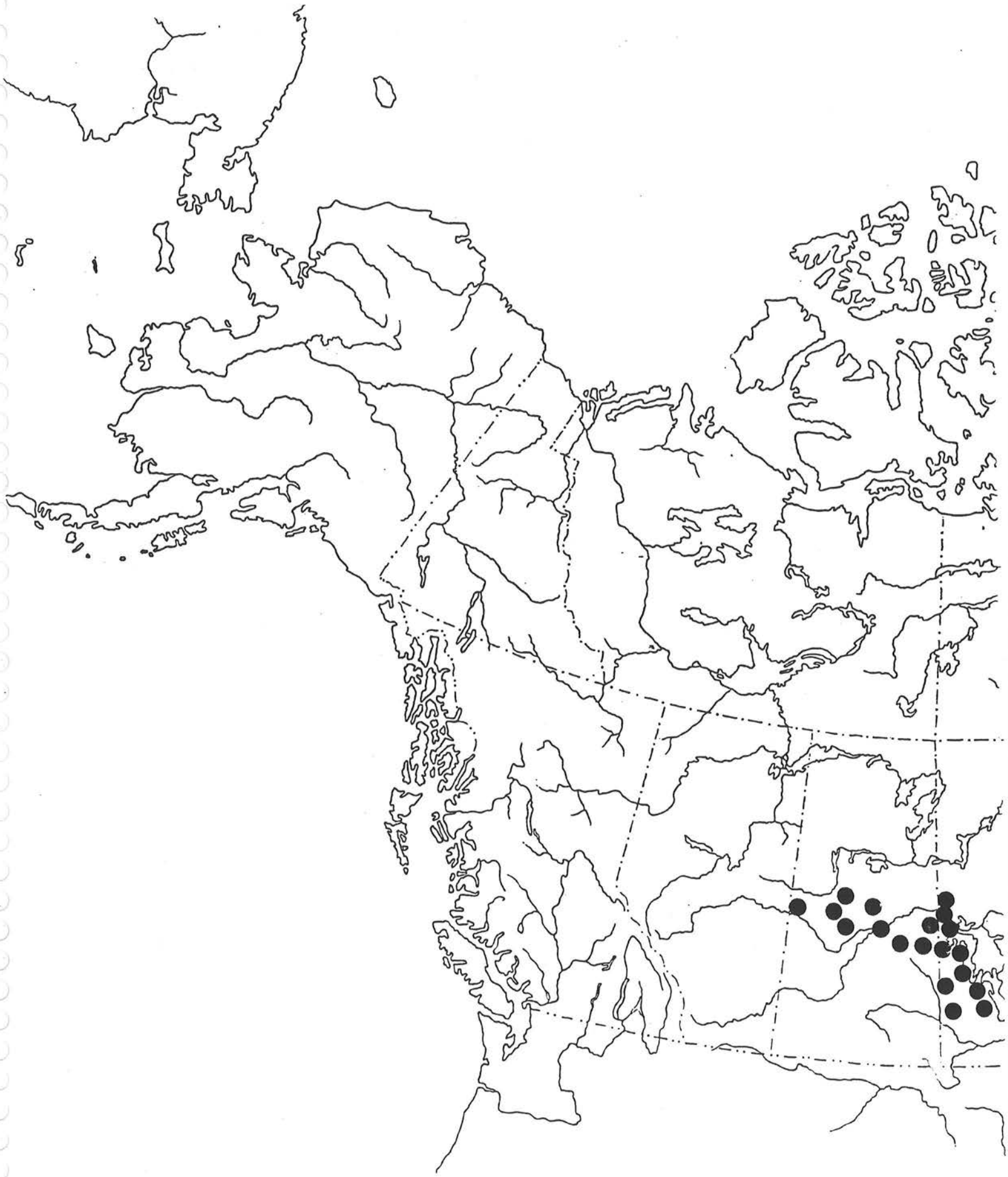
***Dodia kononenkoi* Tschiakov & Lafontaine**



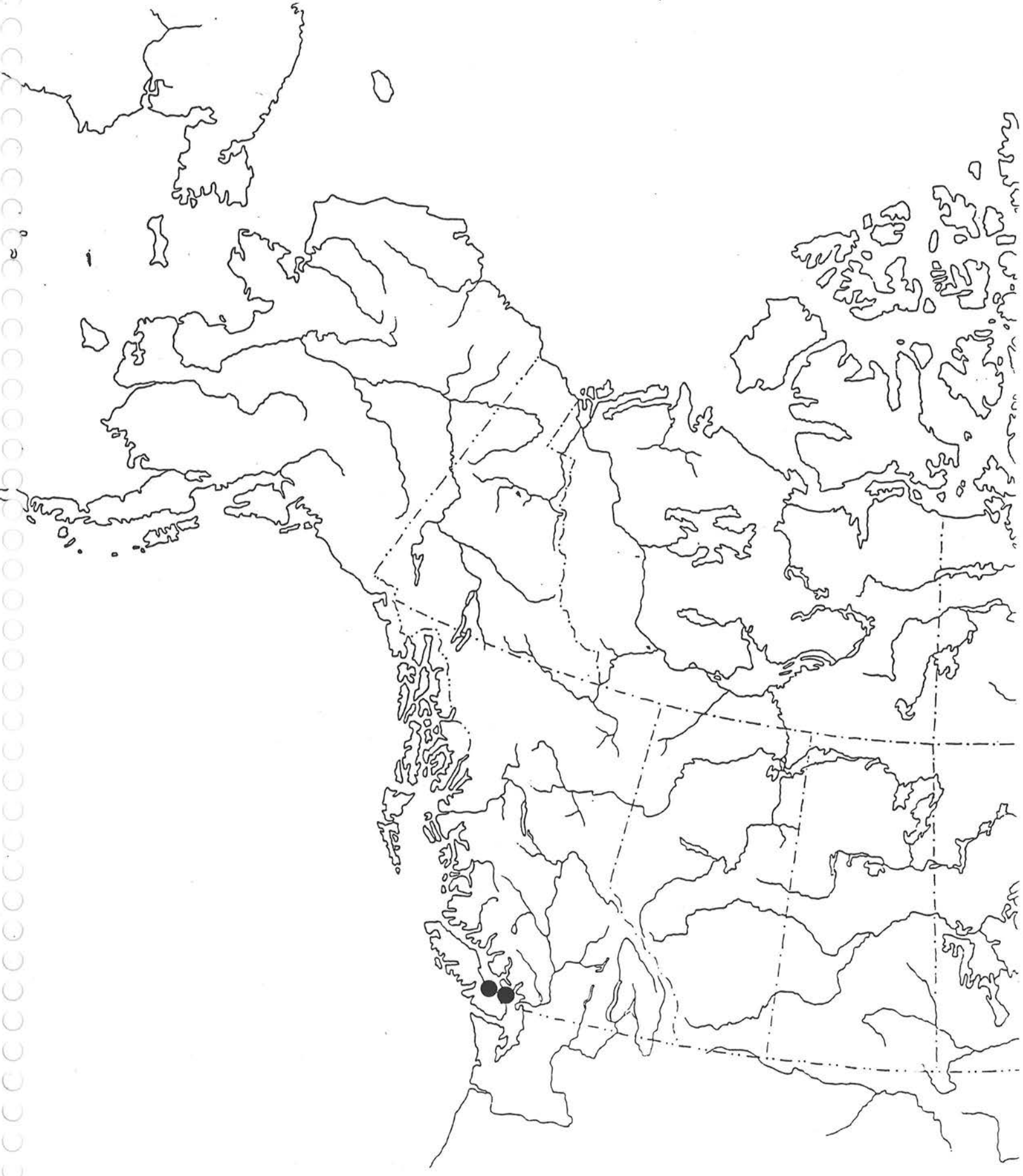
***Dodia verticalis* Laf. & Troubridge**



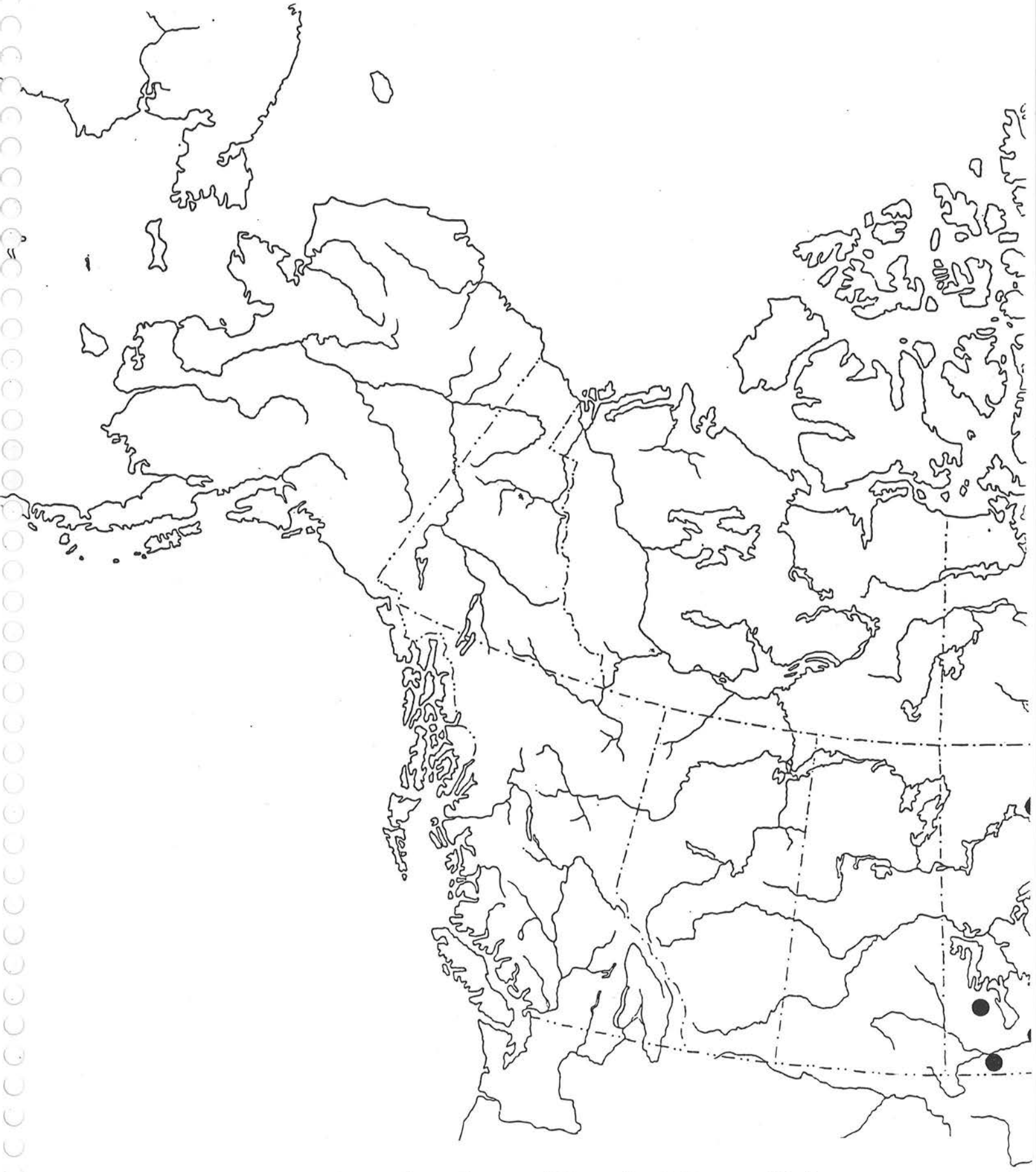
***Haploa lecontei* (Guerin-Meneville)**



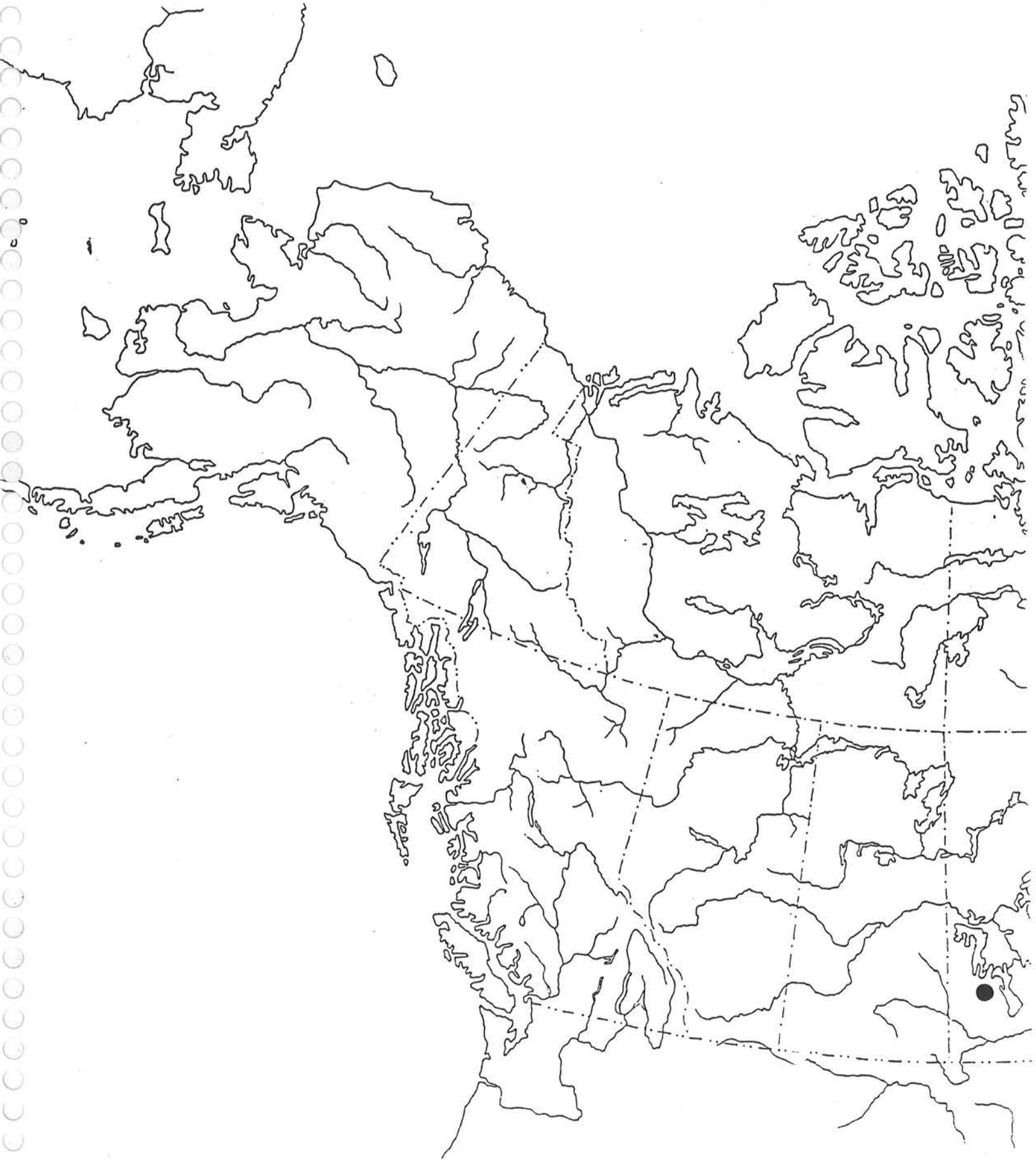
Haploa confusa (Lyman)



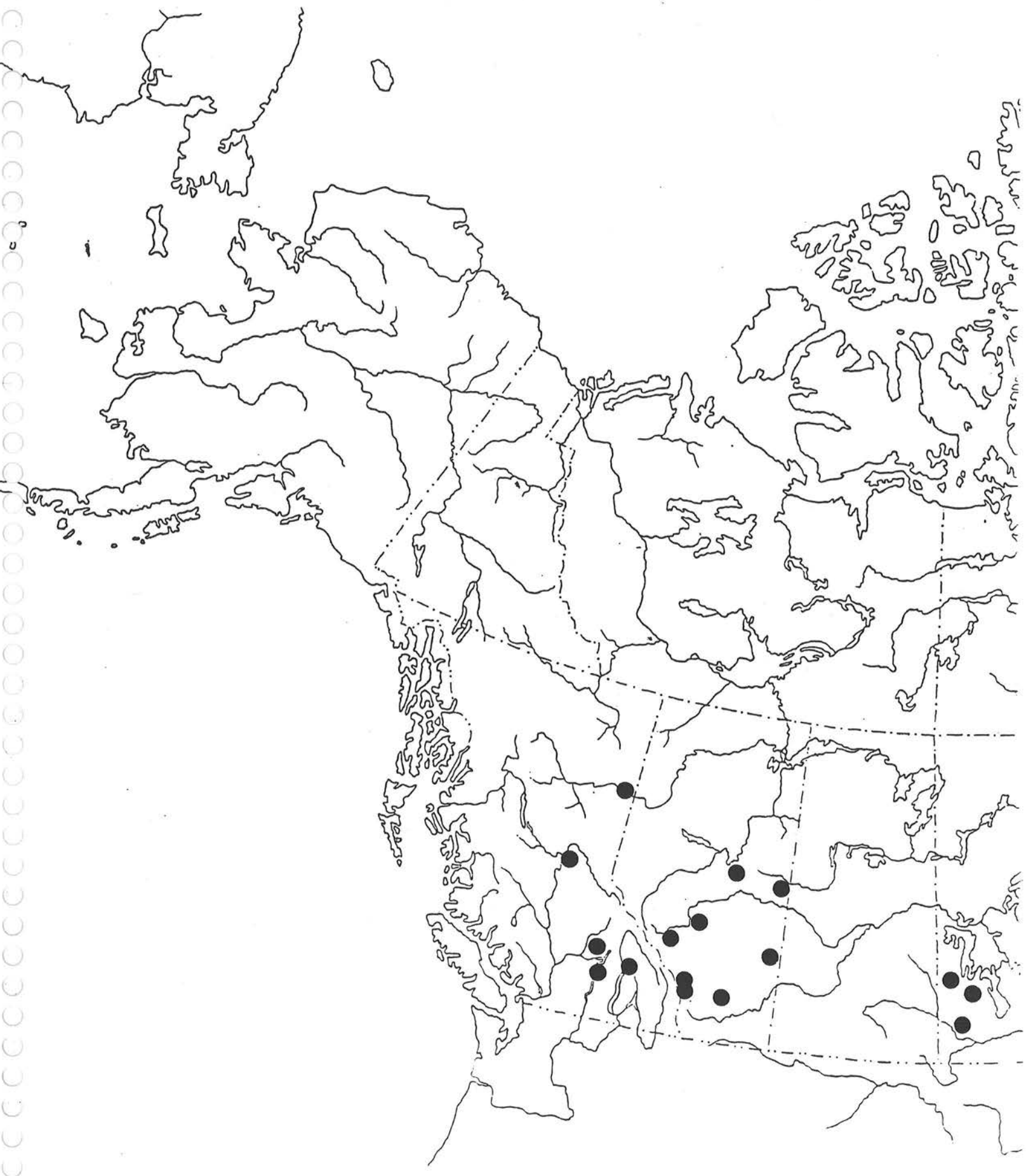
Tyria jacobaeae (Linnaeus)



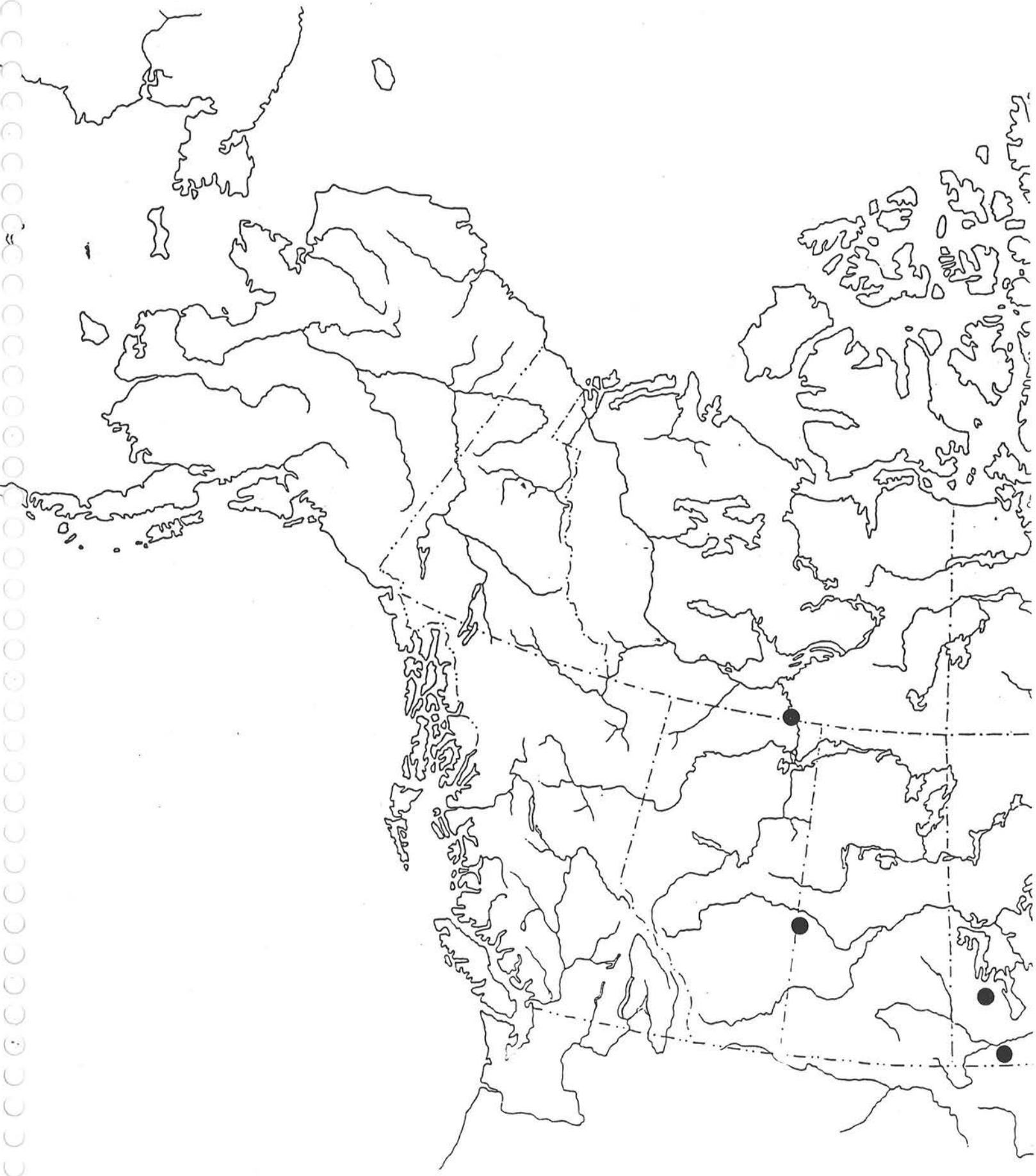
***Holomelina laeta* (Guerin-Meneville)**



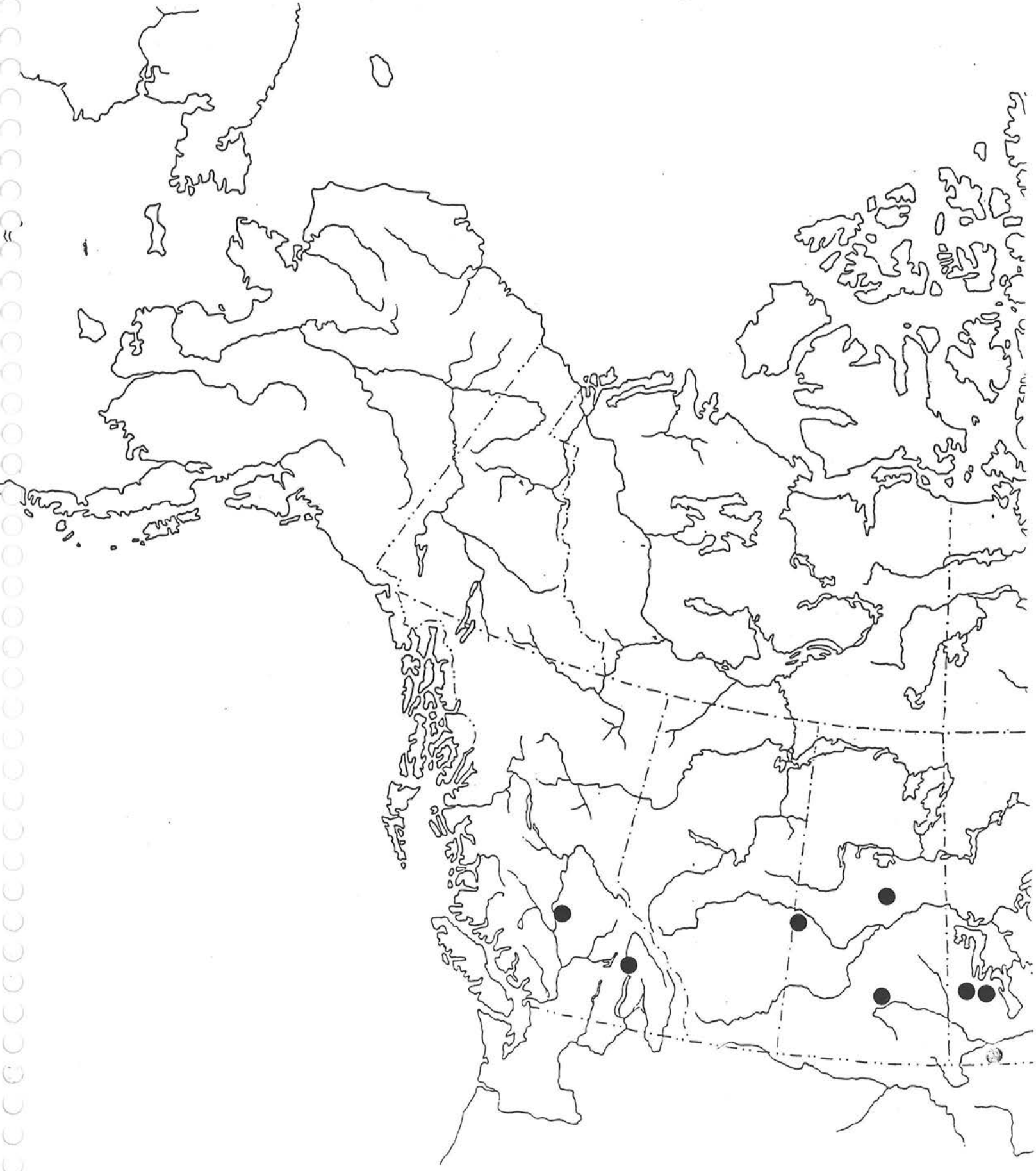
***Holomelina lamae* (Freeman)**



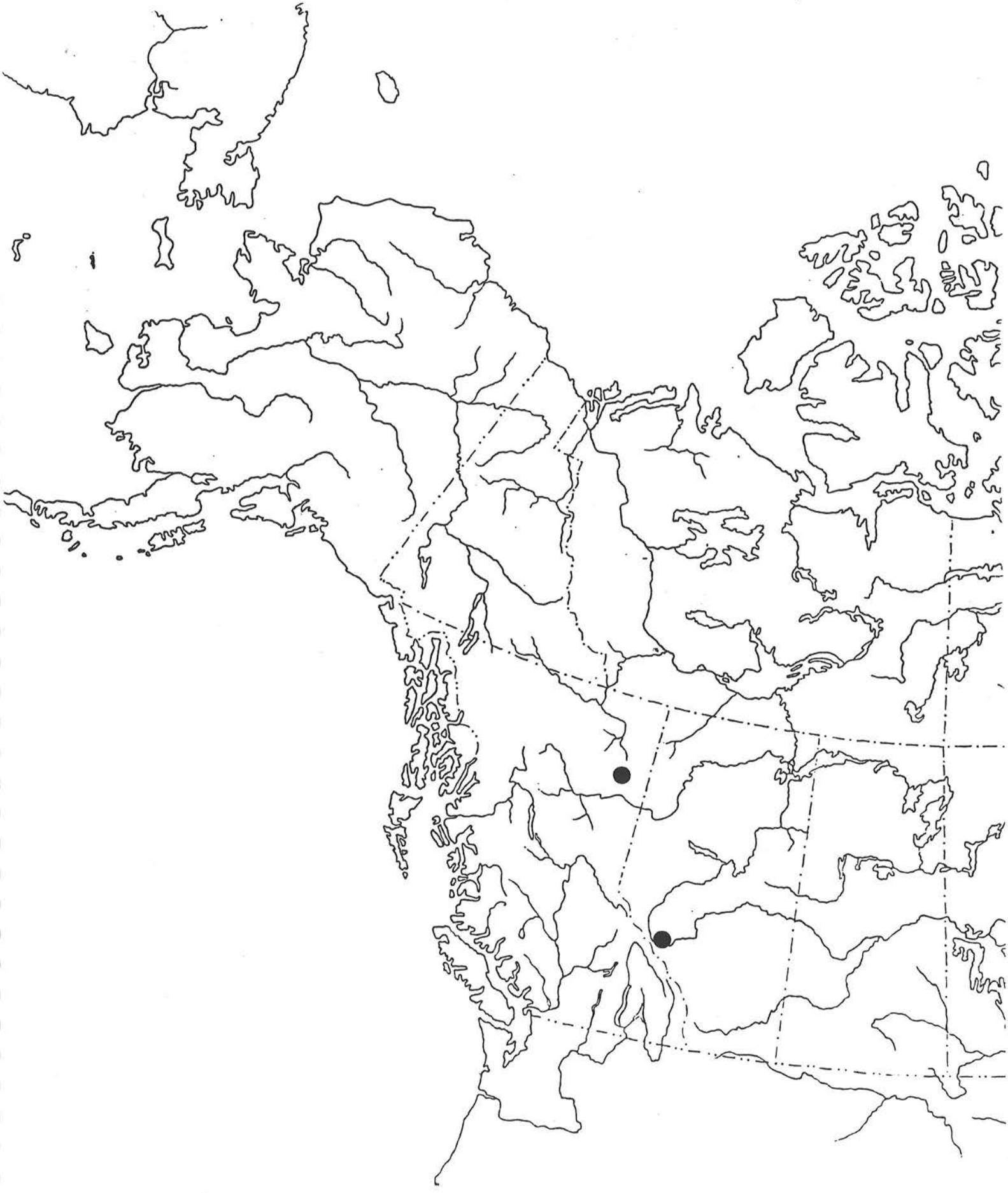
***Holomelina ferruginosa* (Walker)**



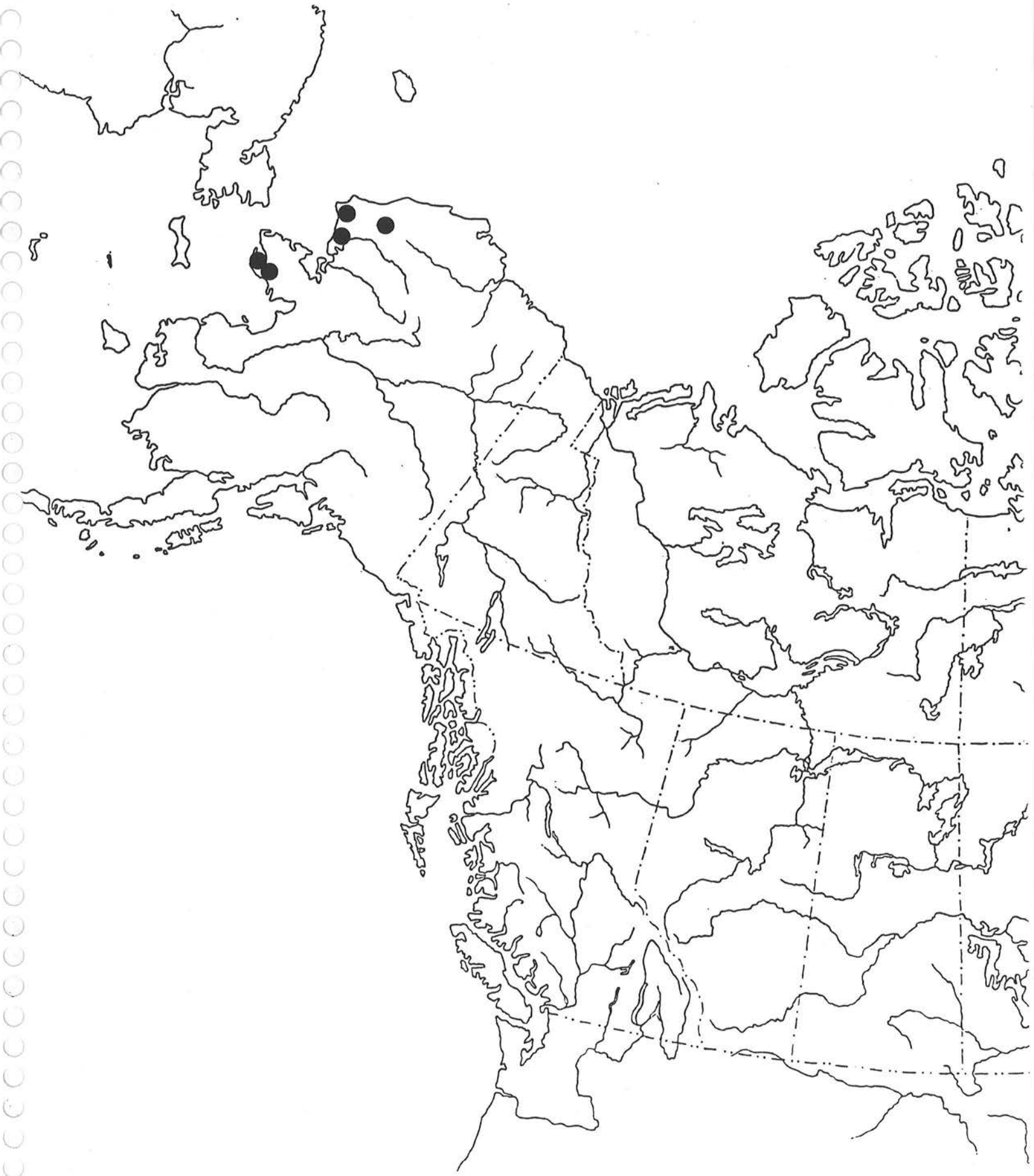
Holomelina aurantiaca (Huebner)



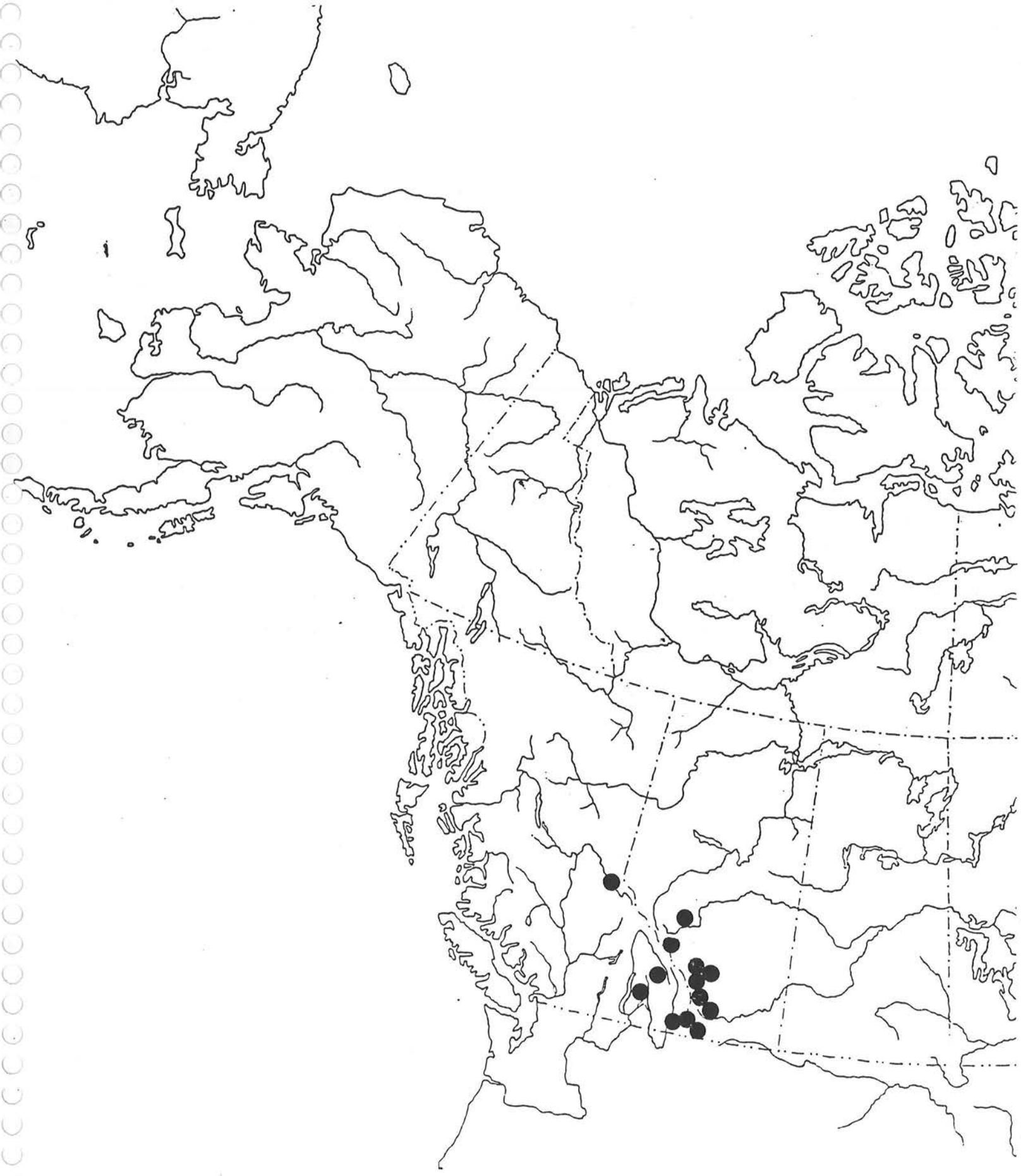
Holomelina fragilis (Strecker)



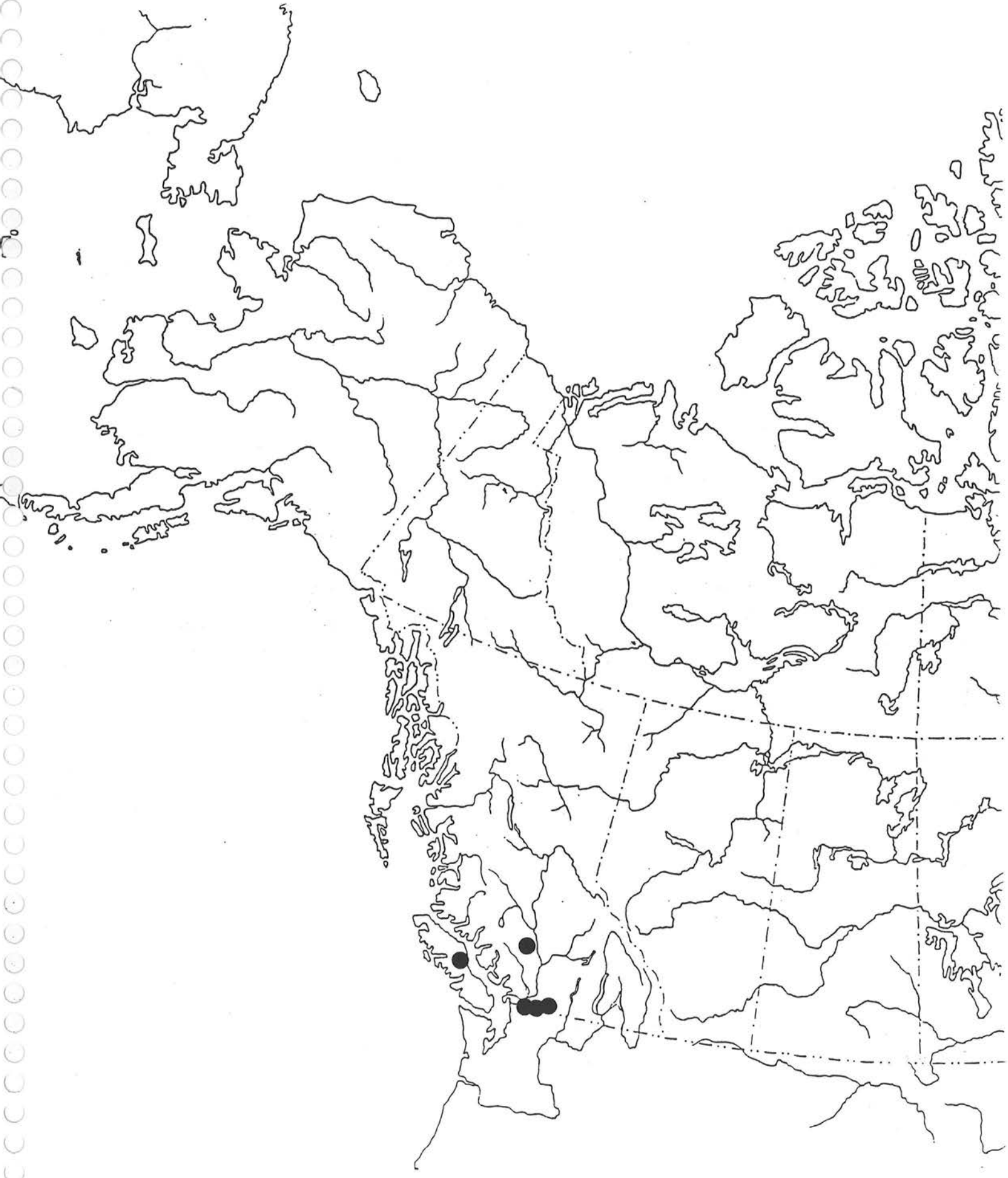
***Holoarctia cervini* (Fallou)**



***Holoarctia fridolini* (Tortensius)**

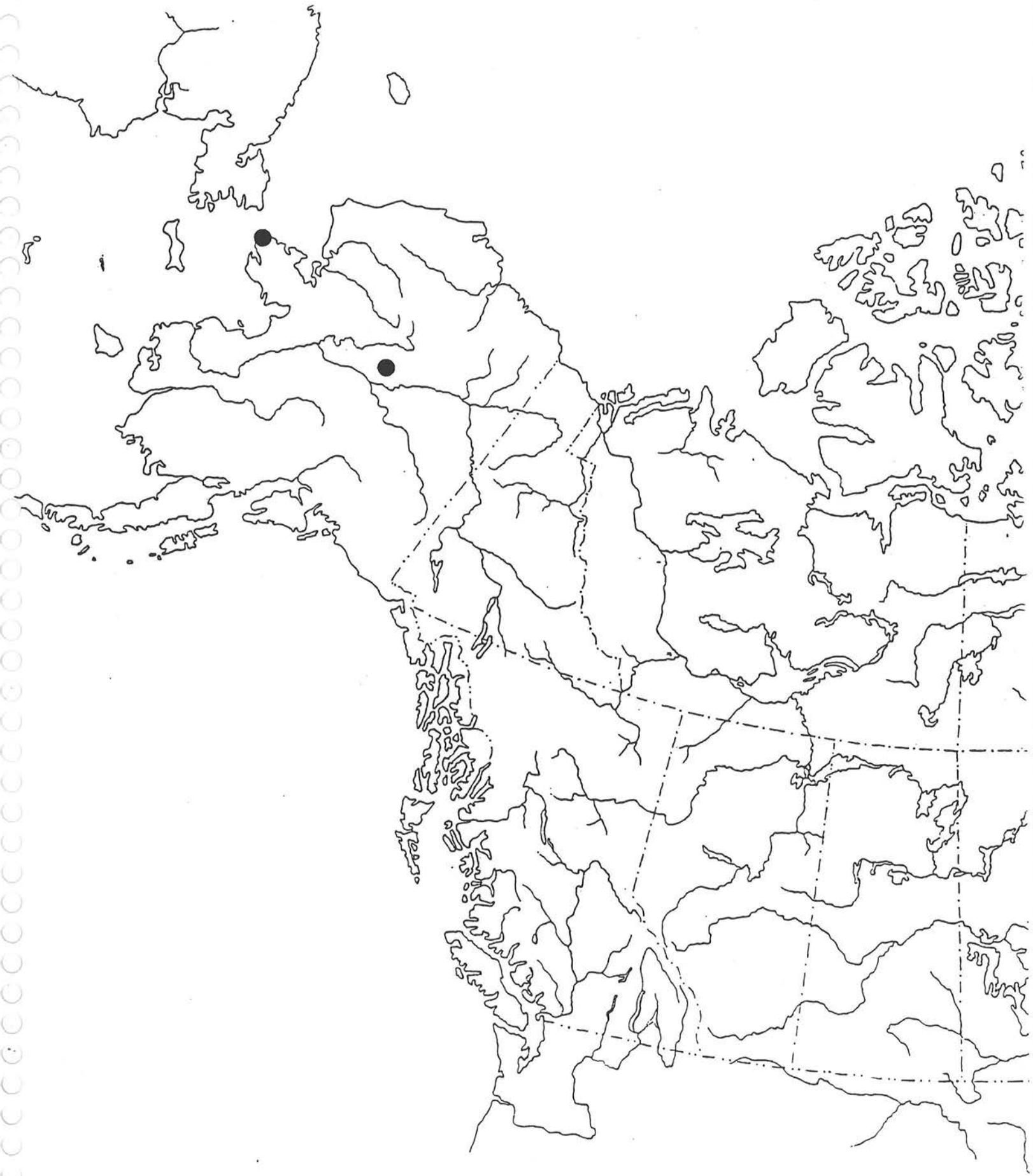


Neoarctia beanii (Neumoegen)

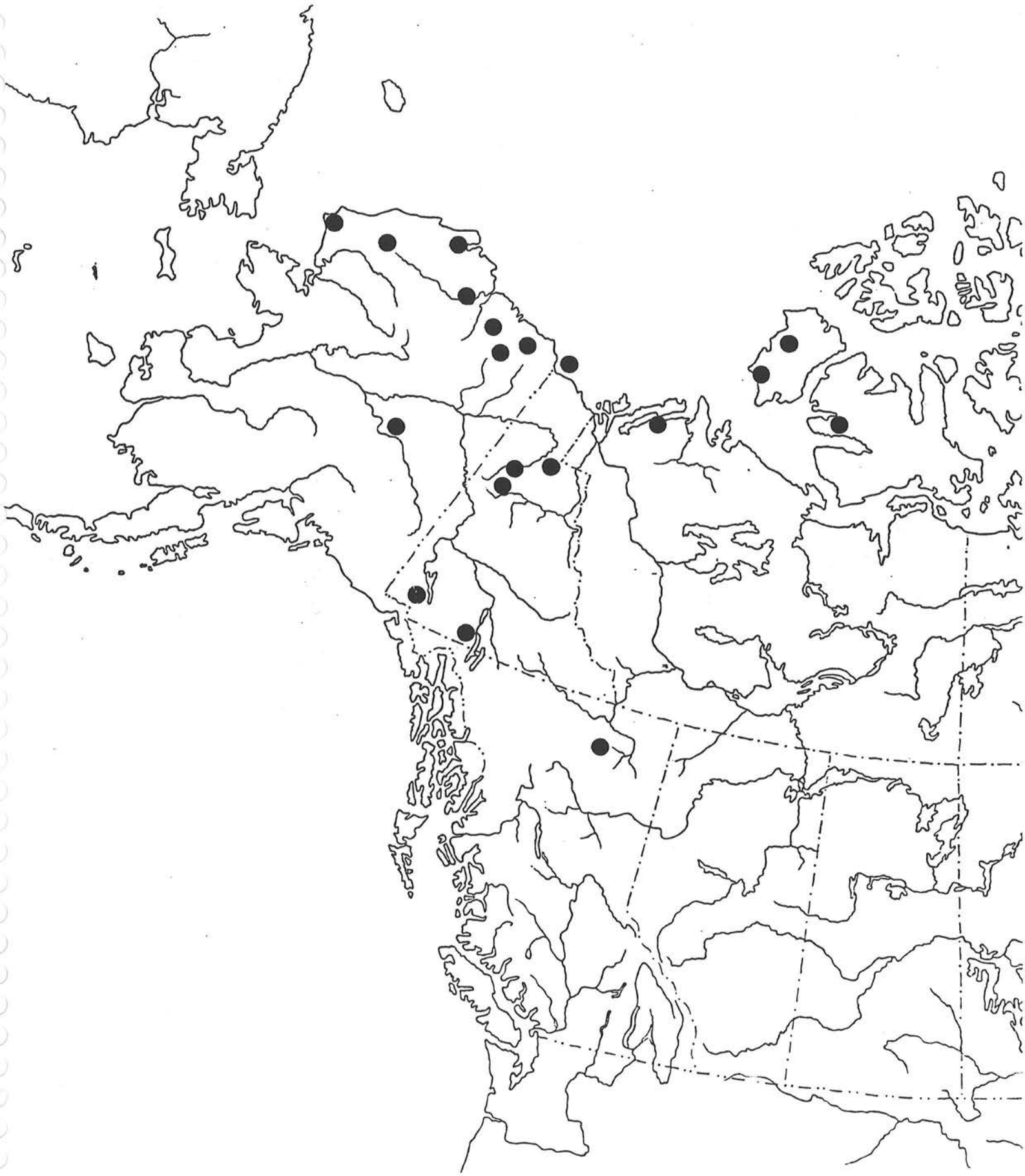


Neoarctia brucei (Hy. Edw.)

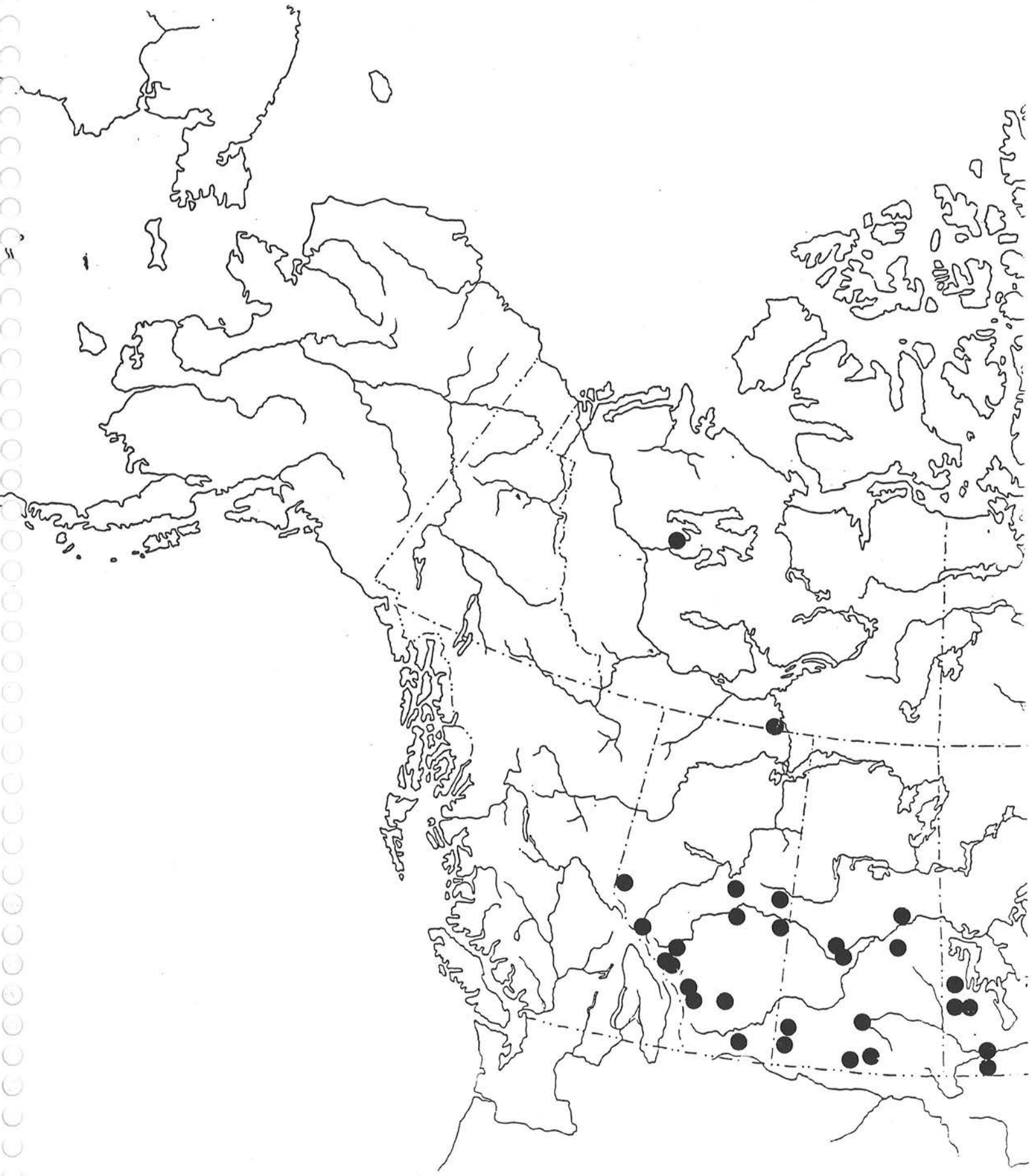
***Neoarctia lafontainei* Ferguson**



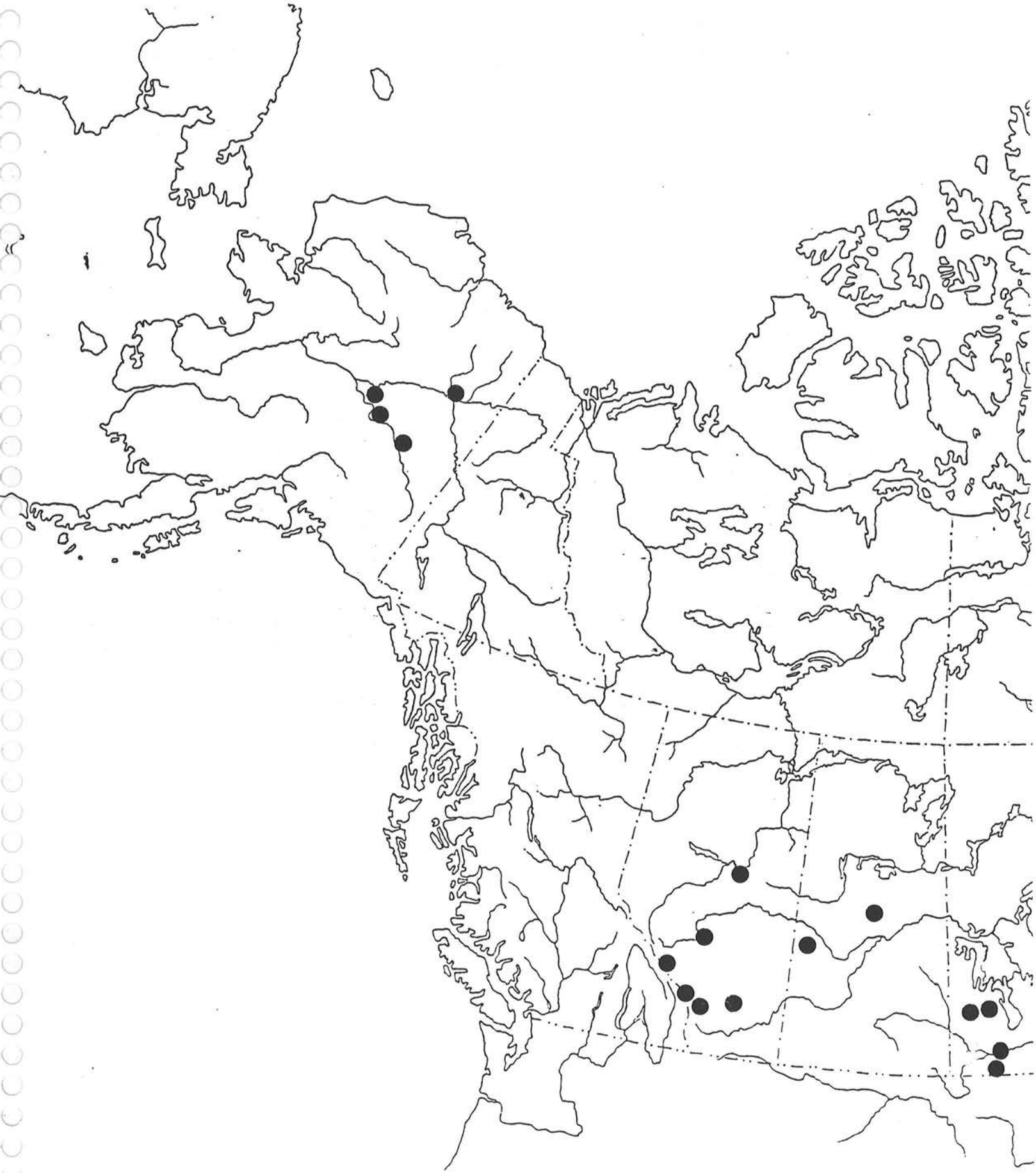
***Hyperborea czekanowskii* Grum-Grshimailo**



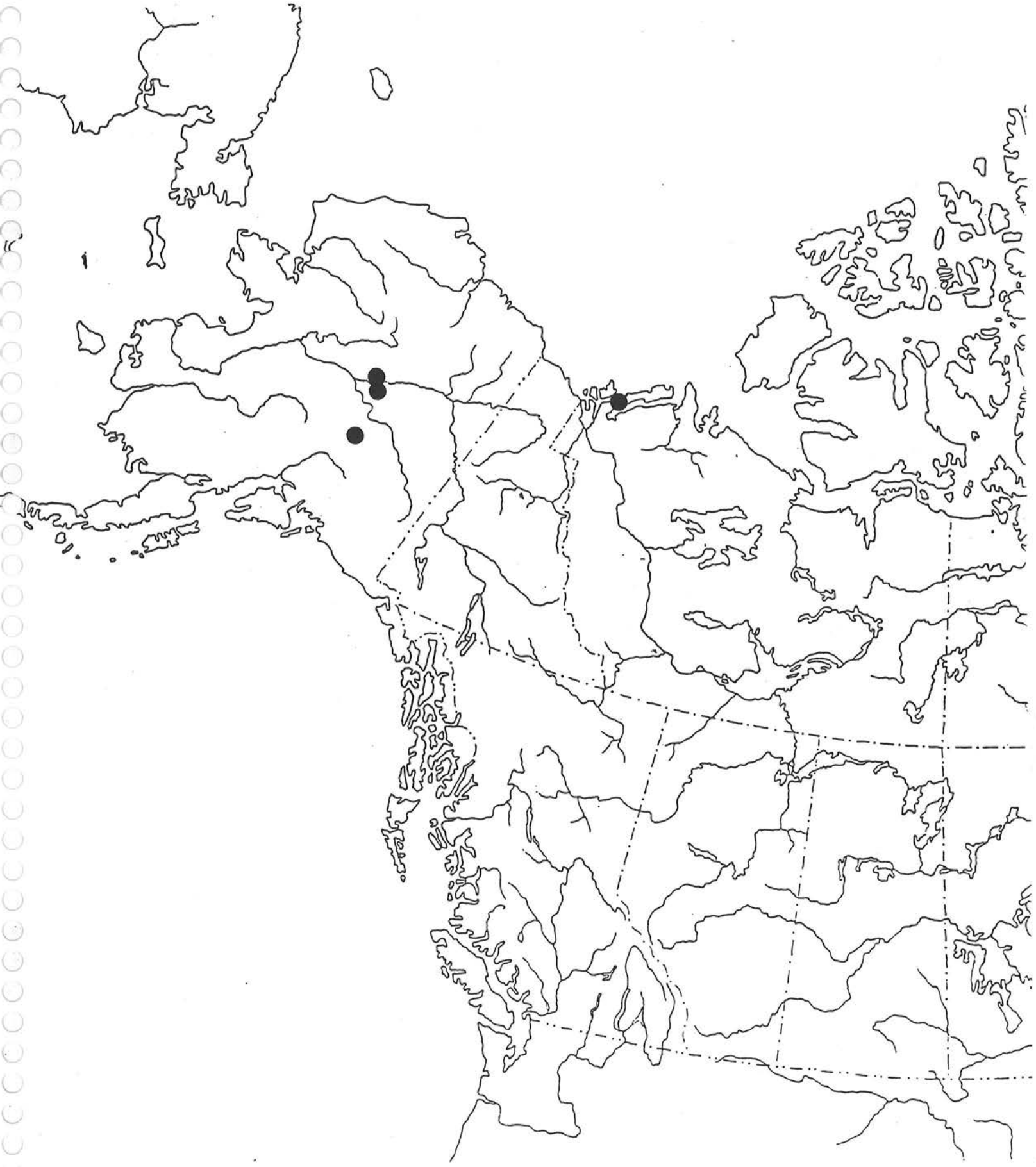
***Grammia quenseli* (Paykull)**



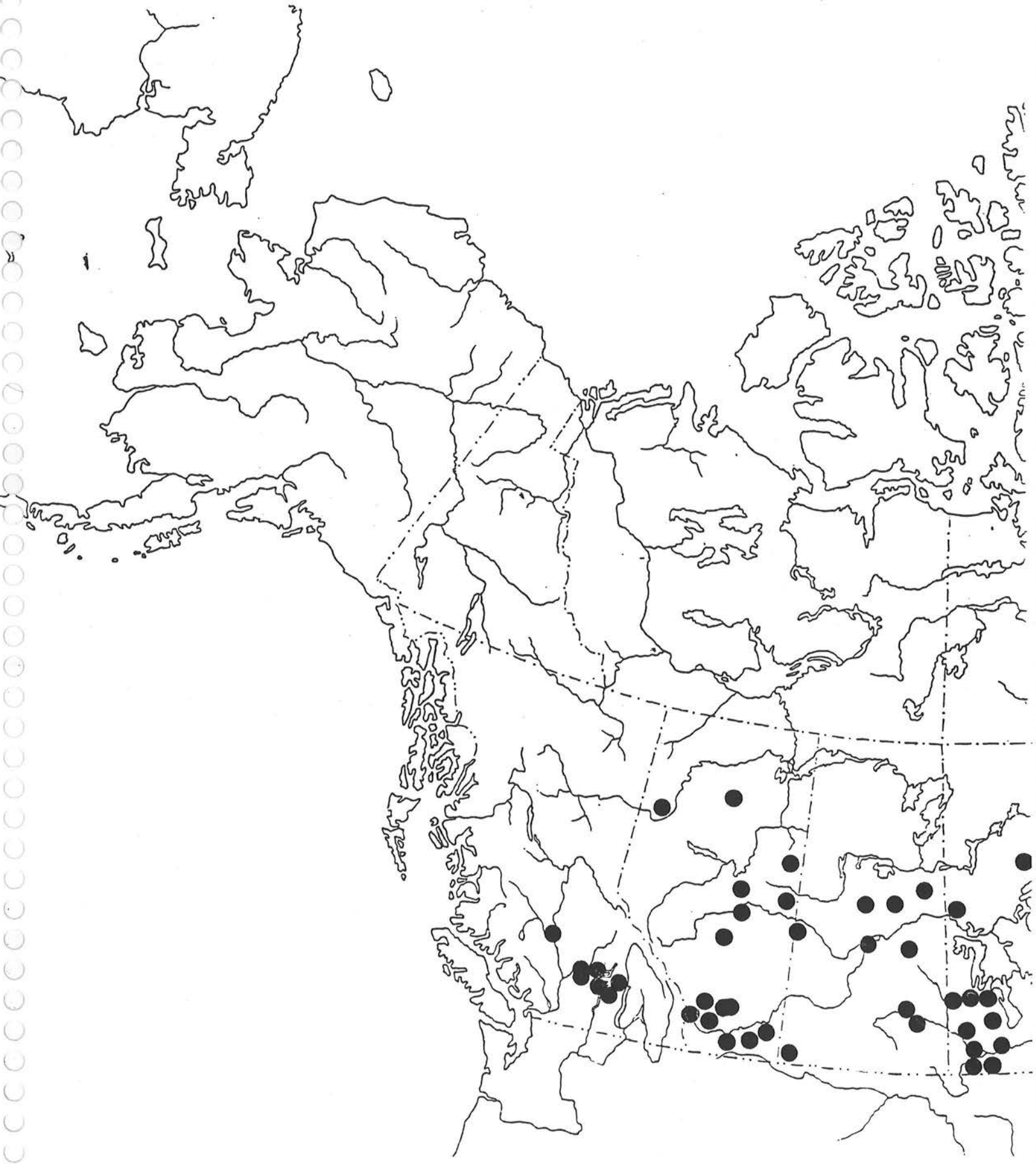
***Grammia obliterata* (Stretch)**



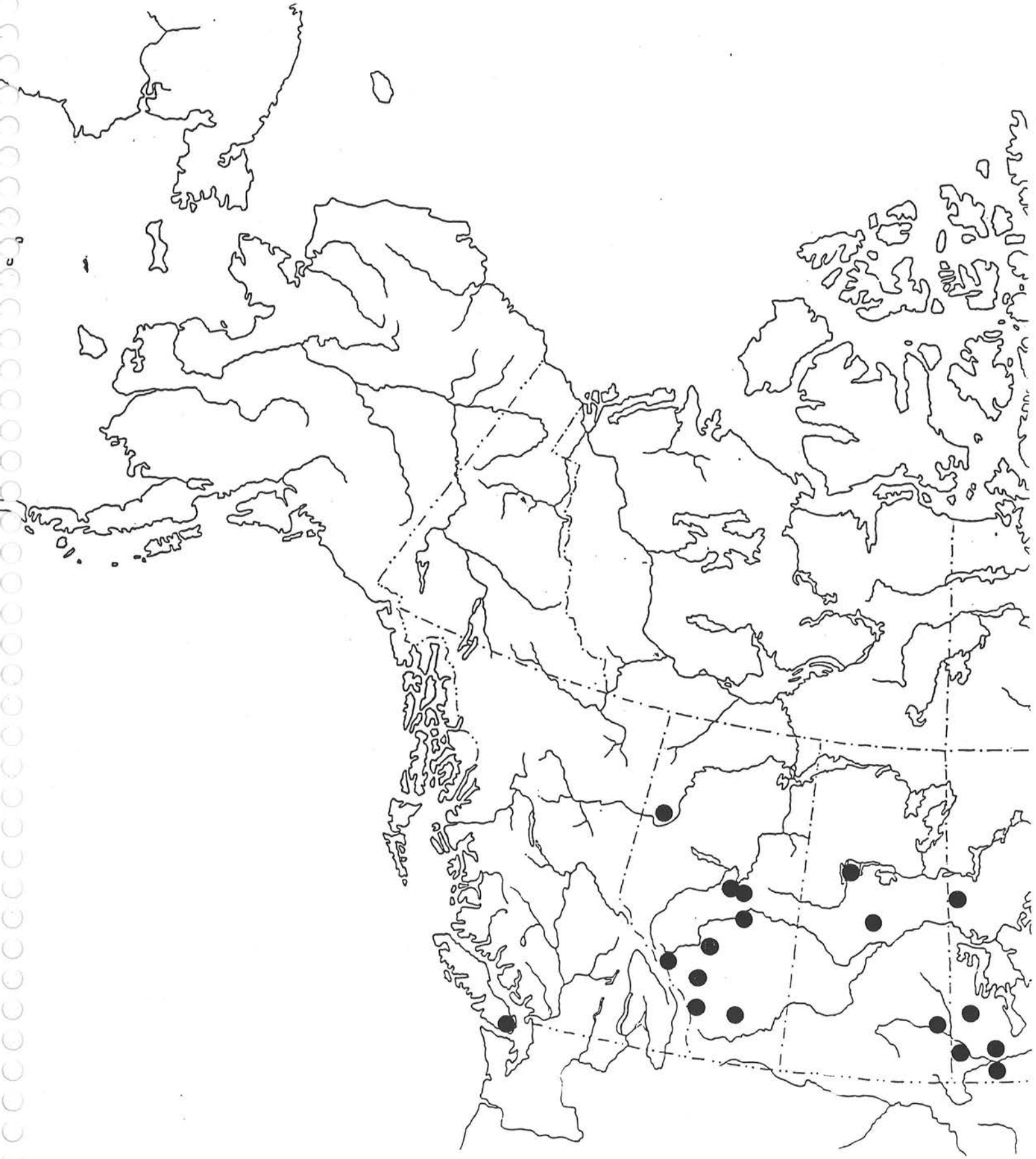
Grammia speciosa (Moeschler)



***Grammia phillipiana* Ferguson**

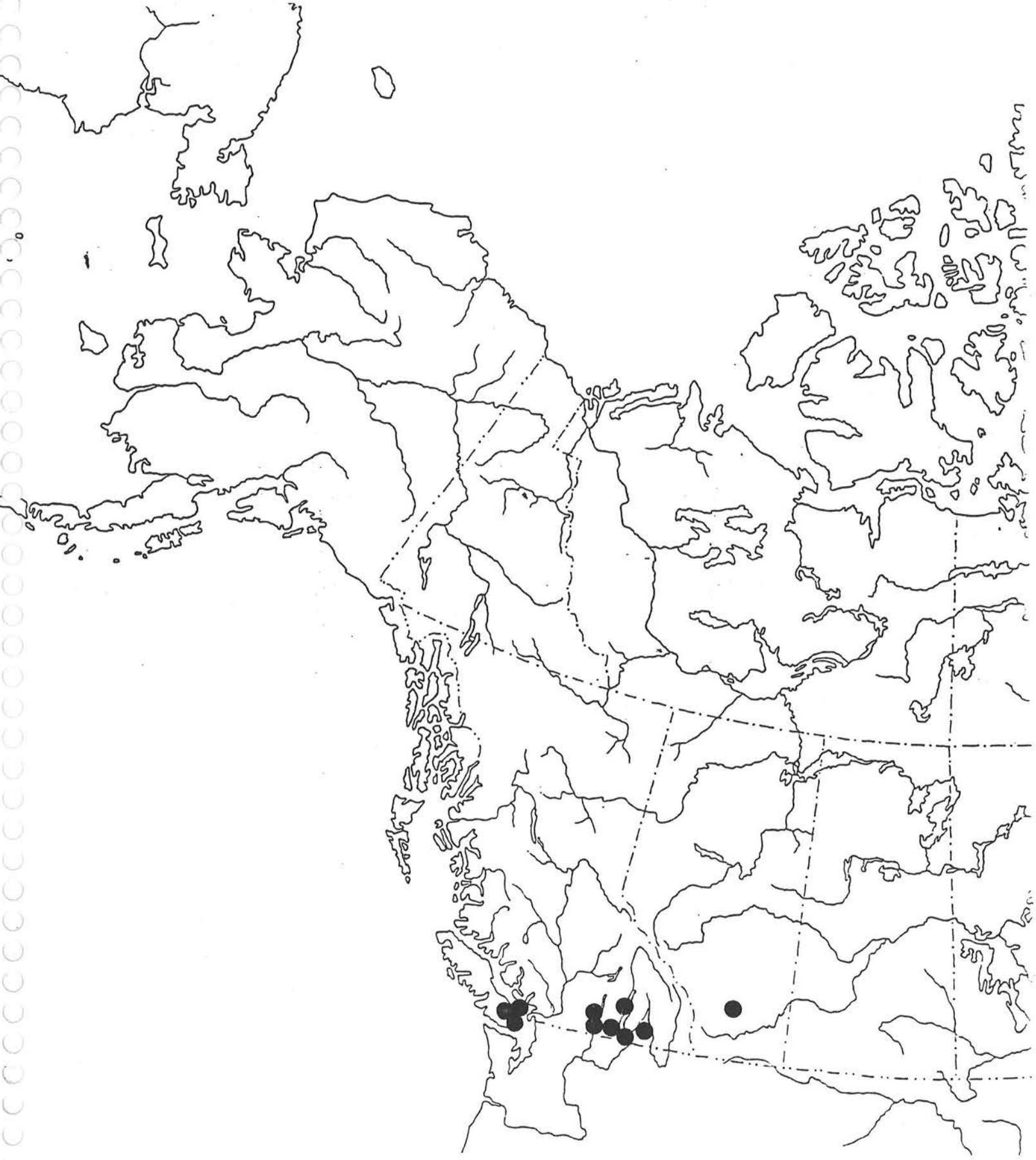


***Grammia parthenice* (W. Kirby)**

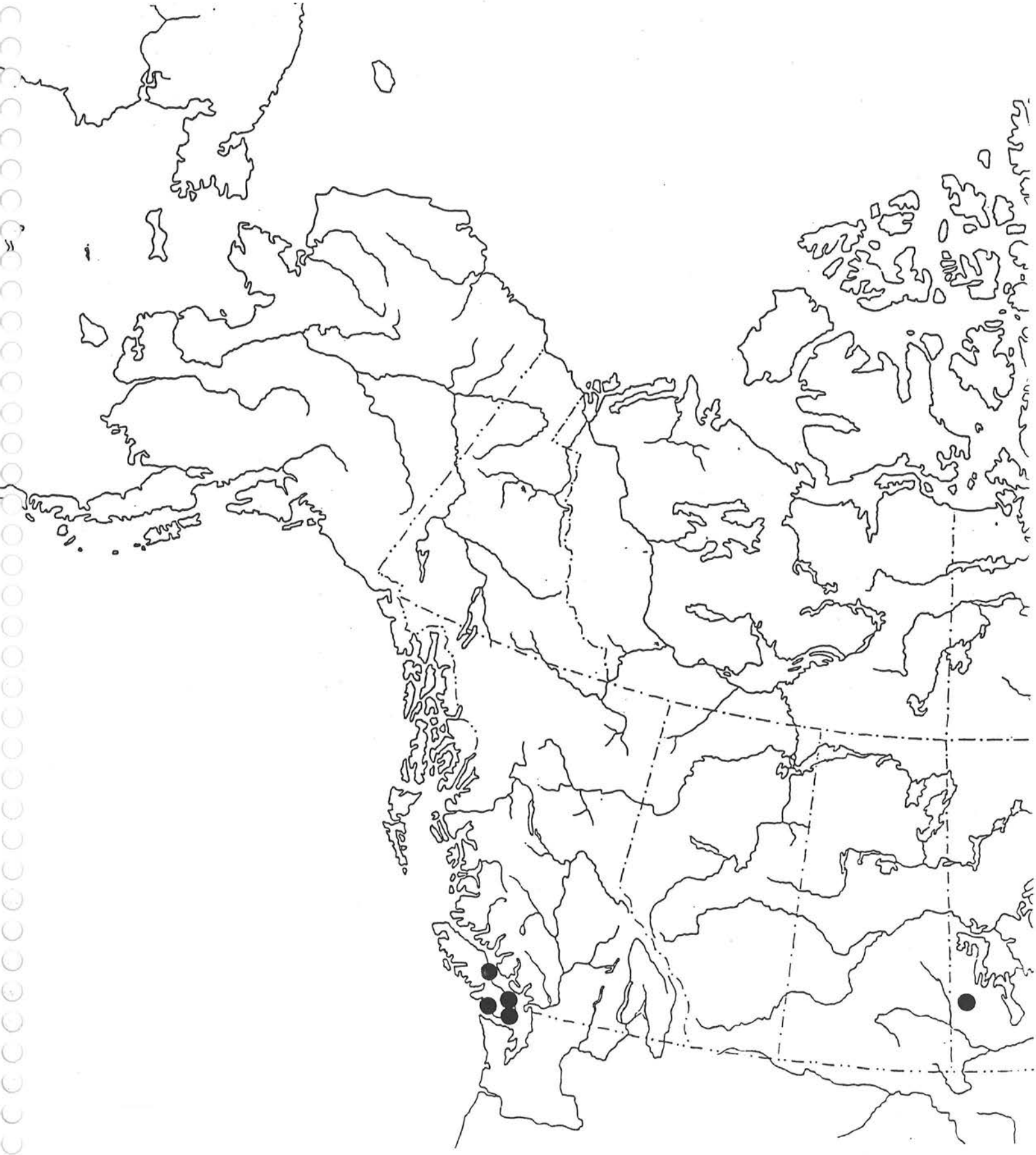


***Grammia virgo* (Linnaeus)**

***Grammia doris* (Boisduval)**

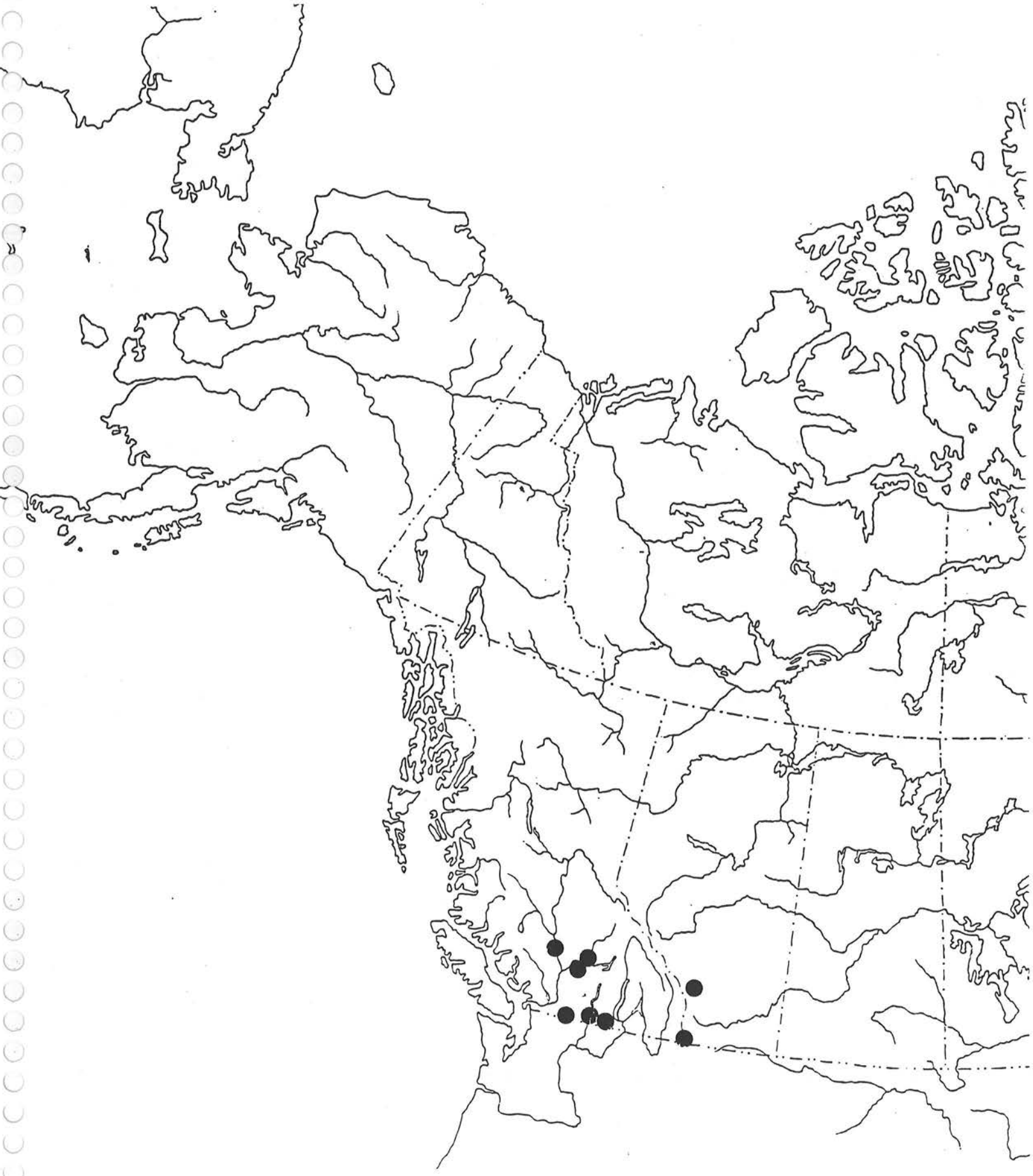


***Grammia ornata* (Packard)**

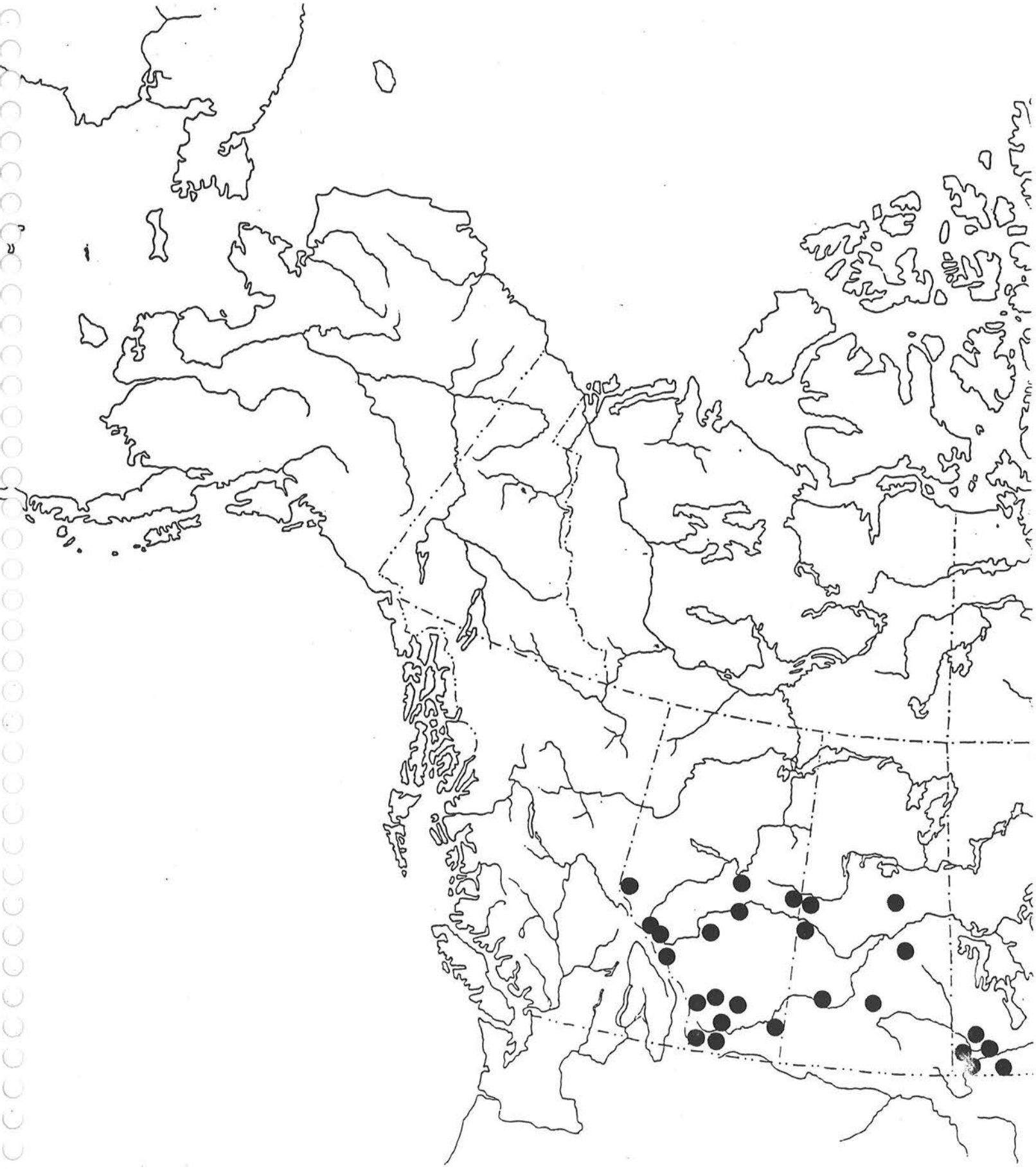


***Grammia complicata* (Walker)**

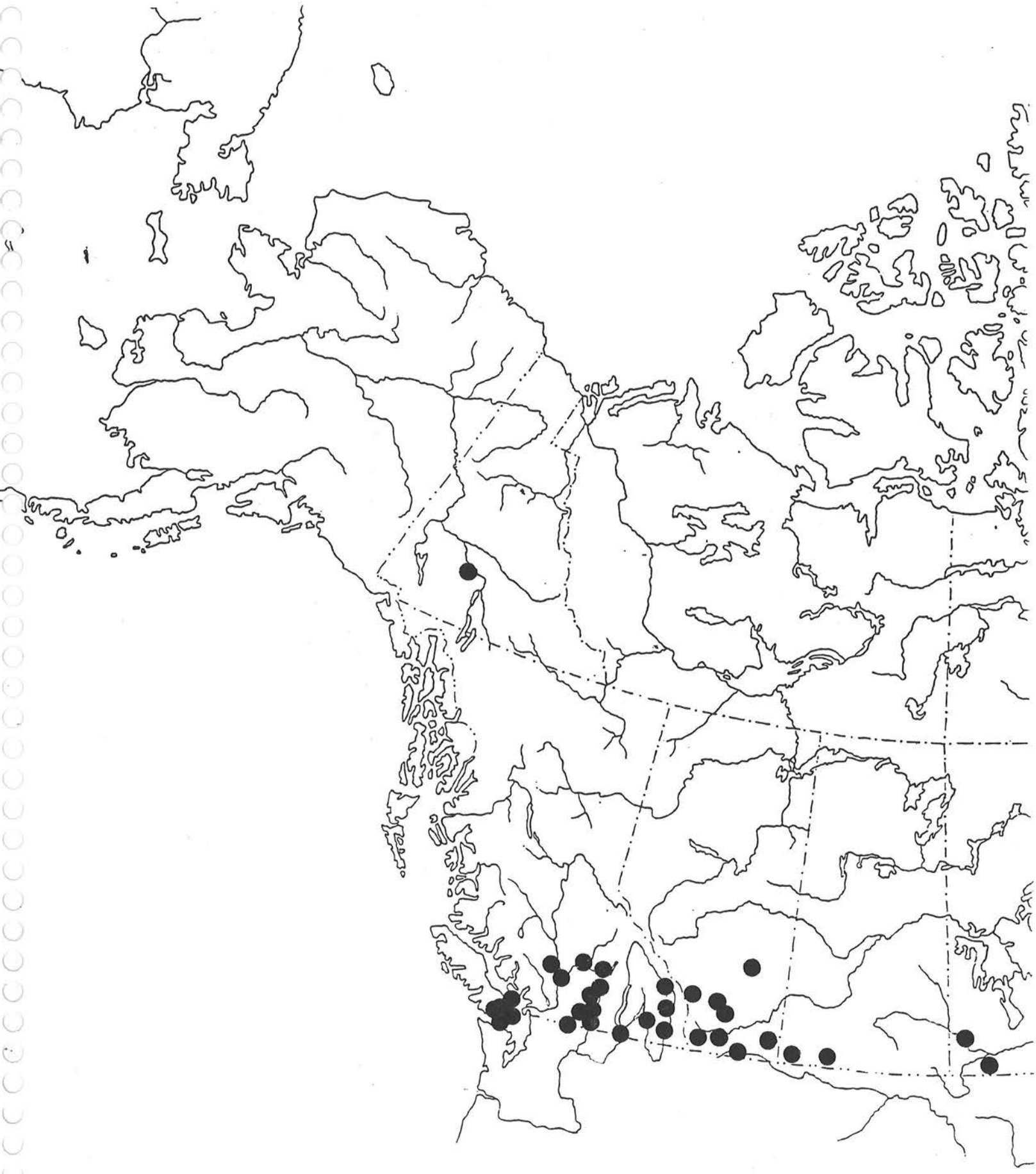
***Grammia blakei* (Grote)**



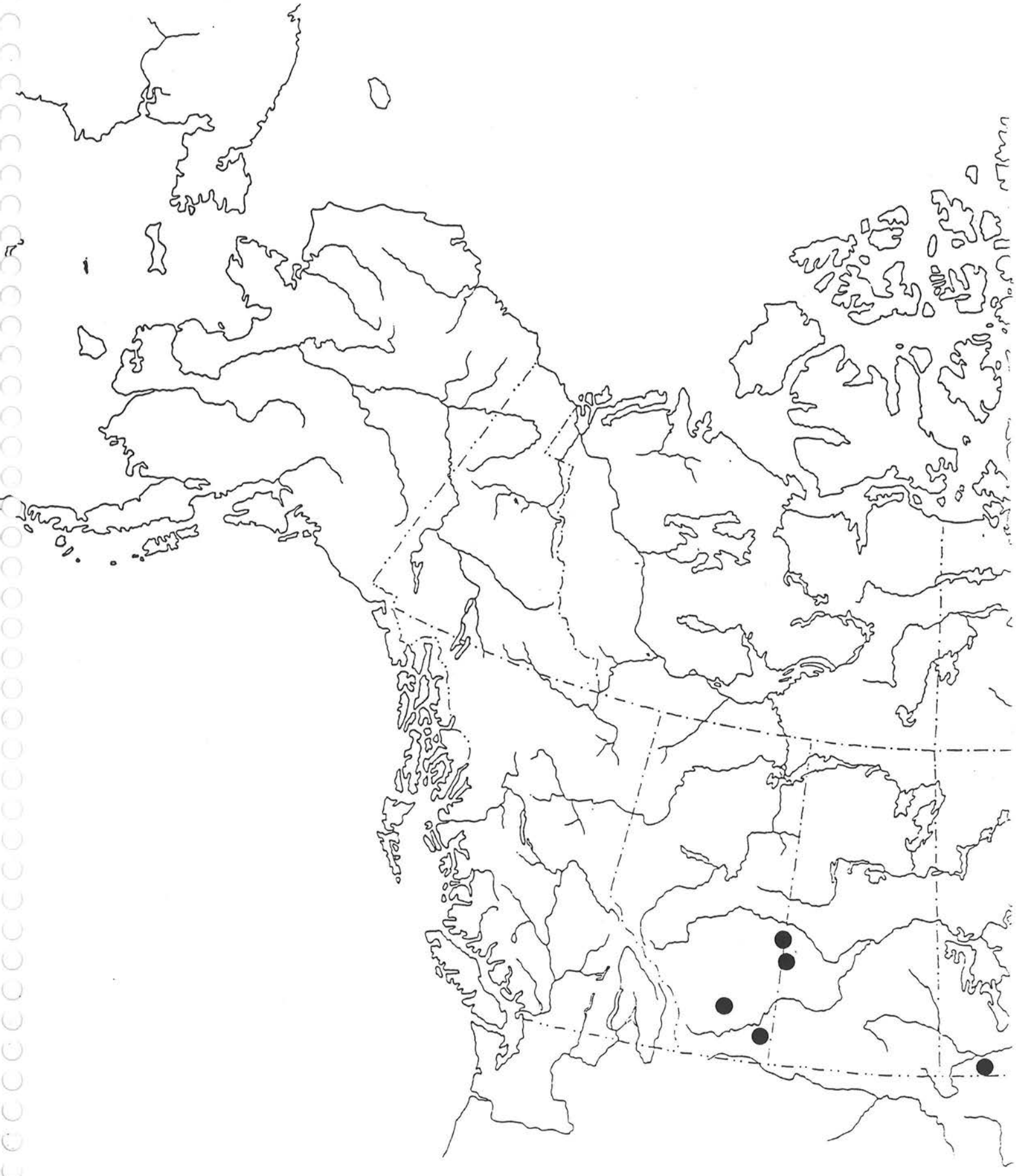
***Grammia elongata* (Stretch)**



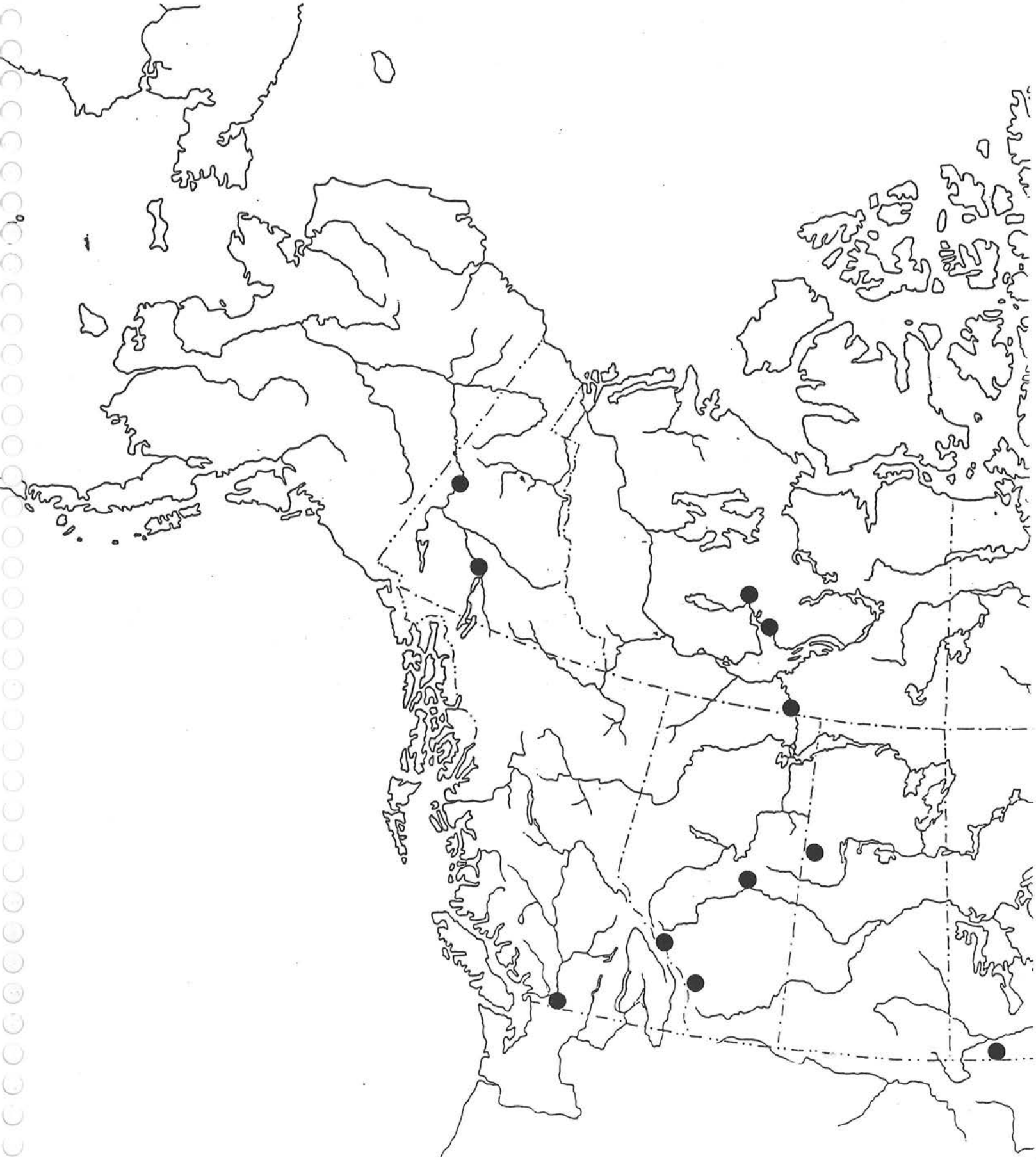
***Grammia williamsii* (Dodge)**



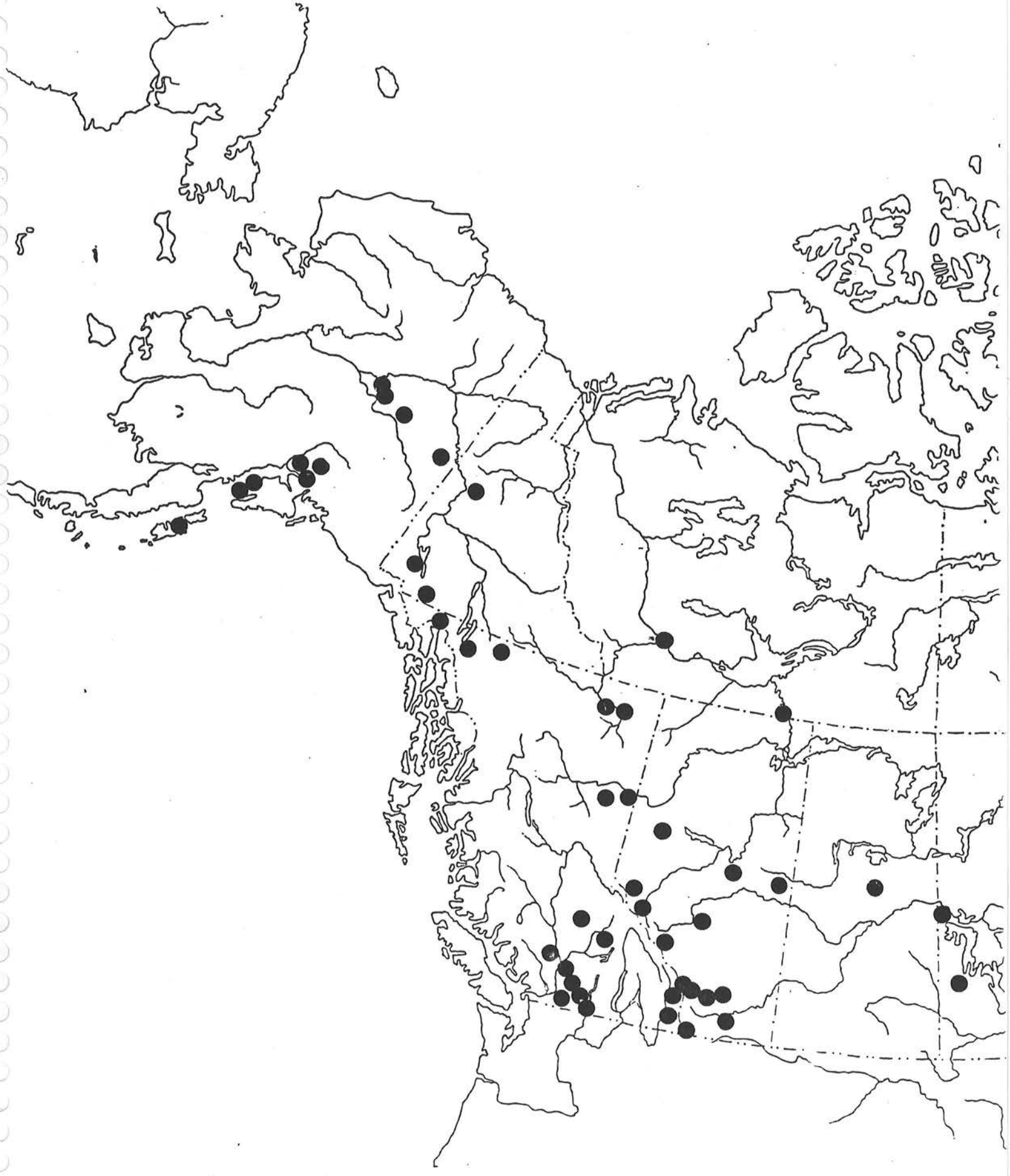
***Grammia nevadensis* (Grote and Robinson) Complex**



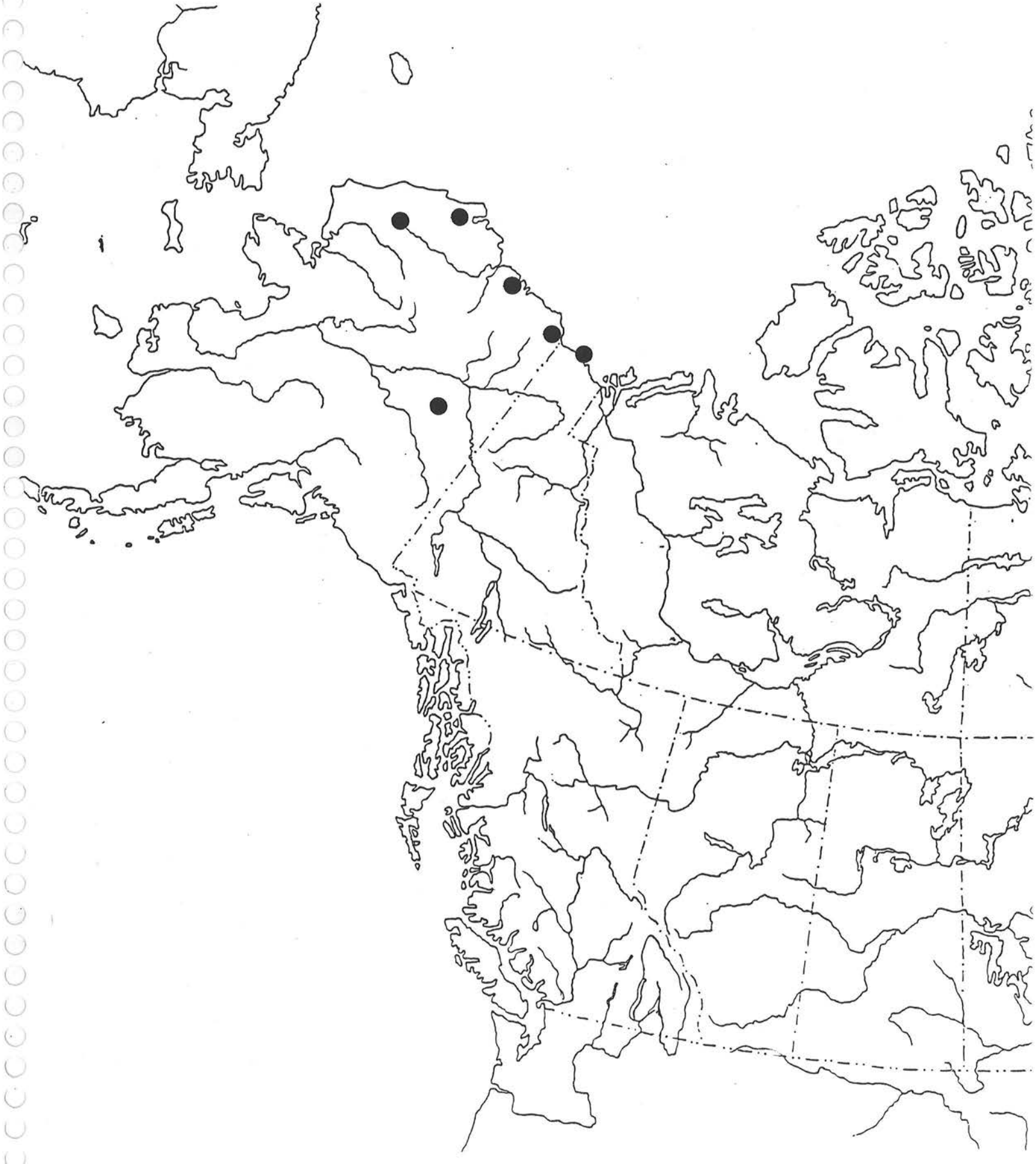
***Grammia favorita* (Neumoegen)**



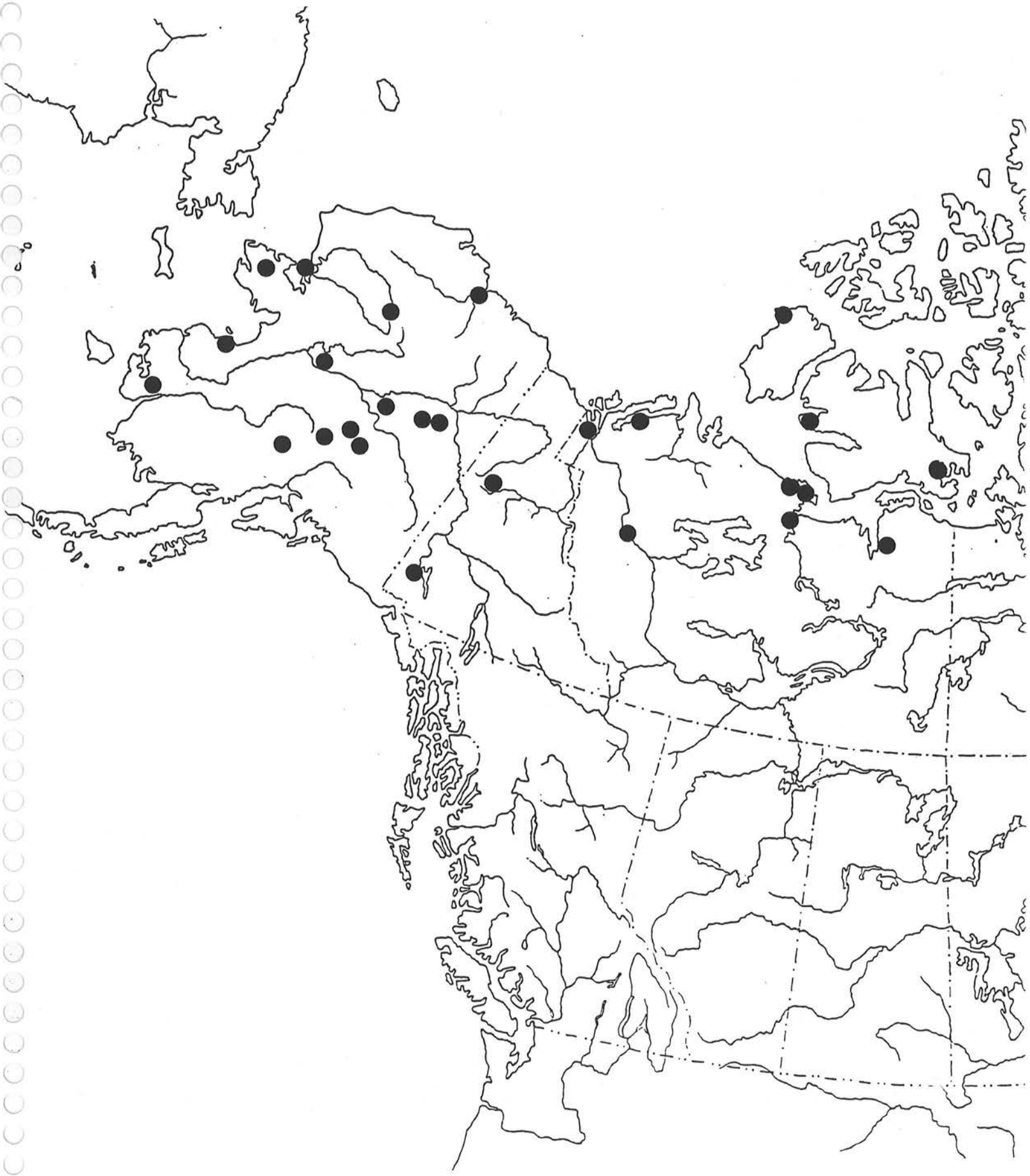
***Grammia celia* (Saunders)**



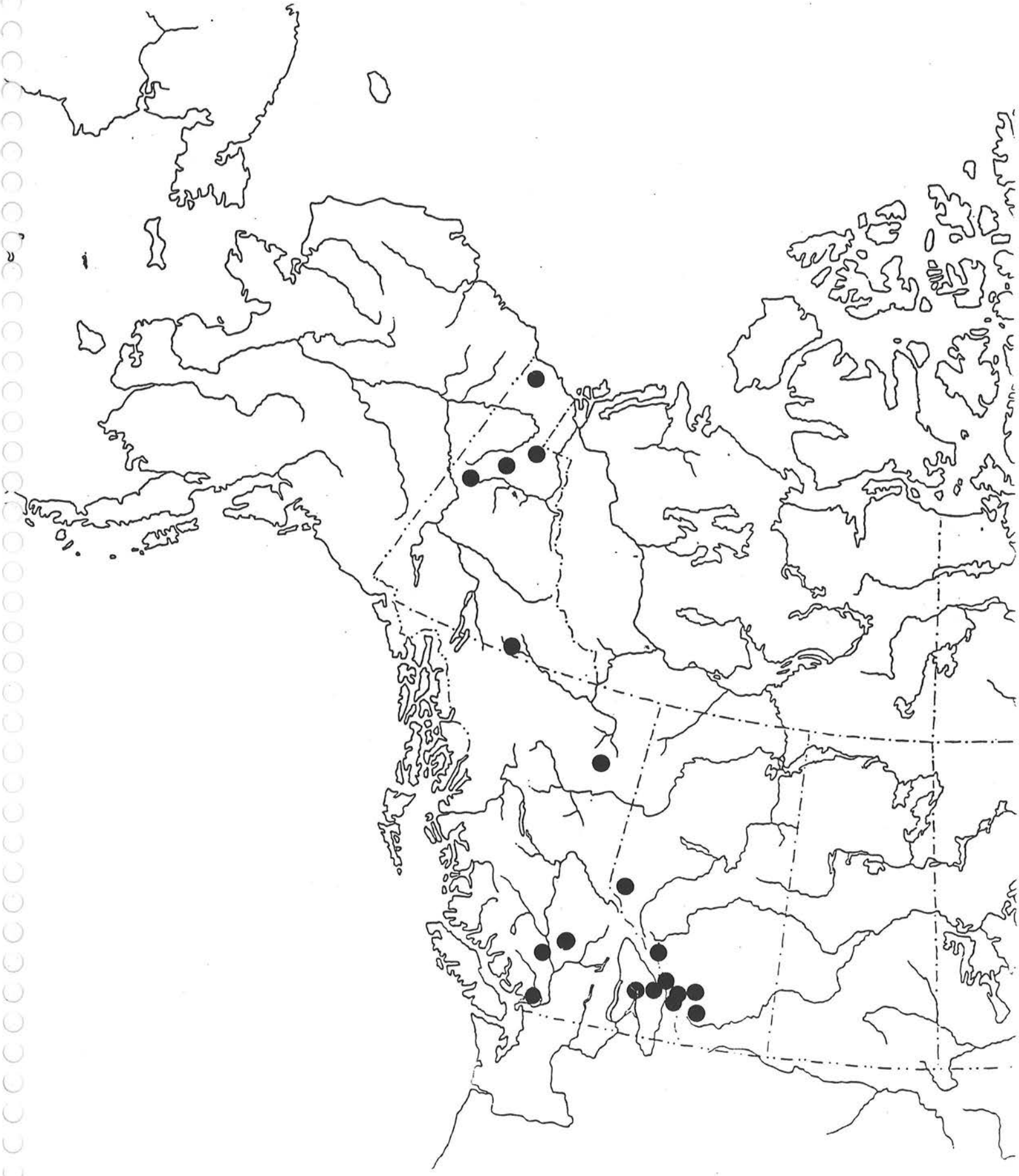
Parasemia plantaginis (Linnaeus)



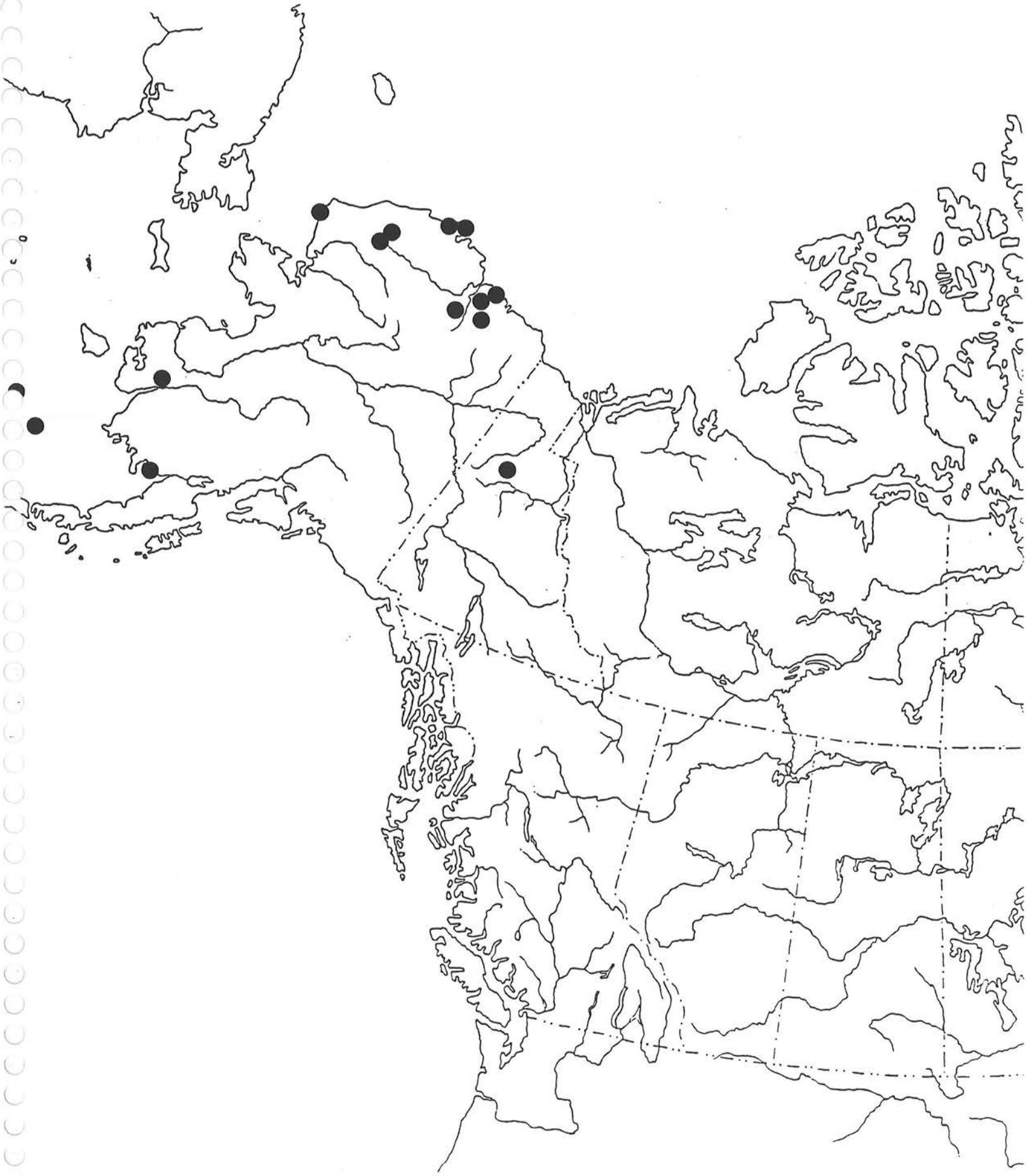
Acerbia alpina (Quensel)



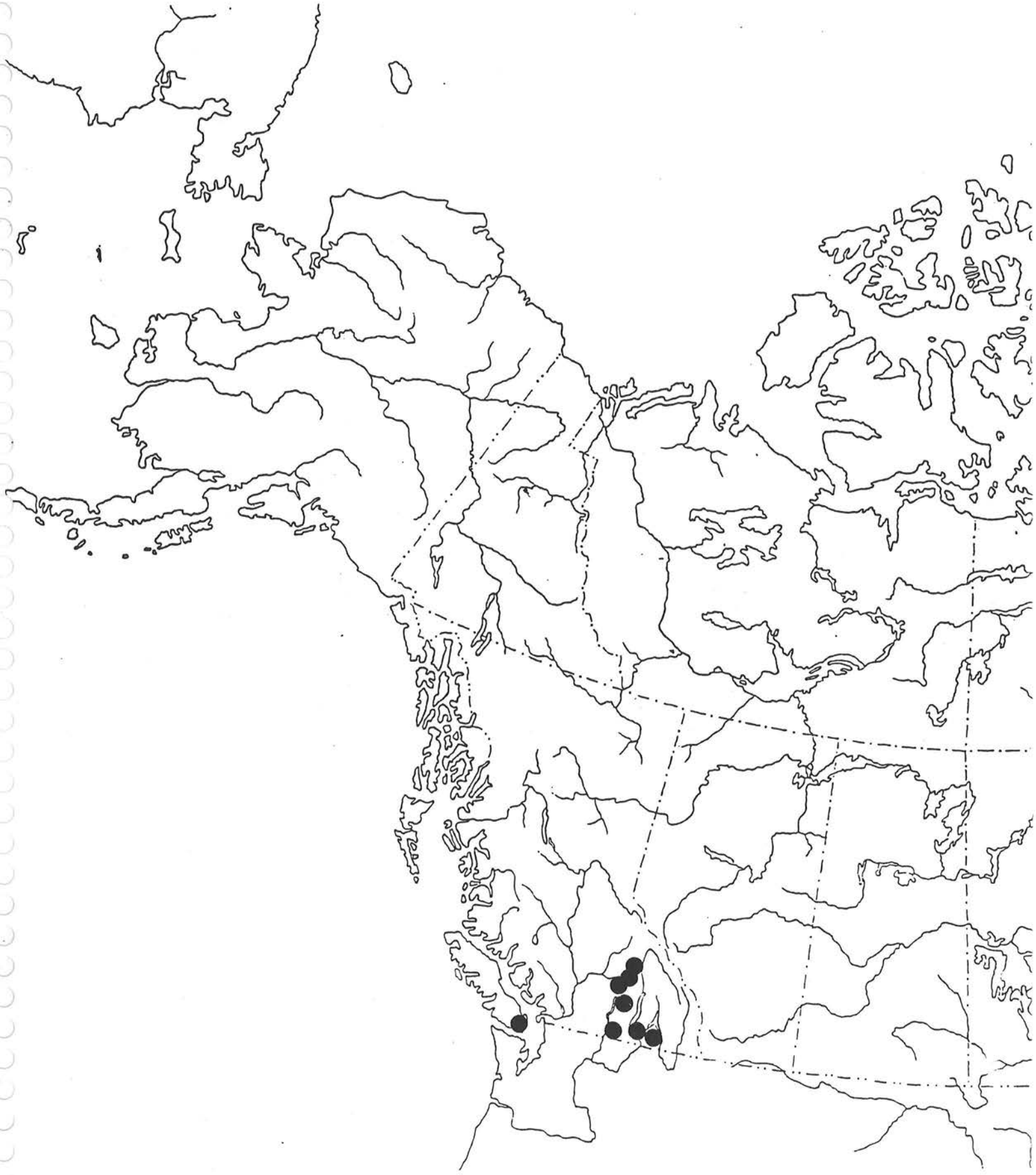
***Pararctia lapponica* (Thunberg)**



***Pararctia yarrowii* (Stretch)**

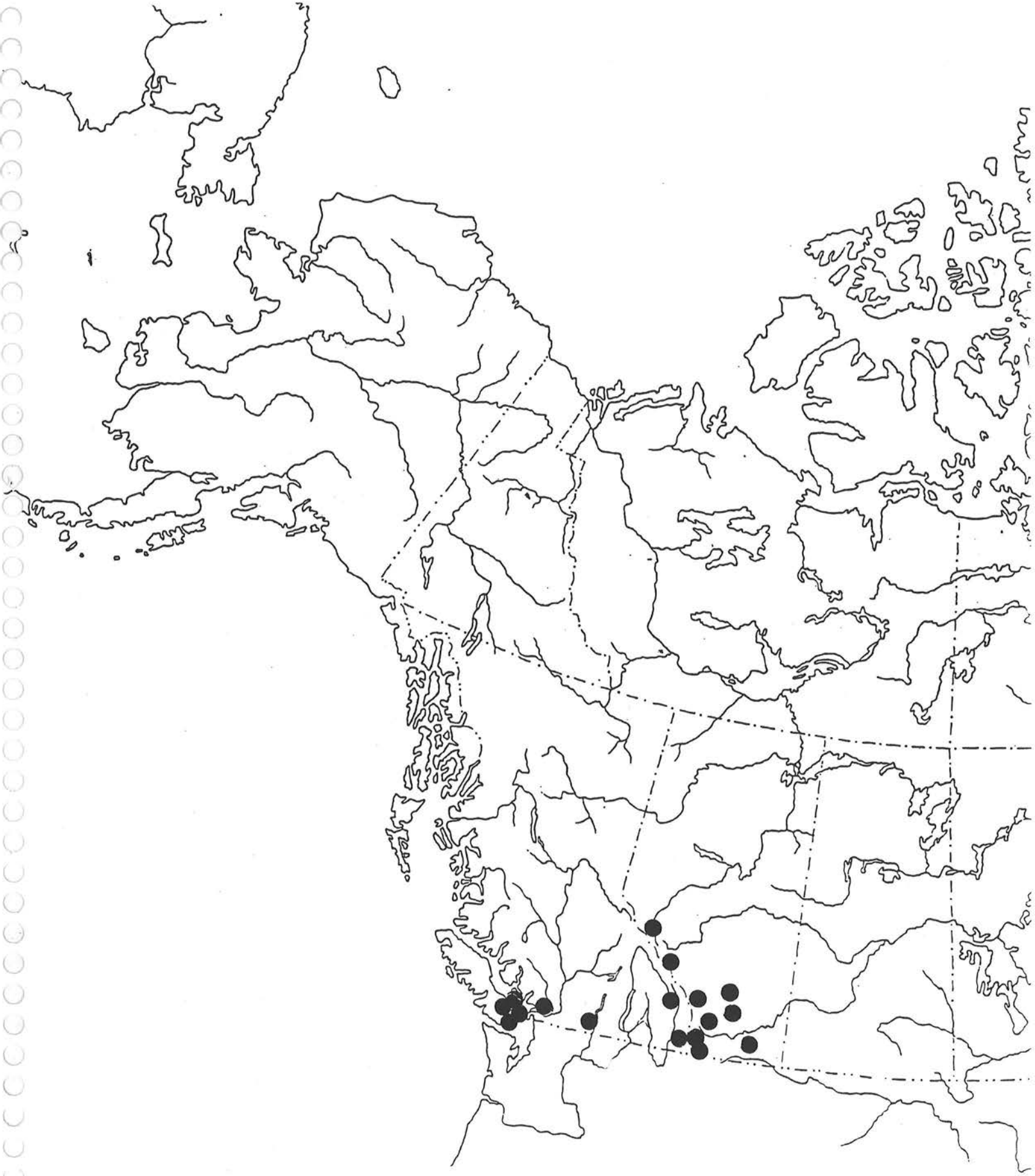


***Pararctia subnebulosa* (Dyar)**

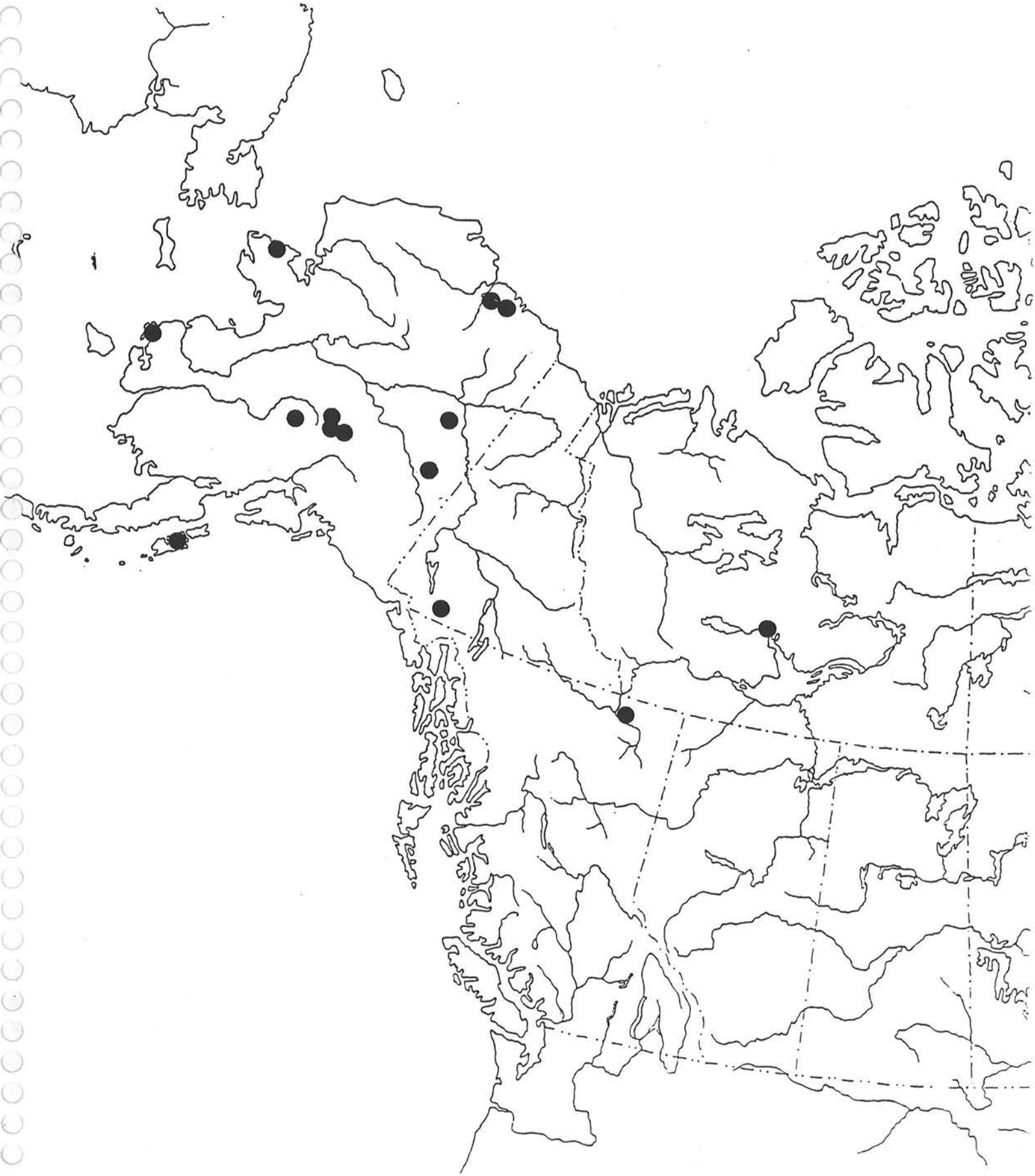


***Platyprepia virginalis* (Boisduval)**

***Arctia caja americana* Harris**

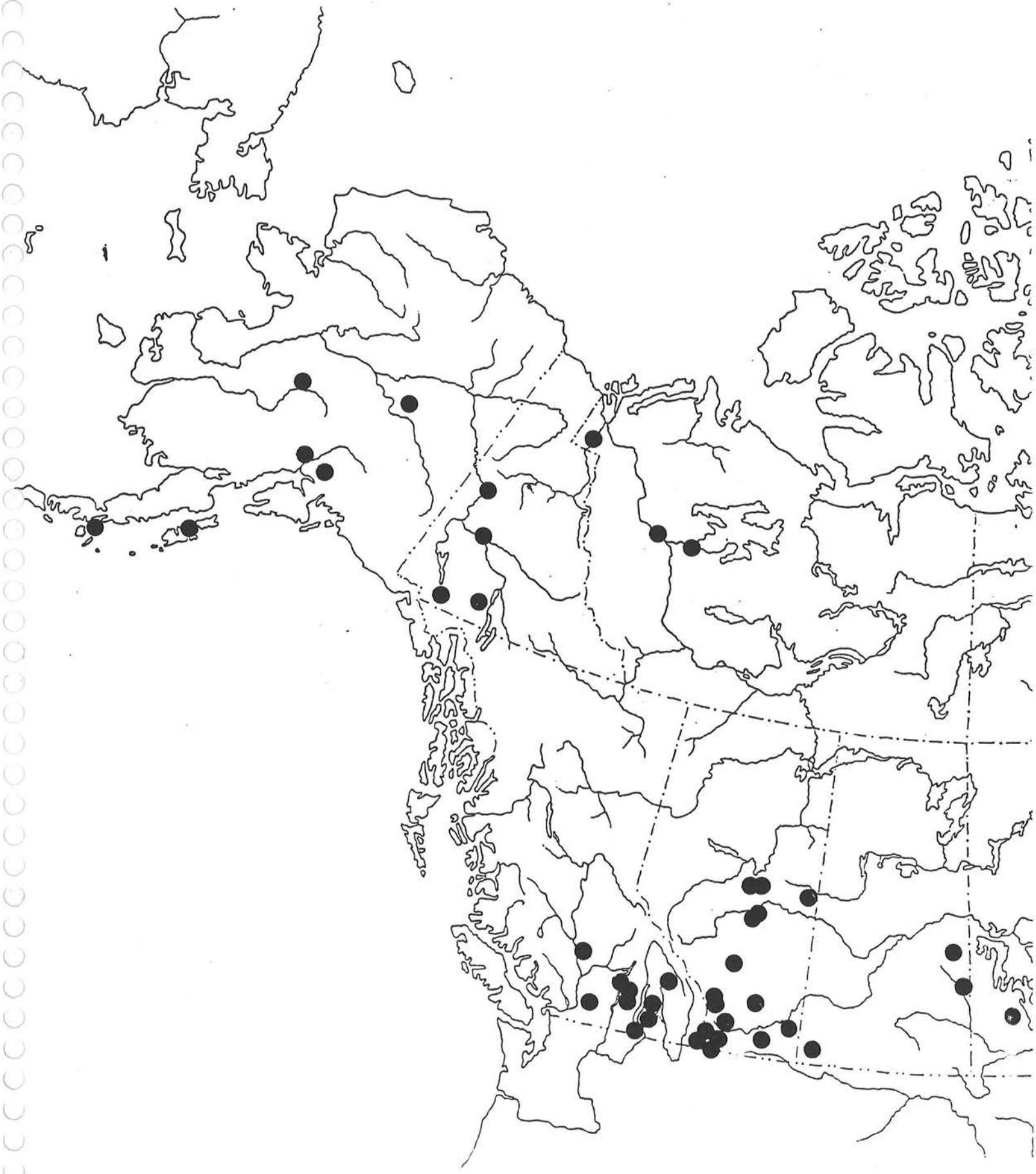


***Arctia caja waroi* Barnes and Benjamin**

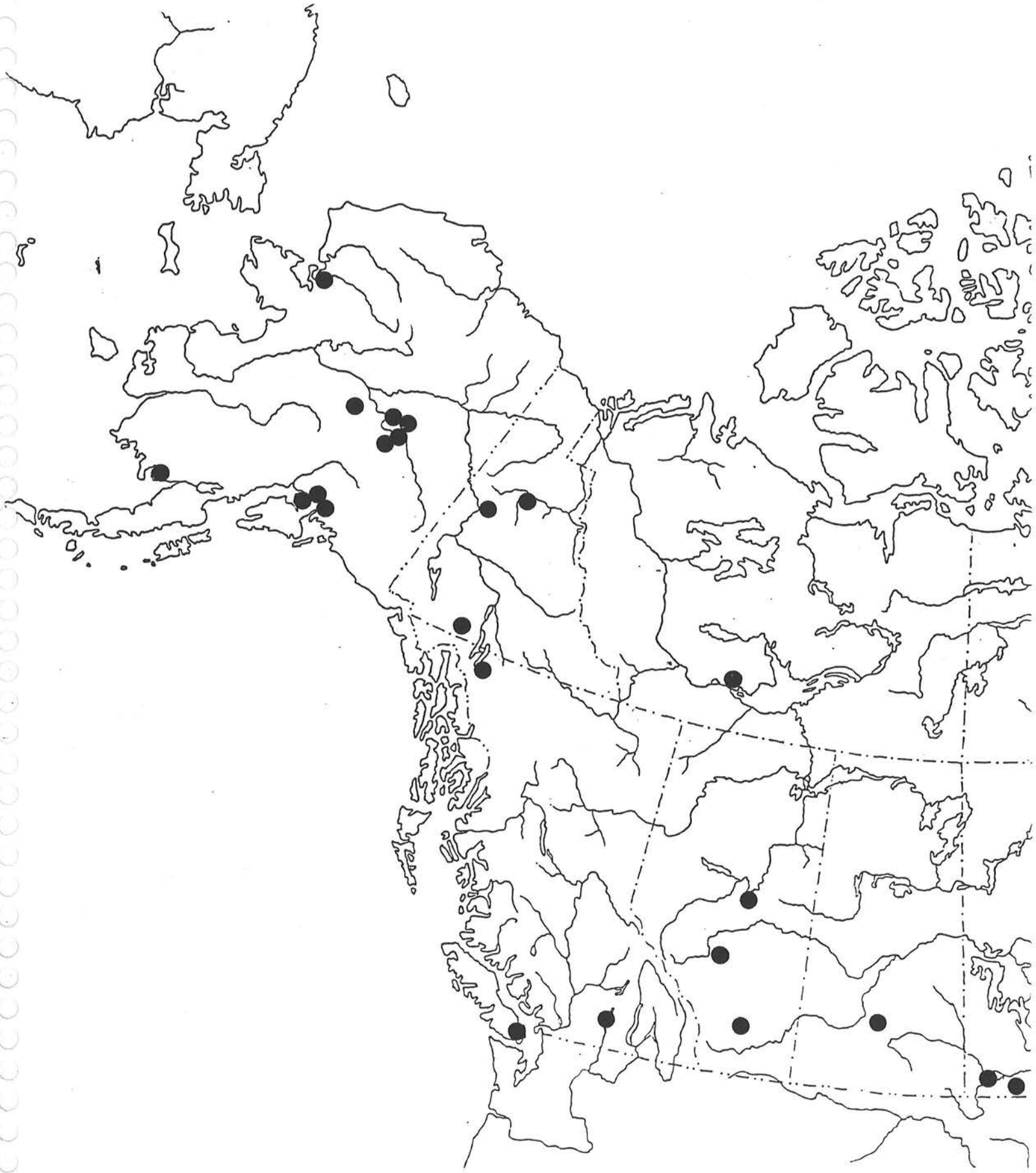


***Arctia opulenta* (Henry Edwards)**

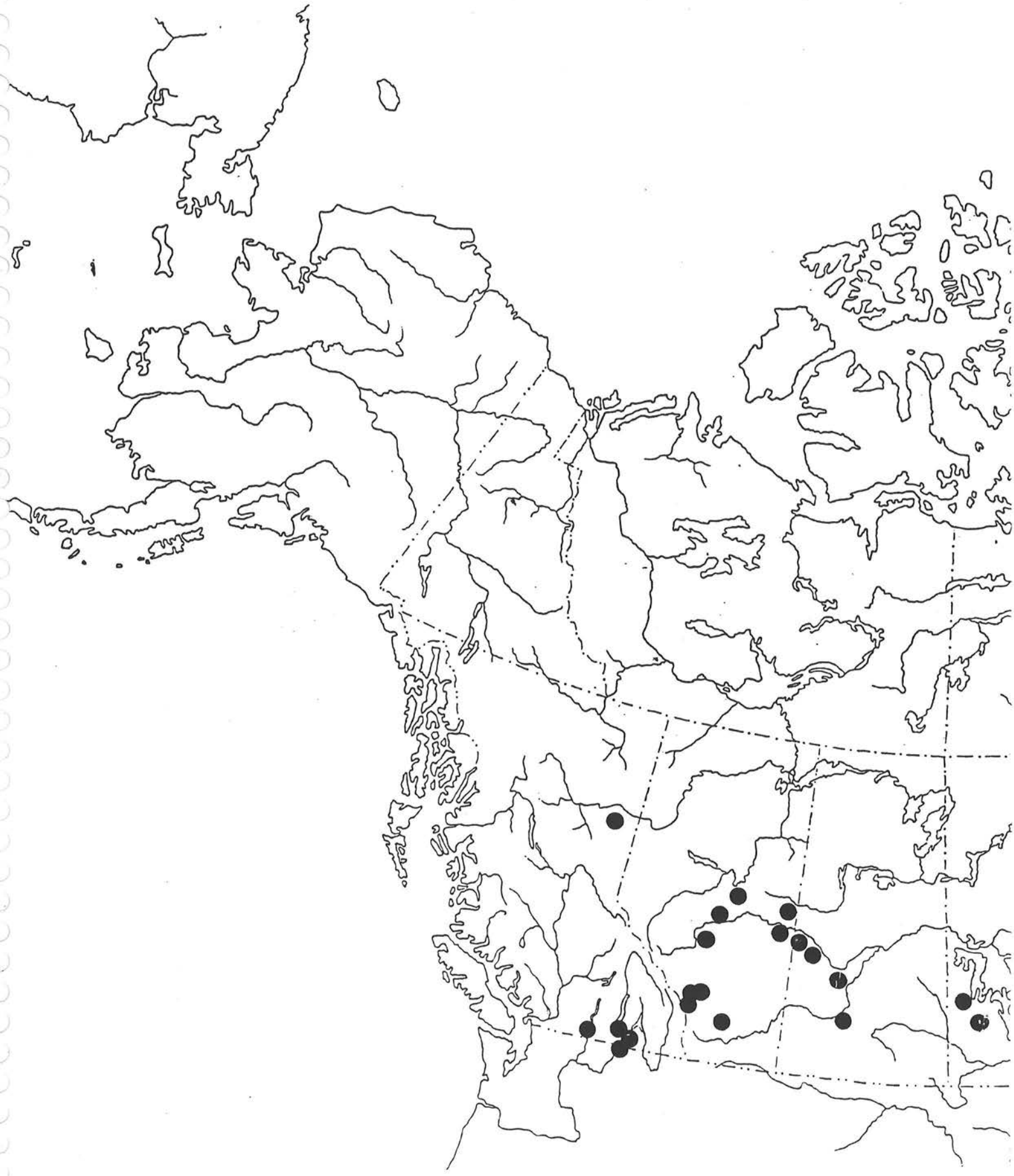
***Arctia brachyptera* Troubridge & Laf.**



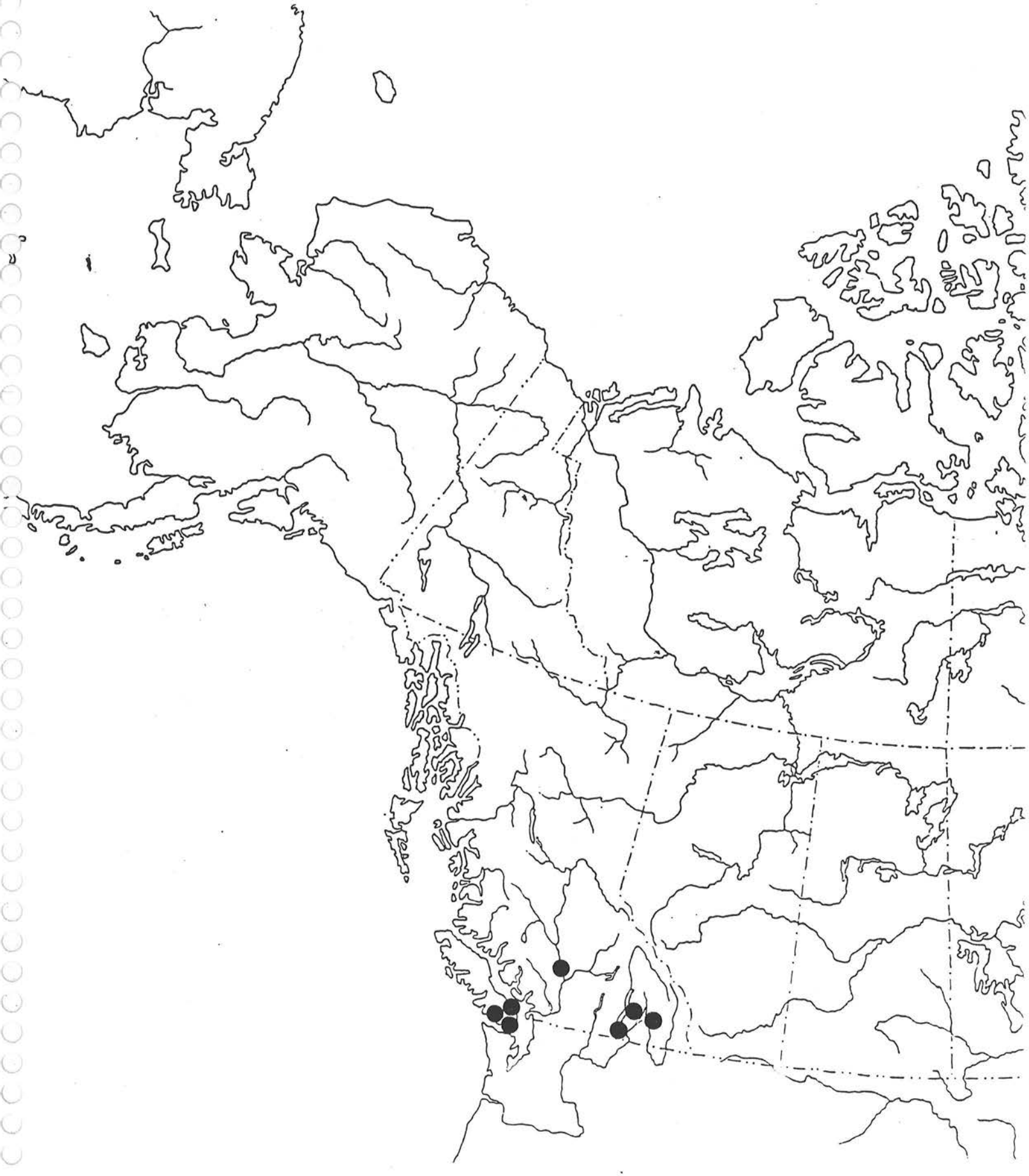
***Platarctia parthenos* (Harris)**



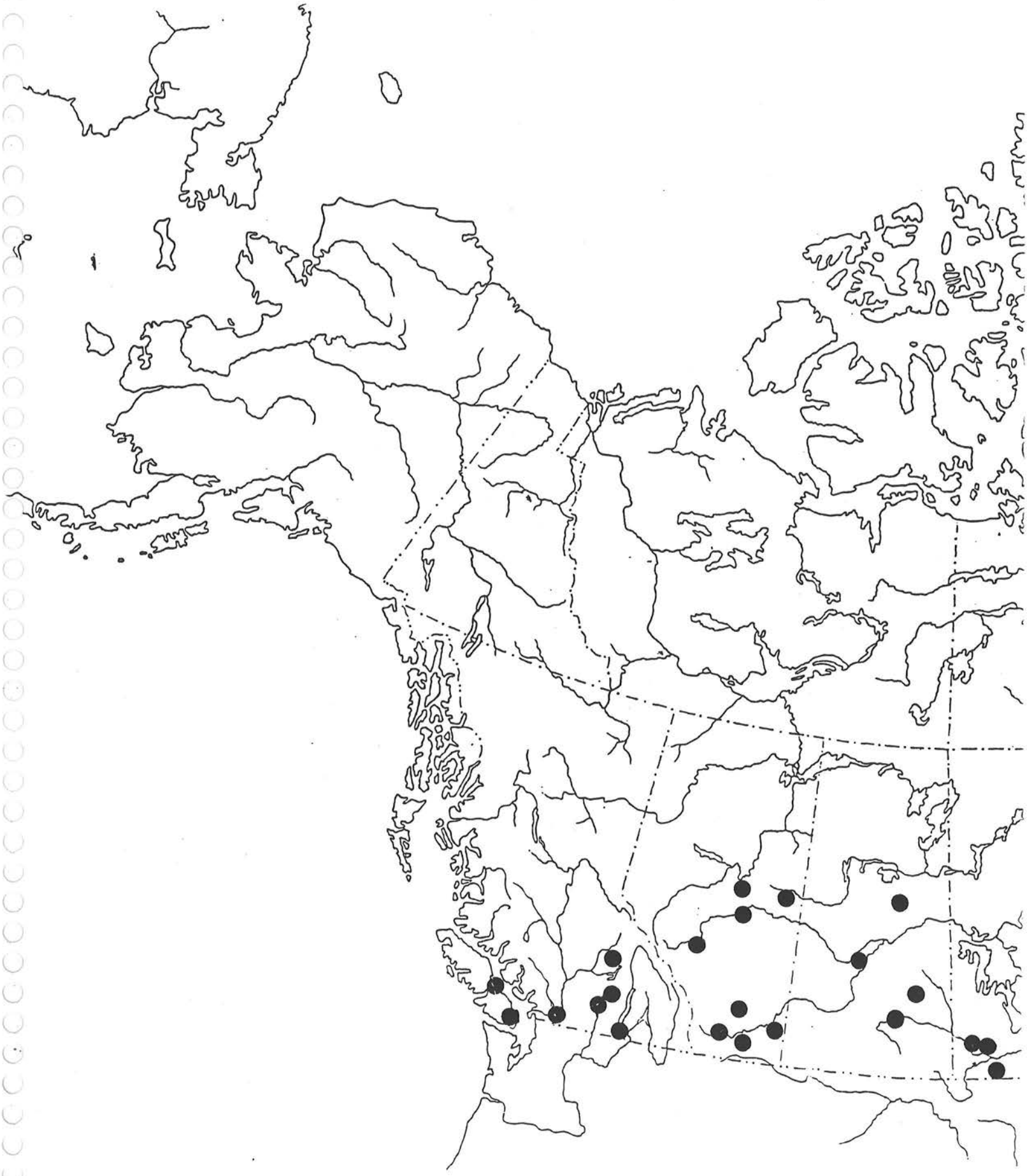
***Phragmatobia fuliginosa* (Linnaeus)**



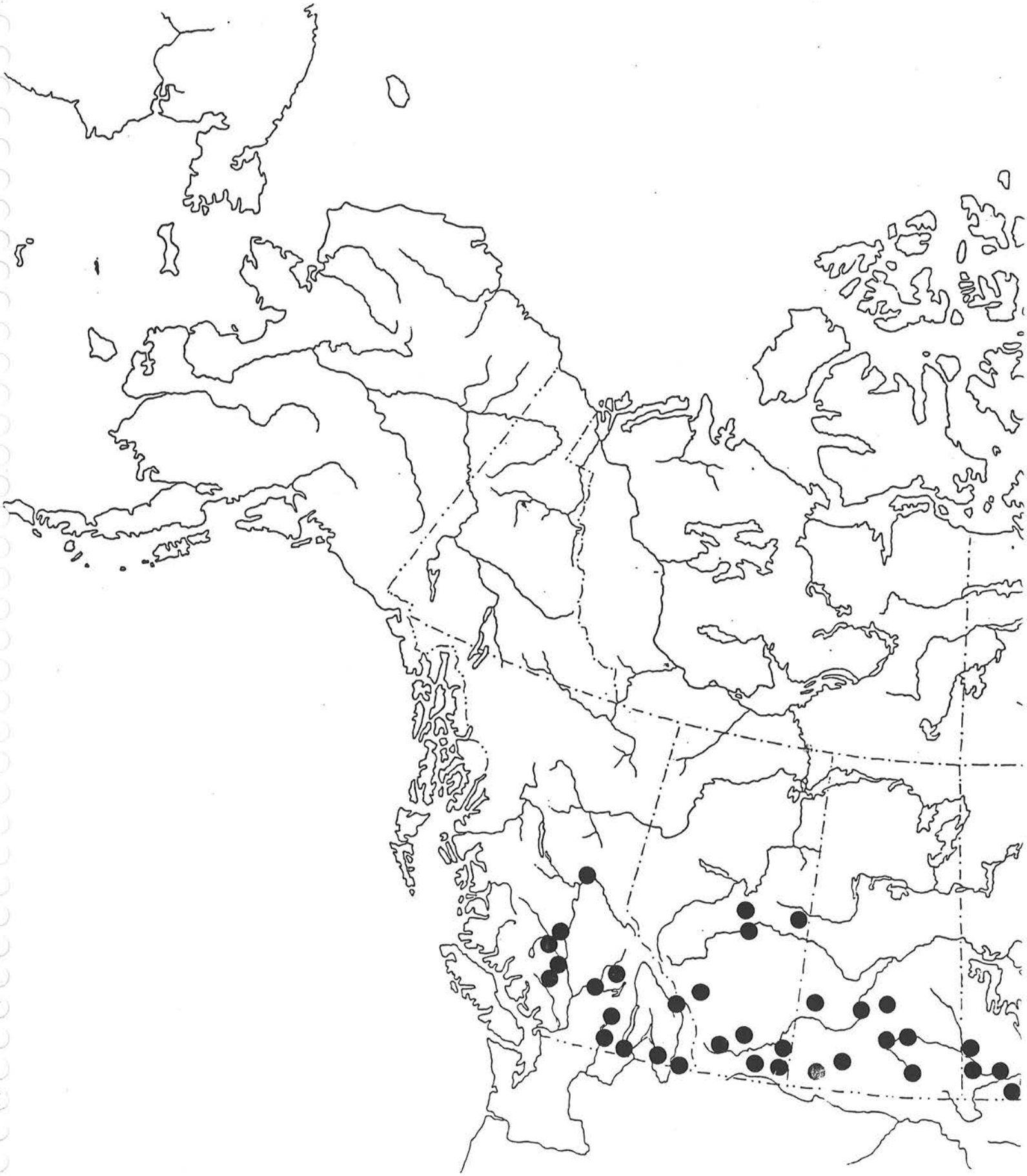
***Phragmatobia assimilans* Walker**



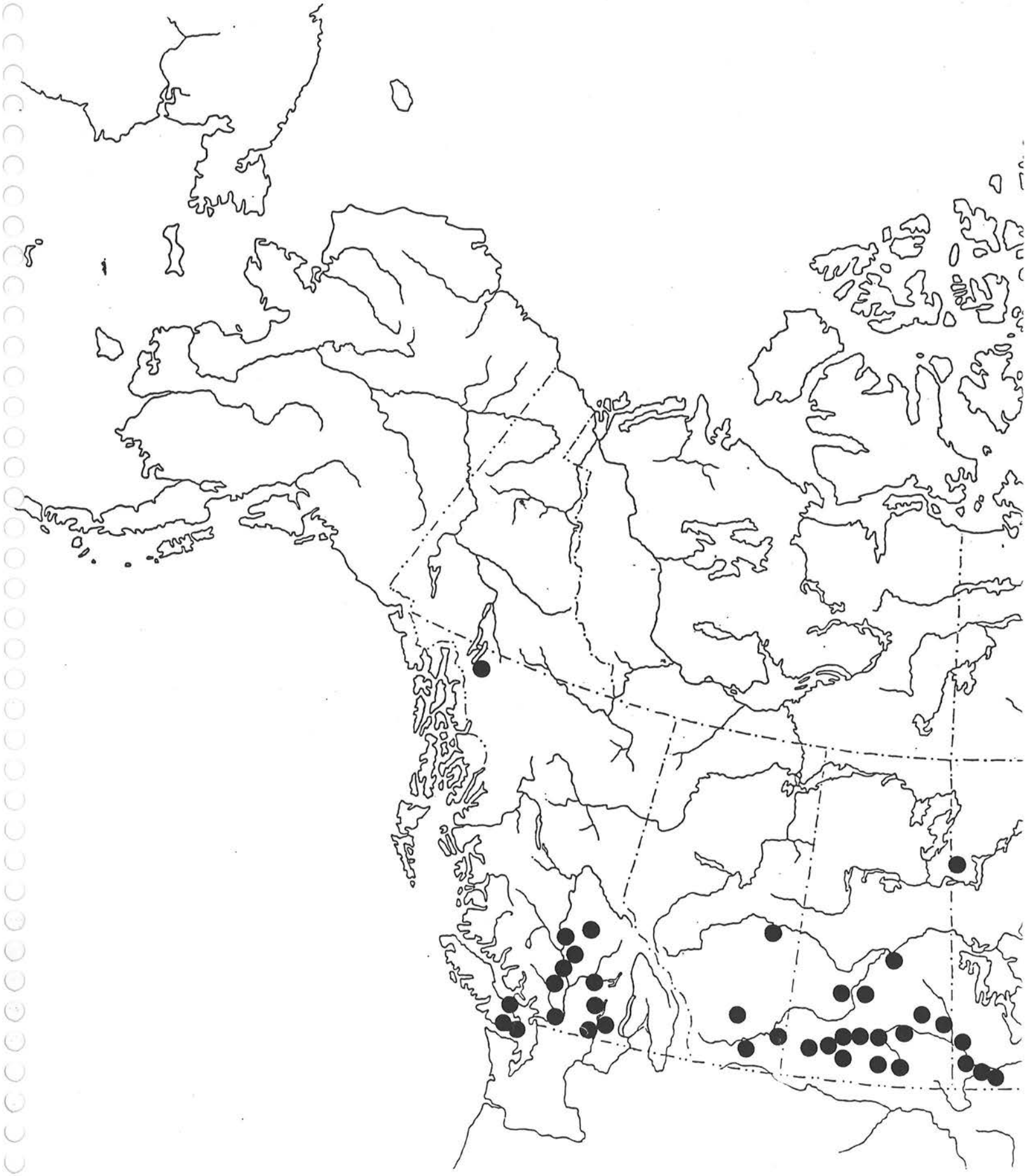
***Leptarctia californiae* (Walker)**



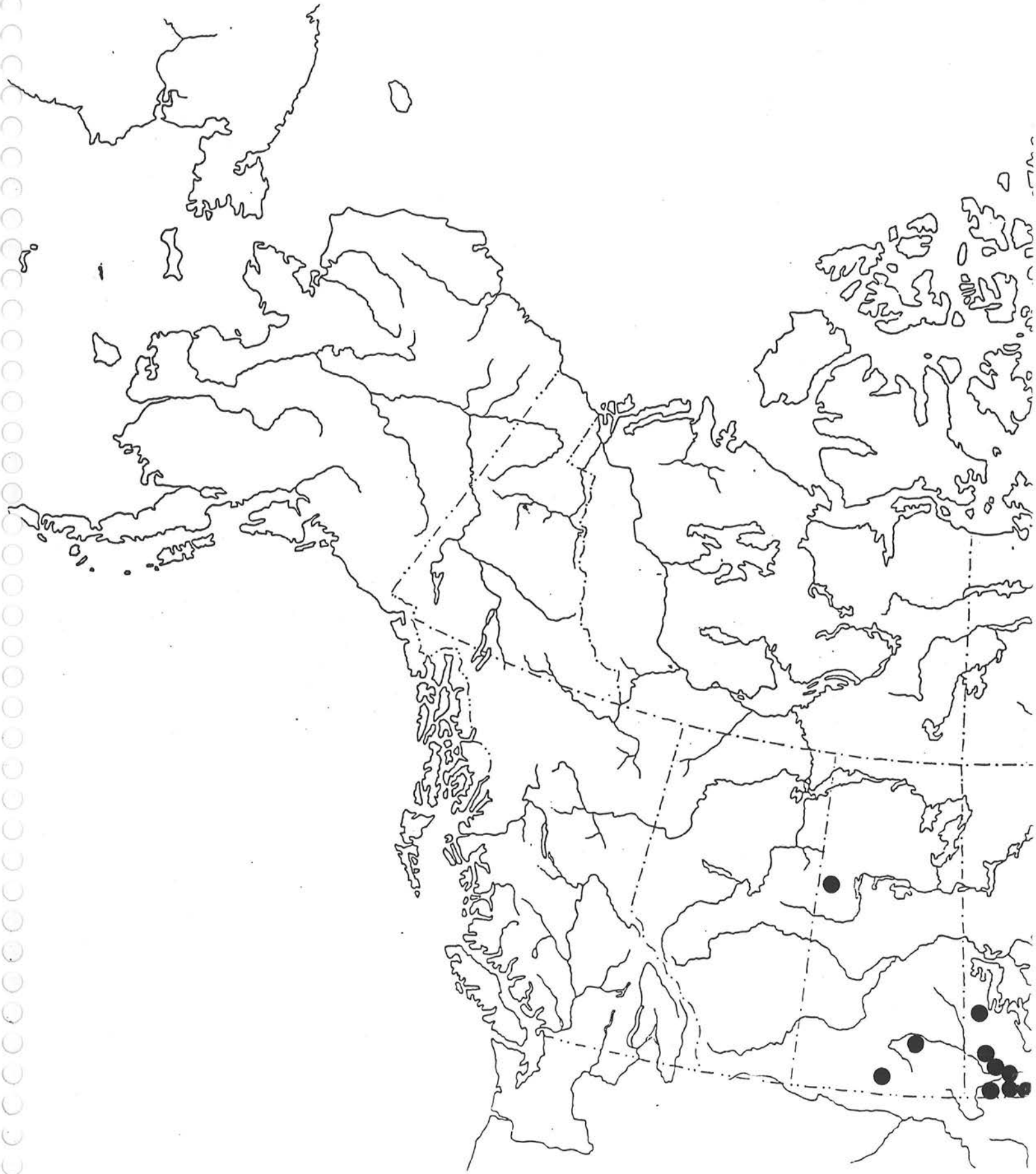
Pyrrharctia isabella (J.E. Smith)



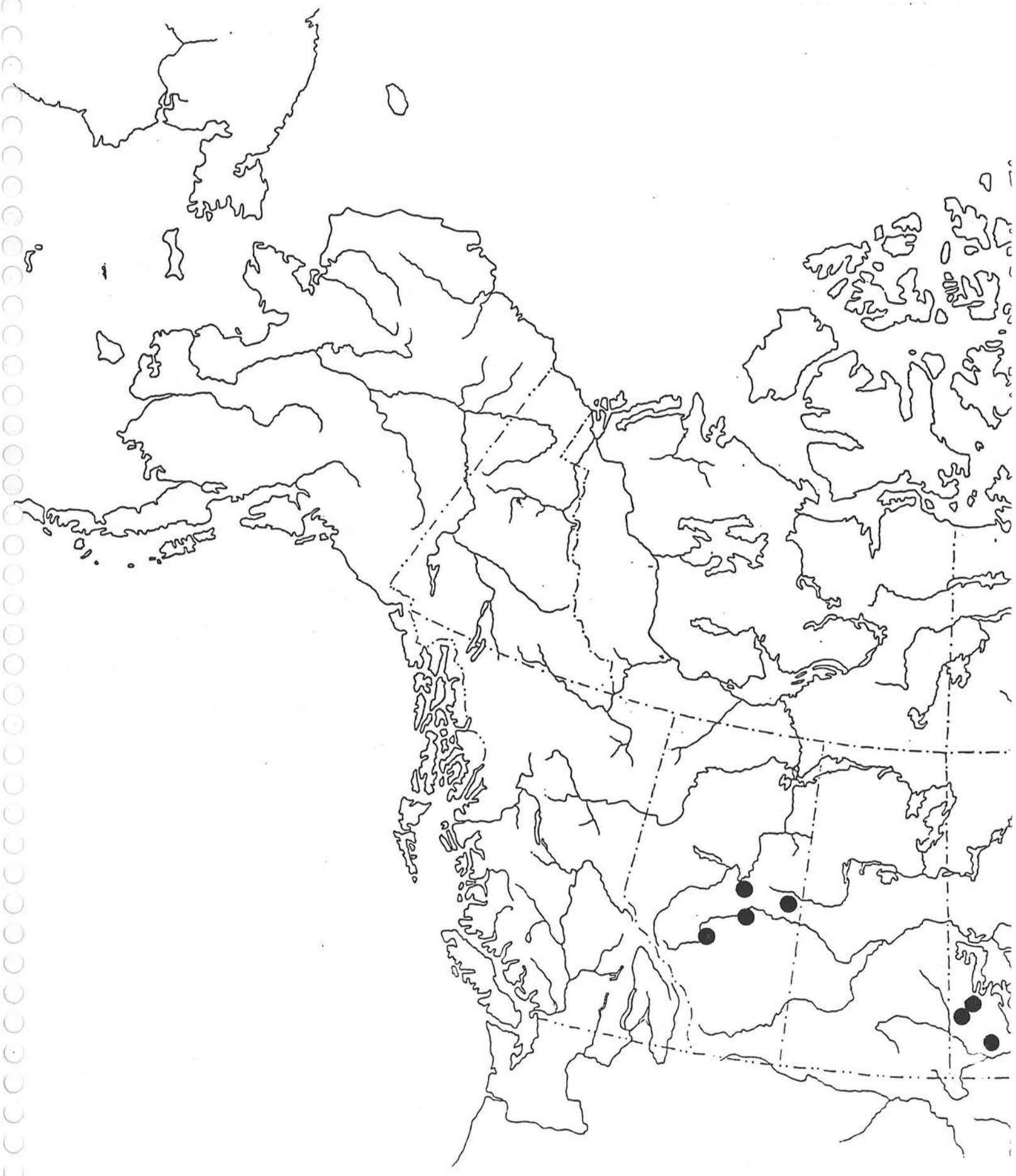
***Estigmene acrea* (Drury)**



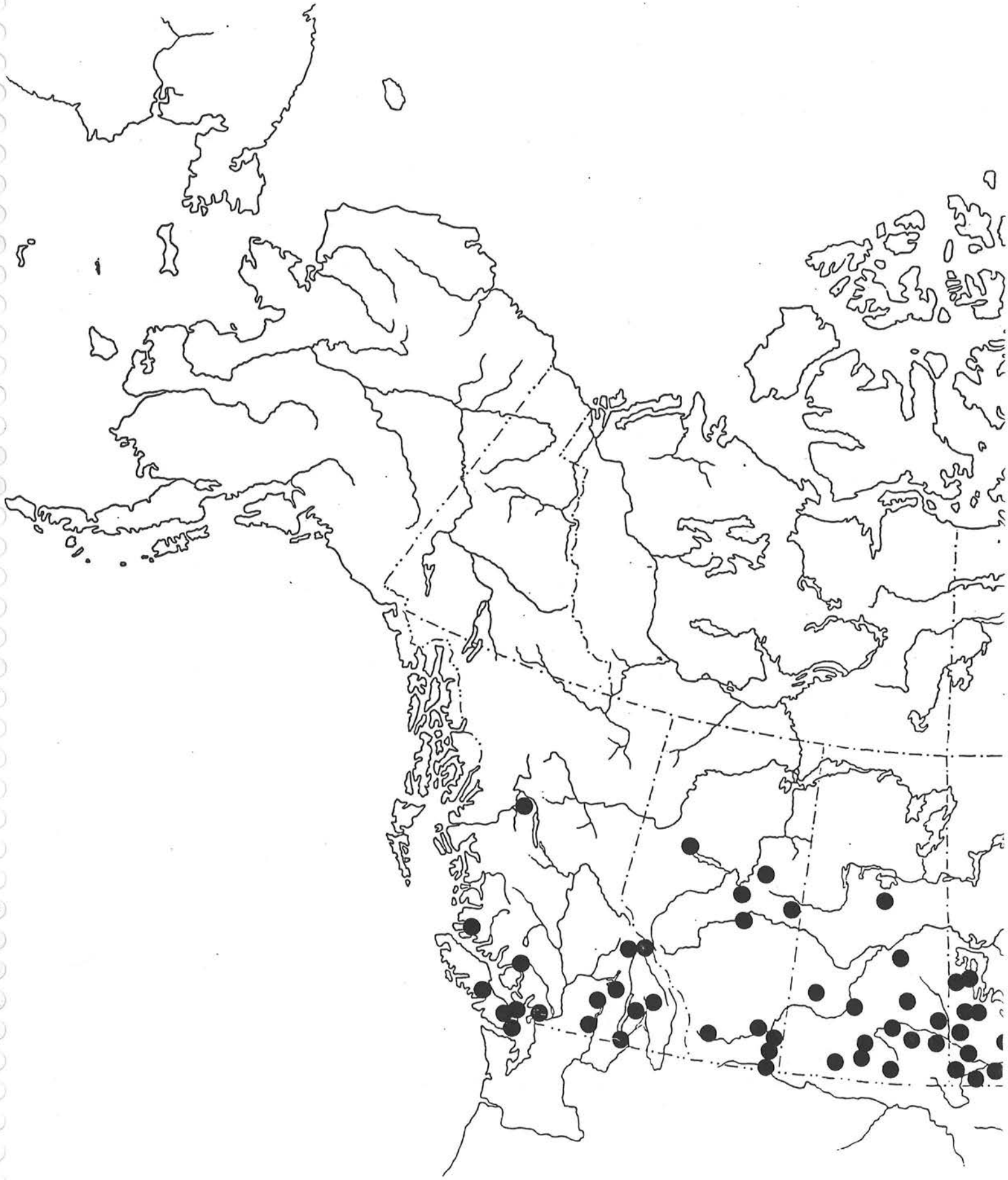
Hyphantria cunea (Drury)



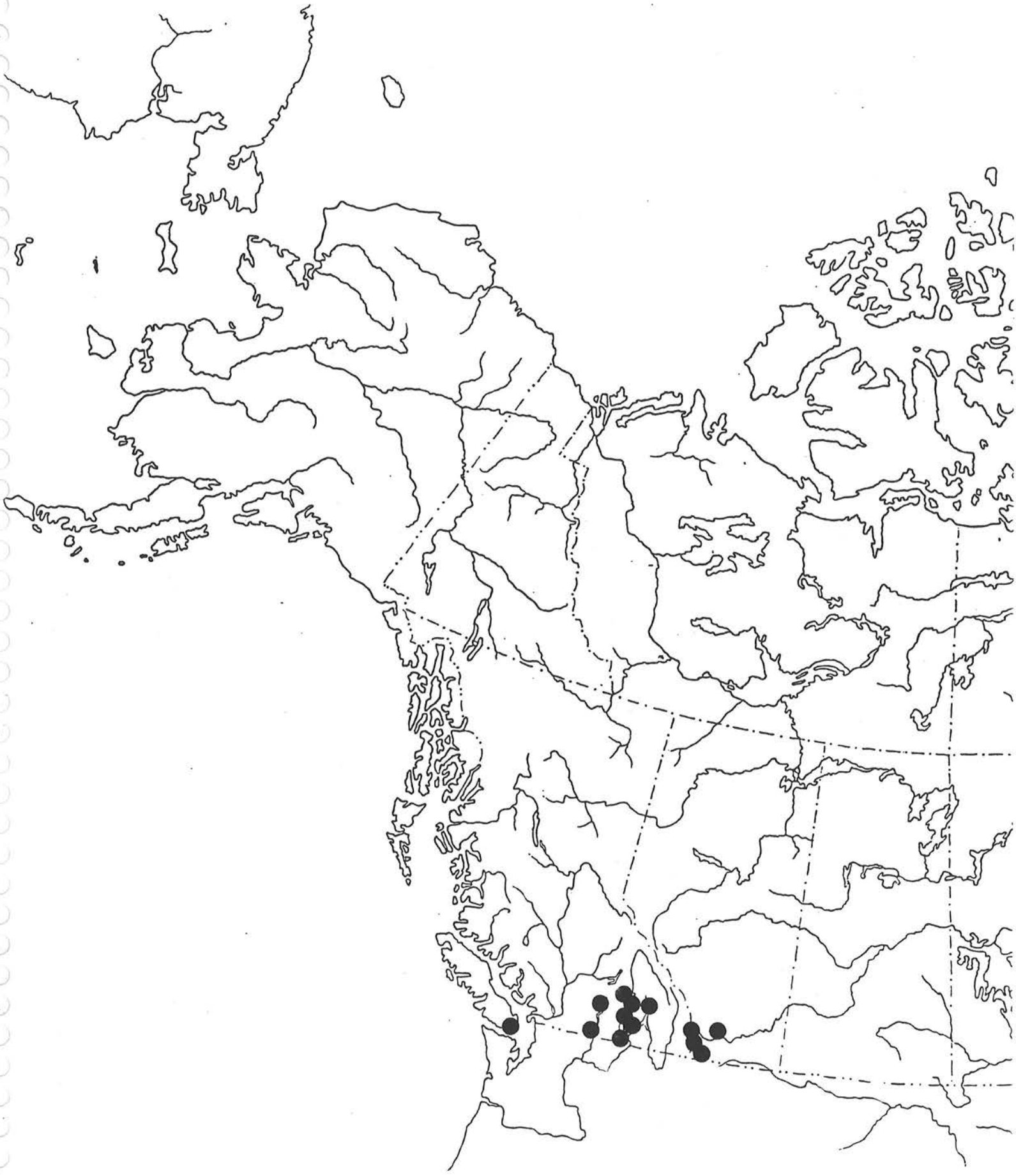
Spilosoma congrua **Walker**



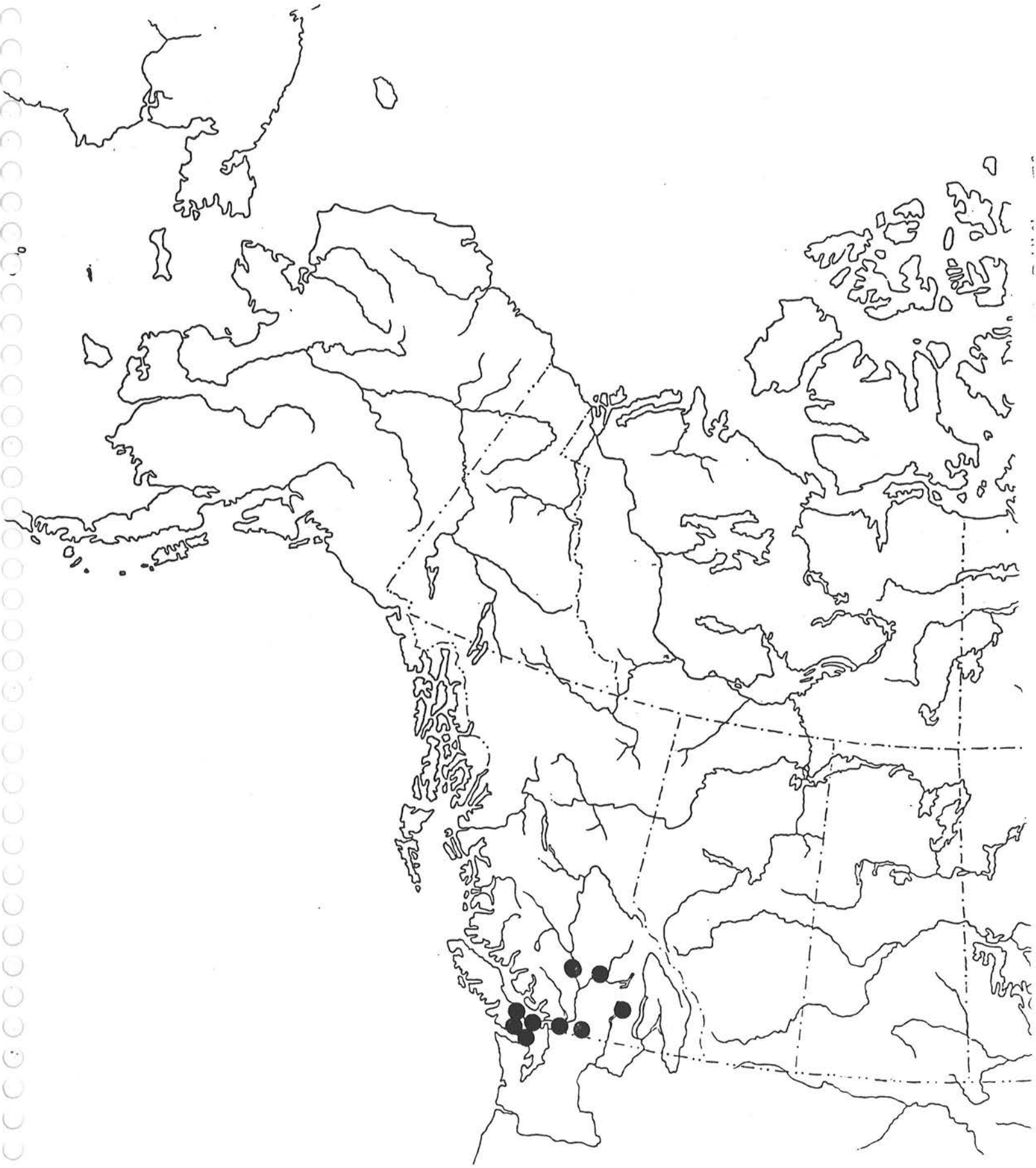
Spilosoma dubia (Walker)



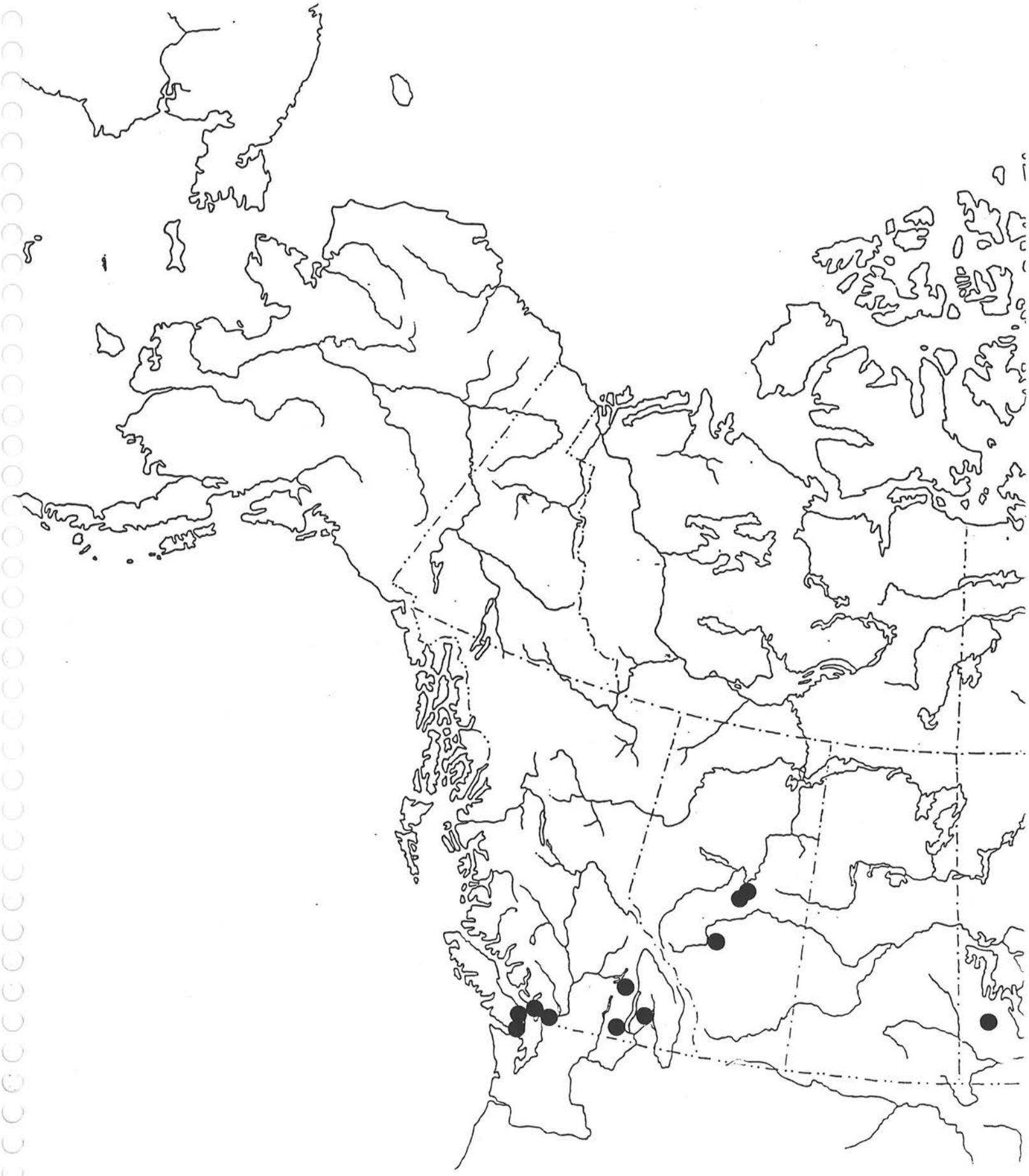
Spilosoma virginica (Fabricius)



Spilosoma vagans (Boisduval)

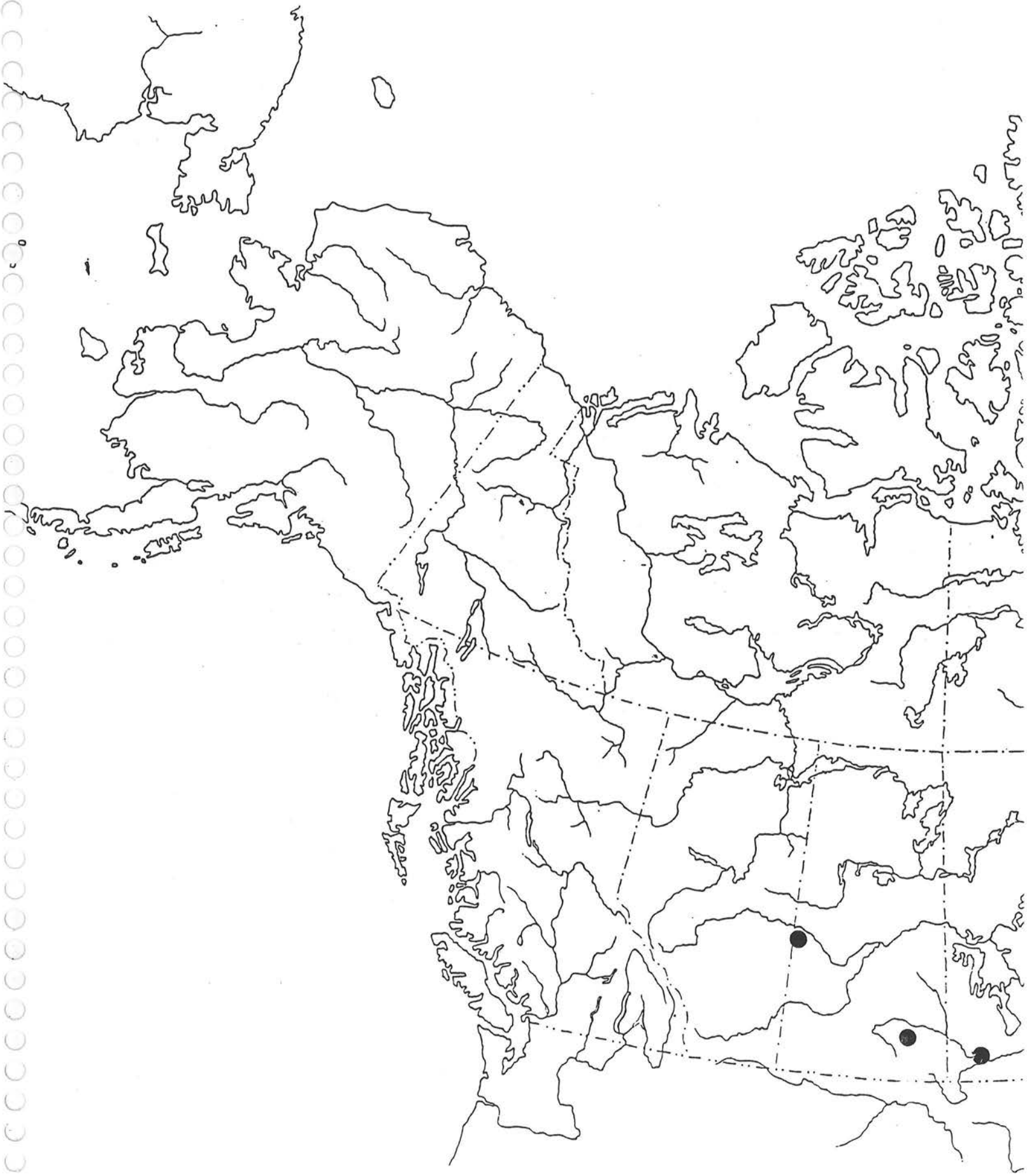


***Spilosoma pteridis* Hy. Edwards**

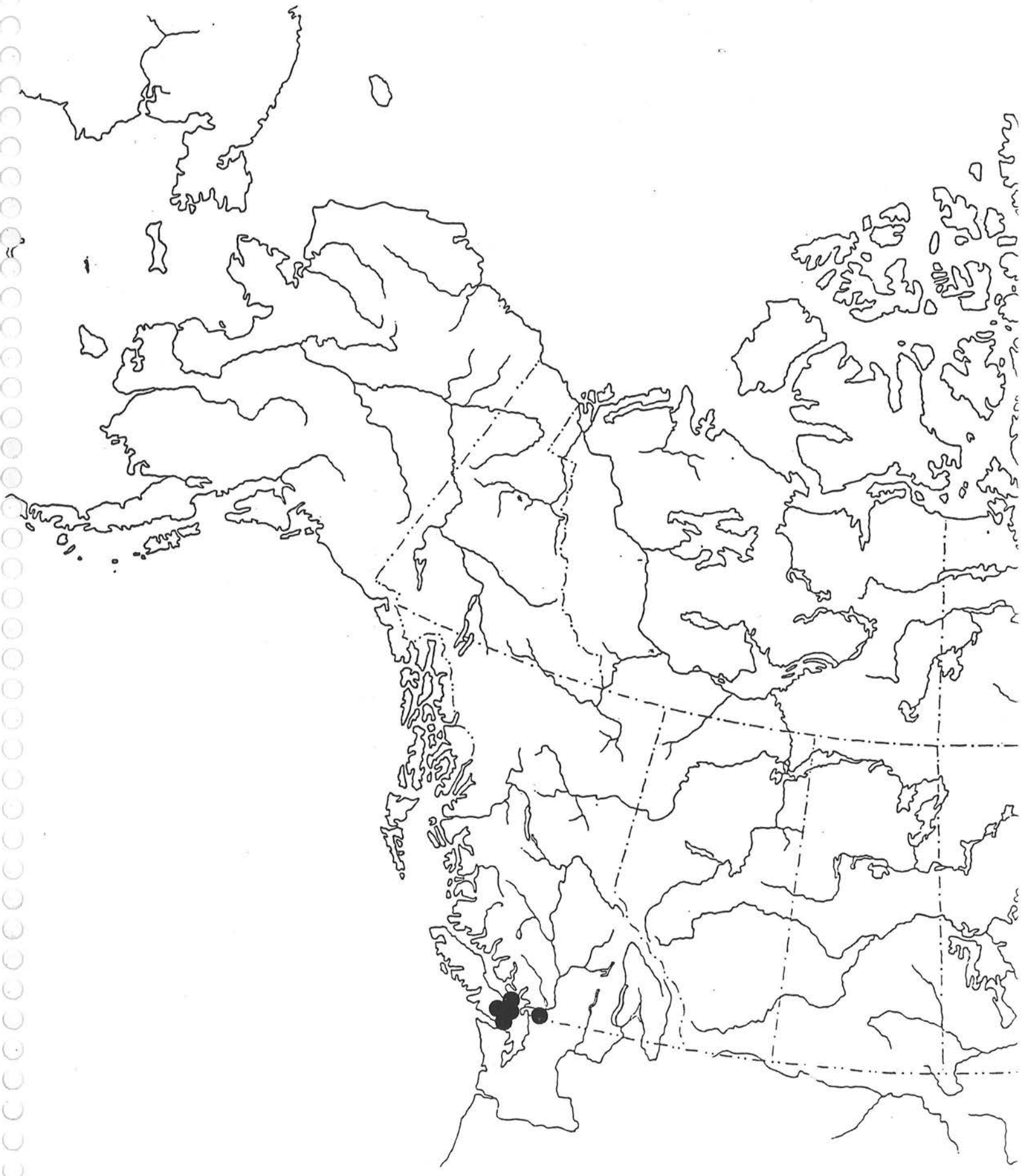


Spilosoma danbyi (Neumoegen & Dyar

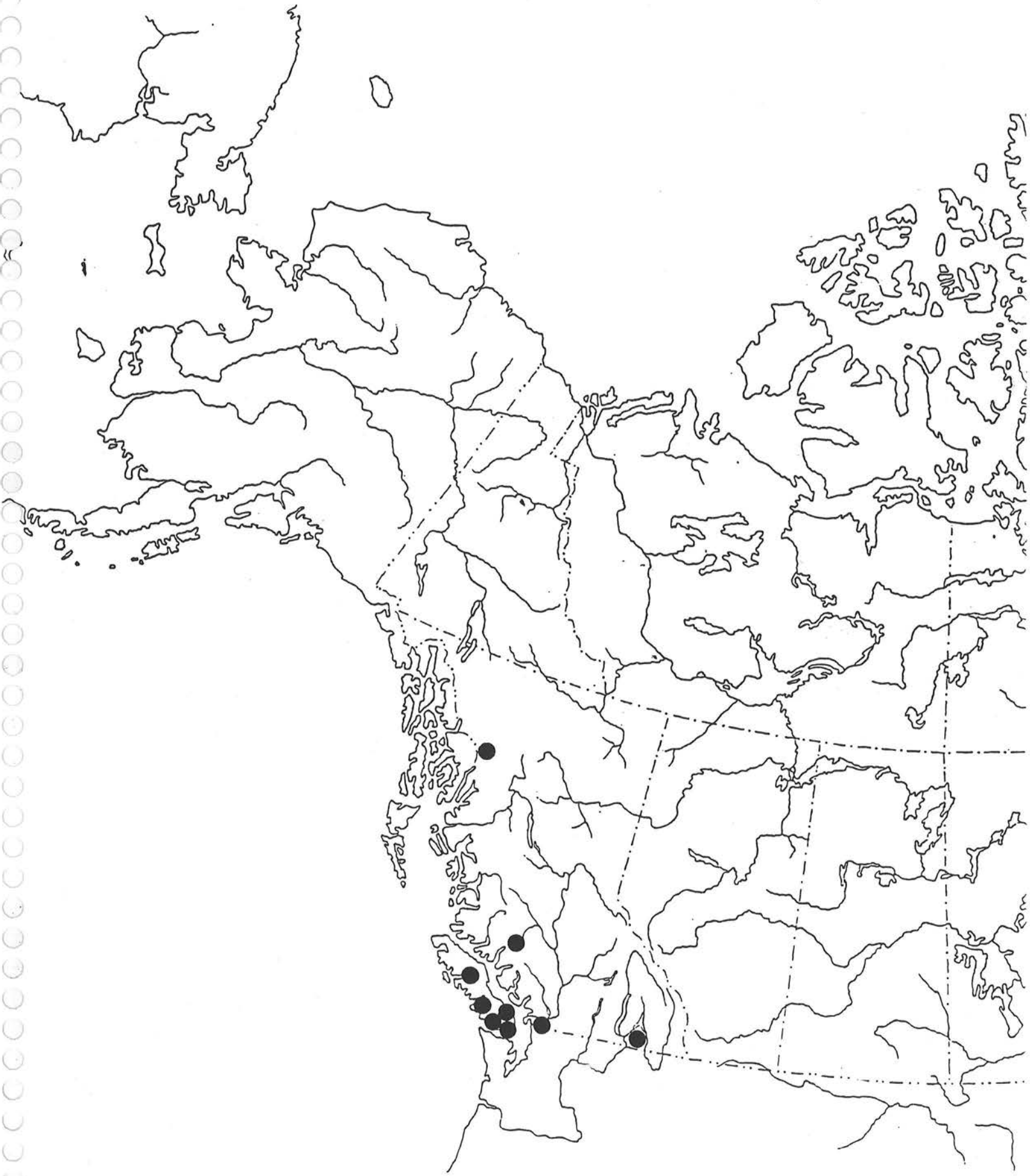
***Hypercompe permaculata* (Packard)**



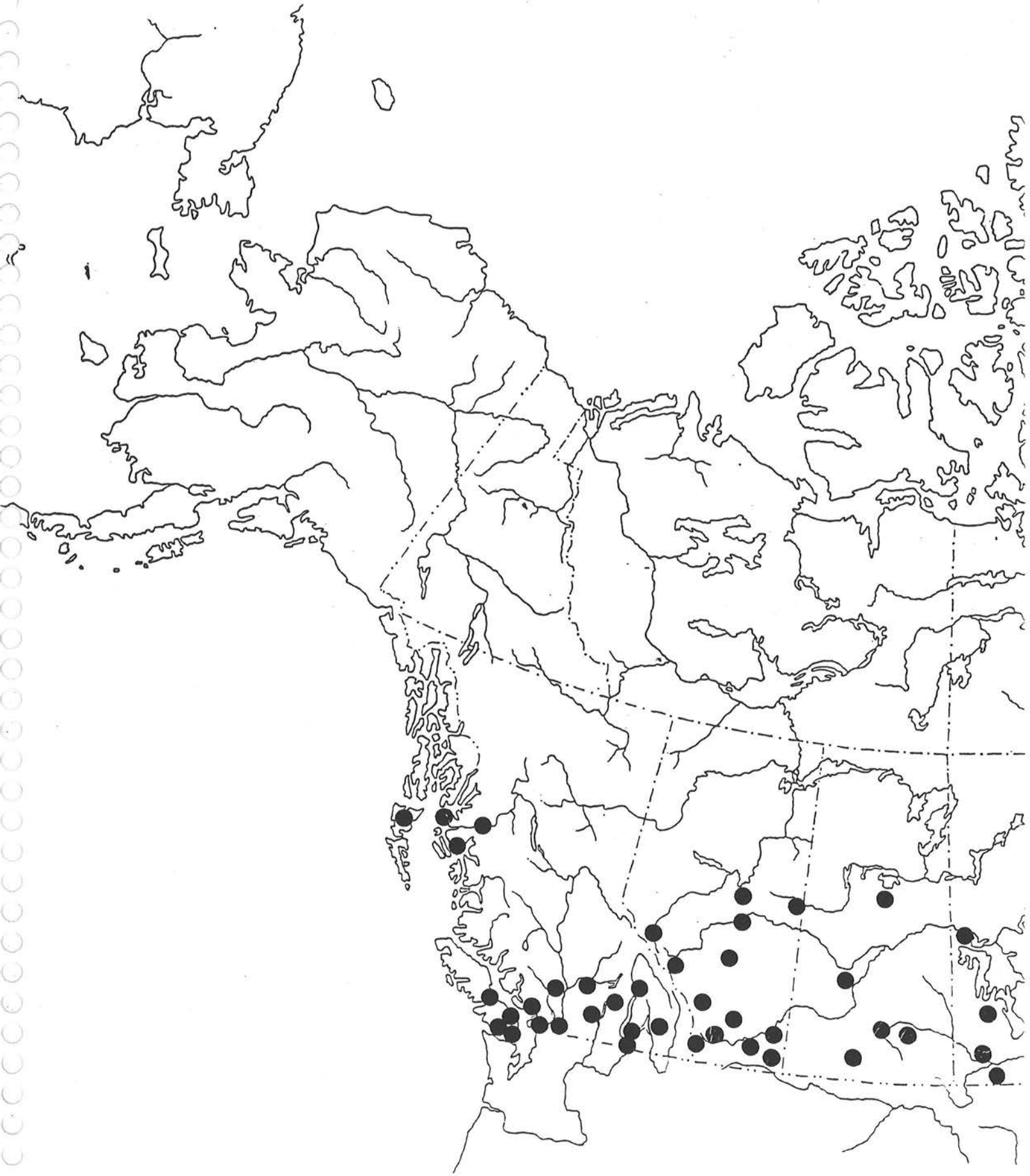
***Halysidota tessellaris* (J.E. Smith)**



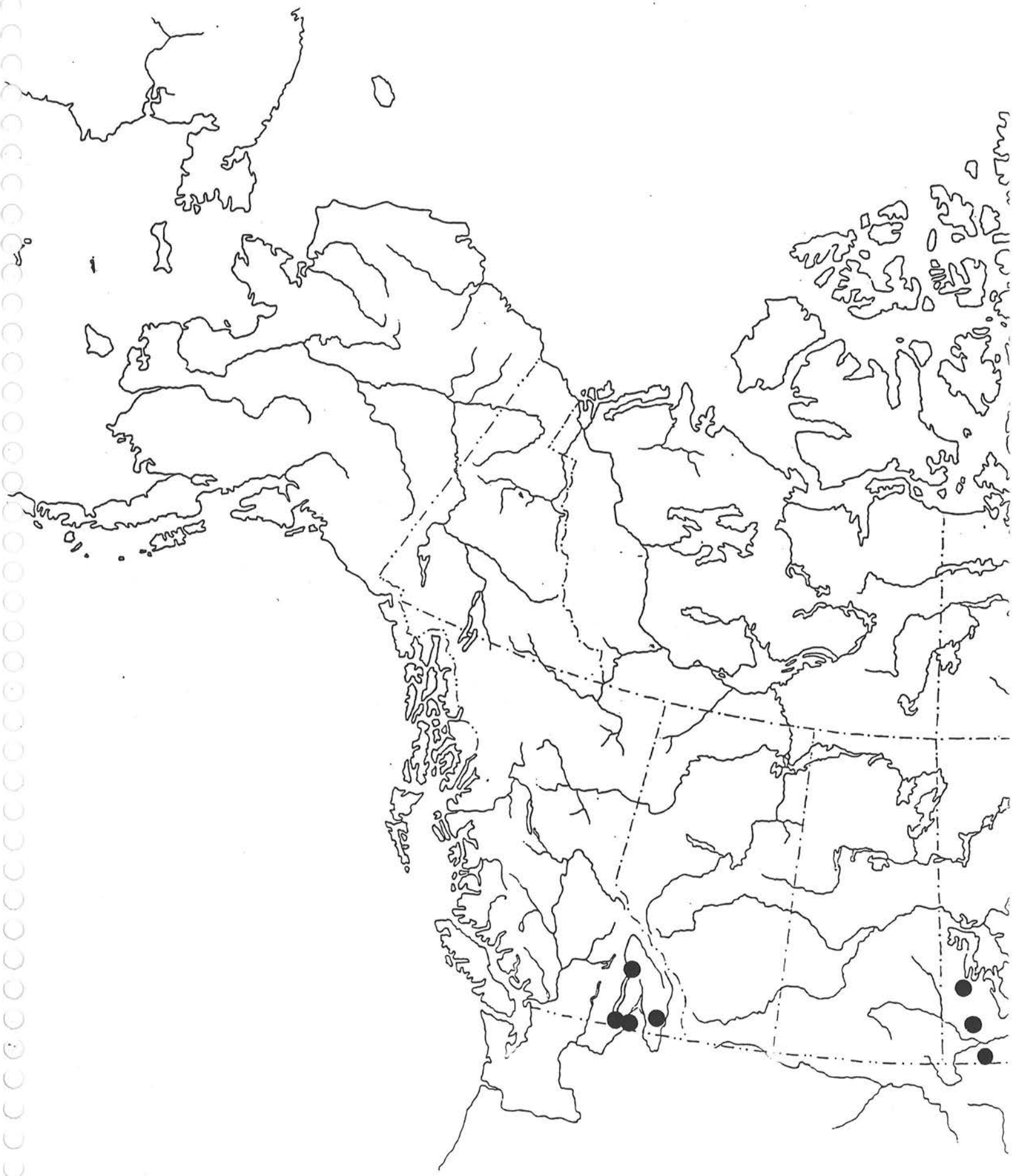
***Lophocampa roseata* (Walker)**



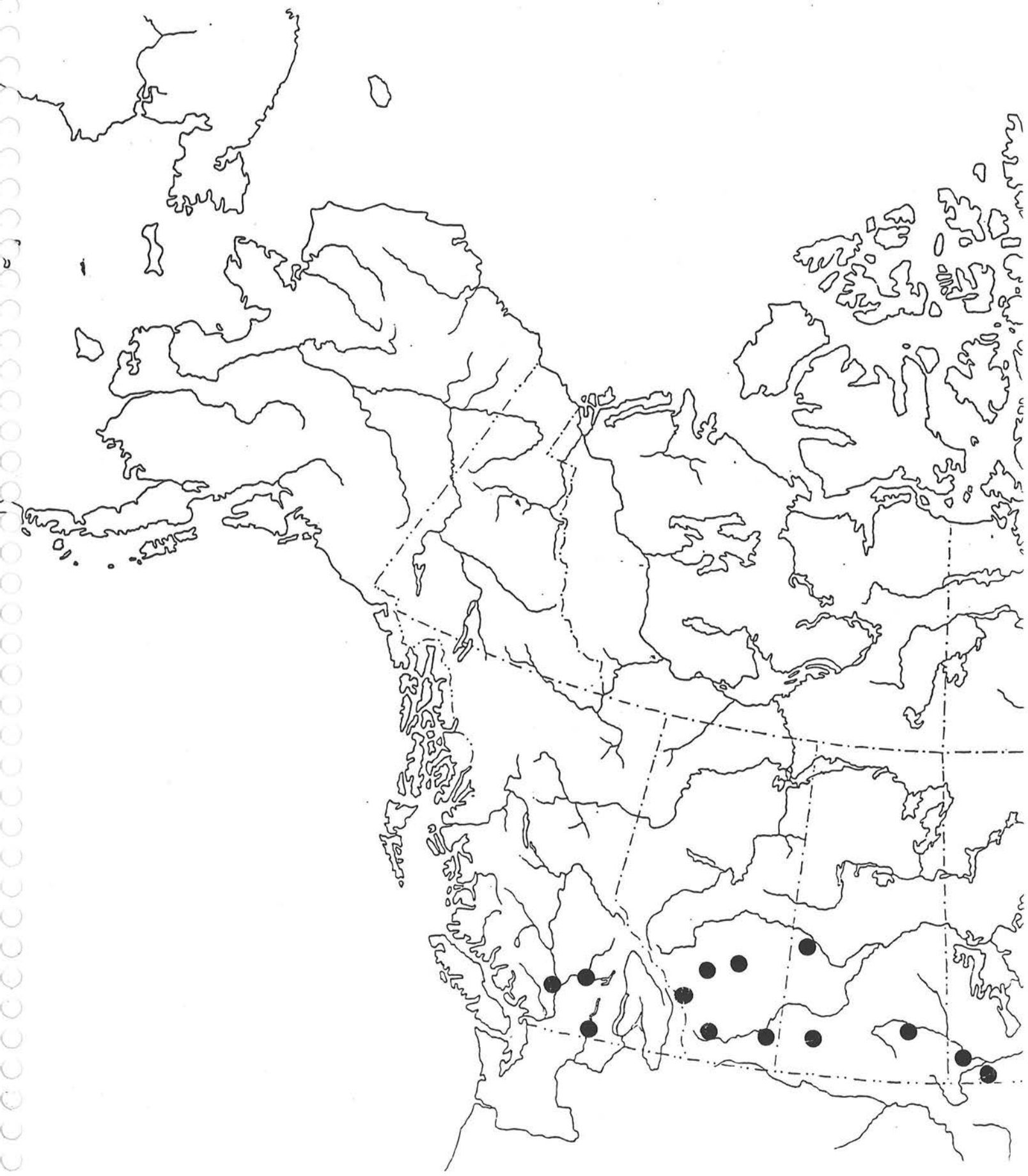
***Lophocampa argentata* (Packard)**



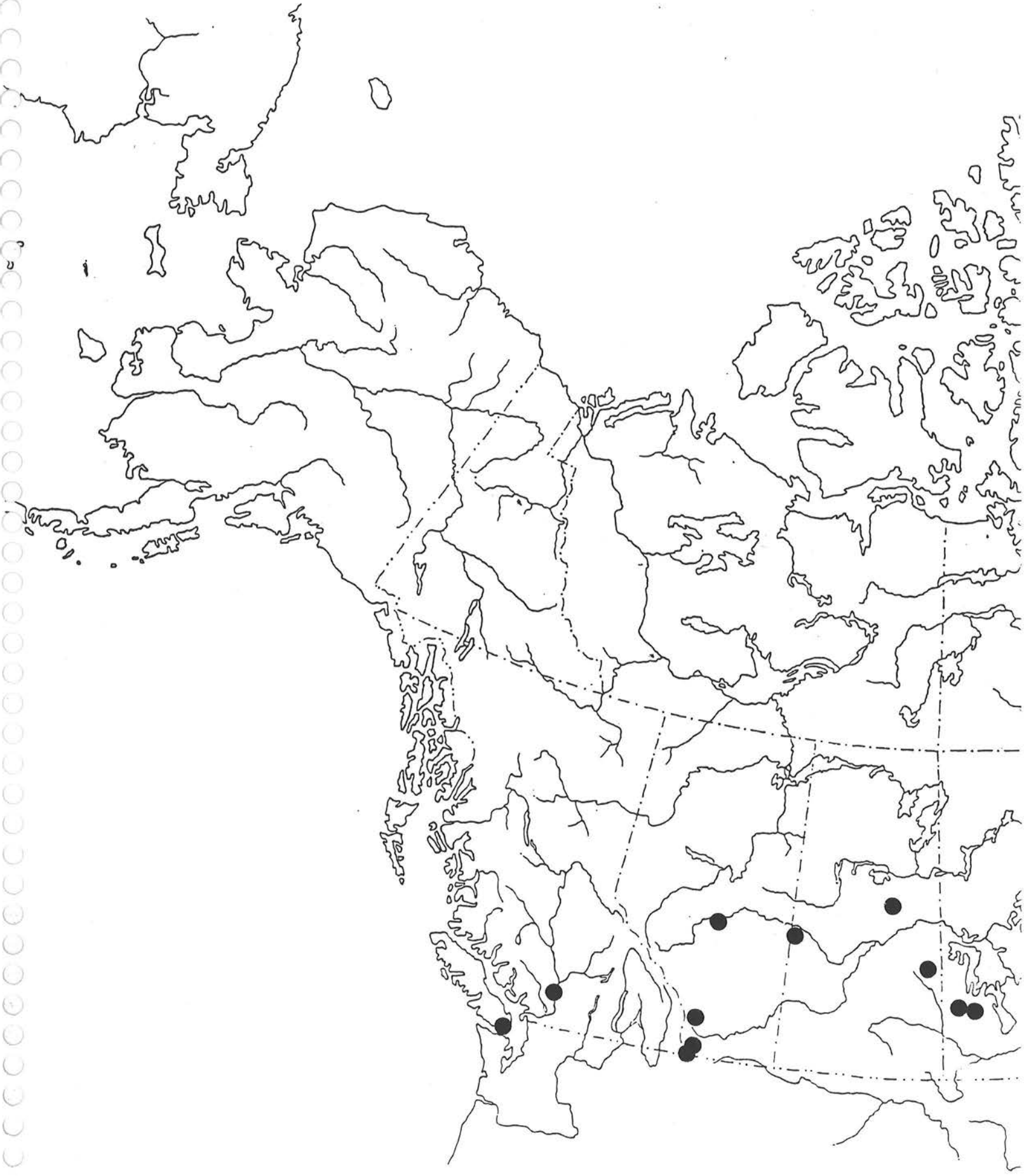
Lophocampa maculata Harris



Cycnia tenera Huebner

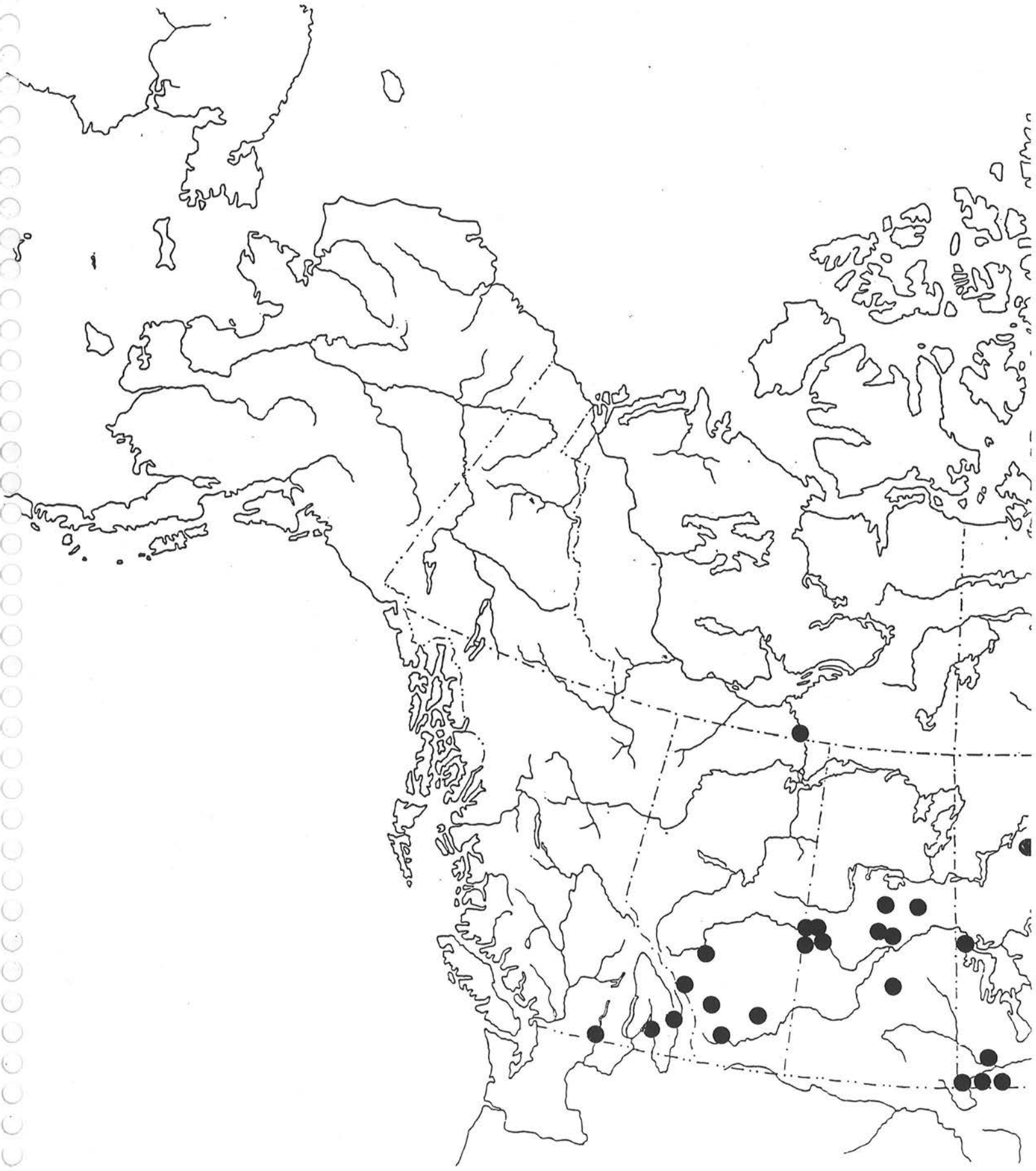


Cycnia oregonensis (Stretch)



Gnophaela vermiculata (Grote)

Ctenucha virginica (Esp.)



***Cisseps fulvicollis* (Huebner)**

Index to Genera and Species

Contributions of the C.P. Gillette Museum of Arthropod Diversity

Available Publications

Moths of western North America. 1. Distribution of Saturniidae of western North America. 1993. by Richard S. Peigler and Paul A. Opler ($6.50).

Moths of western North America. 2. Distribution of Sphingidae of western North America, revised. 1995. by Michael J. Smith ($8.00).

Moths of western North America. 3. Distribution of Arctiidae of western North America. Part 1. Text and maps. 2000. by D.C. Ferguson, P.A. Opler, M.J. Smith, and J.P. Donahue. ( )

Moths of western North America. 4. Distribution of Oecophoridae of western North America. 1996. by Jerry A. Powell and Paul A. Opler . 1996. ($9.00)

Lepidoptera of North America. 1. Distribution of silkmoths (Saturniidae) and hawkmoths (Sphingidae) of eastern North America. Second edition. 1997. ($15.00).

Lepidoptera of North America. 2. Distribution of the butterflies (Papilionoidea and Hesperioidea) of the eastern United States. Compiled by Paul A. Opler. ($17.00).

Insects of Western North America. 1. A survey of the Cerambycidae (Coleoptera) or Long-horned Beetle of Colorado. 1998. by Daniel J. Heffern . ($10.00)

Prices are postpaid within the United States.

Make check to order of Gillette Museum Publications and mail to:

Dr. Paul A. Opler
Department of Bioagricultural Sciences
Colorado State University
Fort Collins, CO 80523