

Baetis larvae in typical condition from a sample

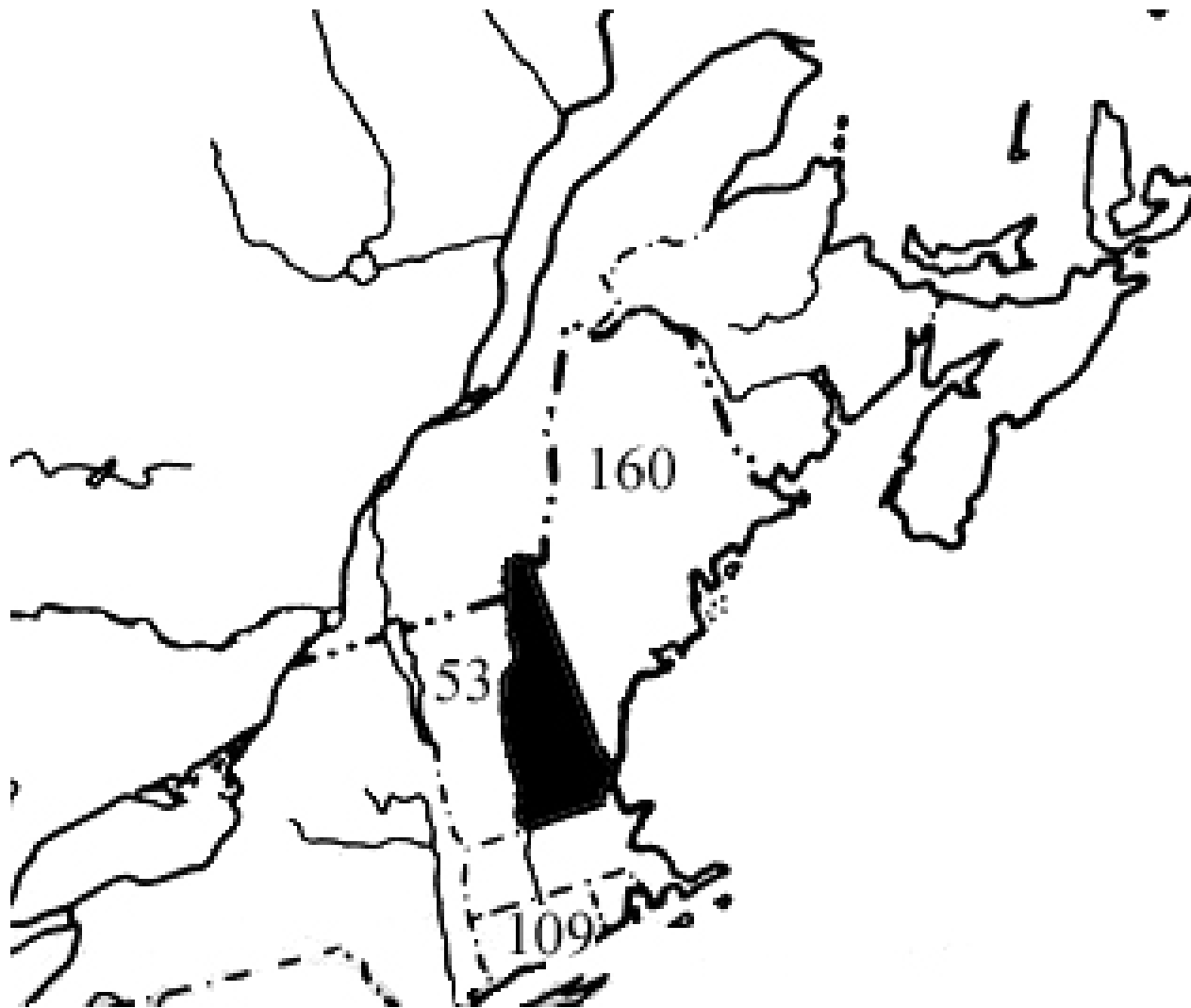


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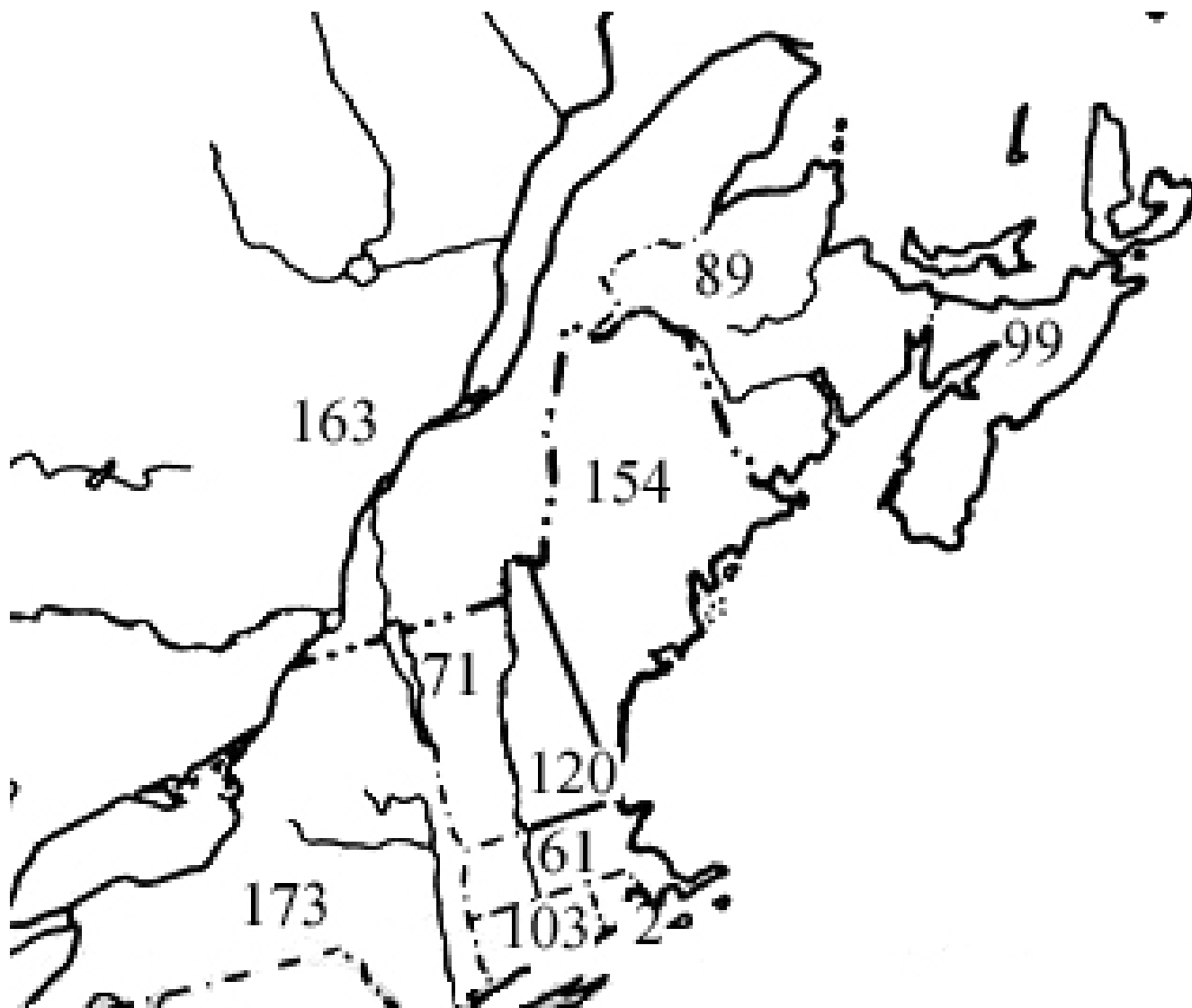
Workshop – Macroinvertebrate taxonomy – NEAEB 2007

Baetidae (Ephemeroptera) and Hydropsychidae (Trichoptera)

Steve Burian (Southern Connecticut State University) and
Don Chandler (University of New Hampshire)

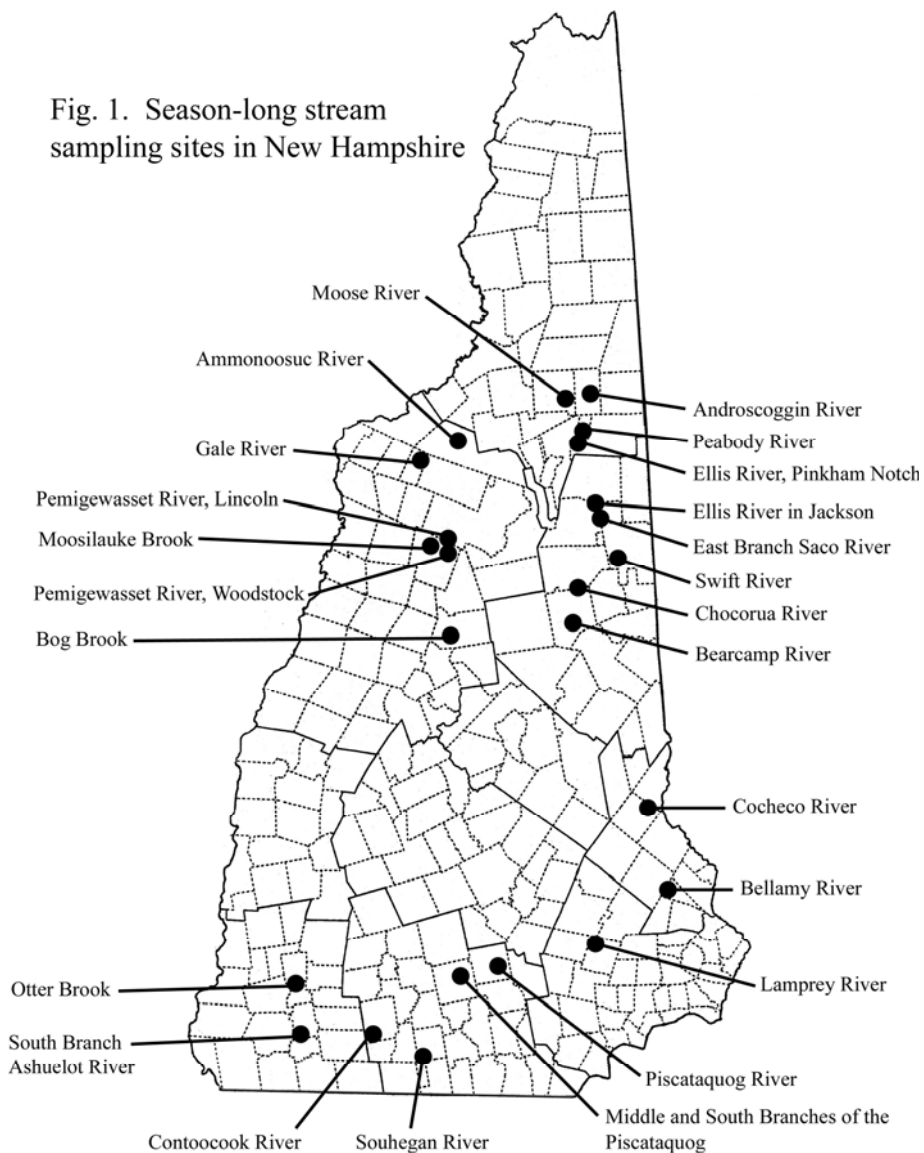


New Hampshire as the “black hole of New England mayfly knowledge” – based on my recollections of a talk by Steve Burian at the Entomological Society of America meetings in Montreal, 1994



Known published diversity of mayflies in New England and adjacent Canada, 2006

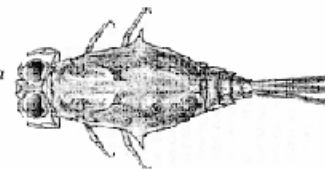
Fig. 1. Season-long stream sampling sites in New Hampshire



Key A. Species of Baetiscidae

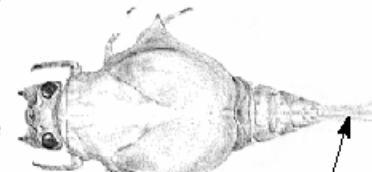
Note: To differentiate between *B. rubescens* and *B. berneri* one needs to use individuals that are relatively late in development. Adults of *B. rubescens* tend to emerge later in the season than *B. berneri*, and are half way through their nymphal development when *B. berneri* adults are emerging. One other *Baetisca* species (*B. lacustris*) occurs in New England, but is found along the margins of ponds and lakes, and still areas along rivers.

1. Thoracic shield relatively narrow, width without spines about half length . . . *Baetisca laurentina*



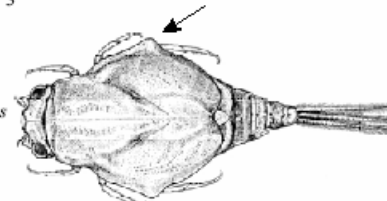
- Thoracic shield relatively broad, body appearing "fat", width (without spines) about two-thirds of length 2

2. (1) Caudal filaments completely light brown *Baetisca carolina*

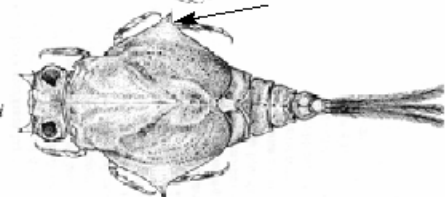


- Caudal filaments with basal half dark brown, apical portion light brown 3

3. (1) Lateral mesonotal spines blunt *Baetisca rubescens*



- Lateral mesonotal spines sharp with dark brown tip *Baetisca berneri*



Baetidae – the small minnow mayflies

Small, generally lack interesting or unique features of the gills, mouthparts, thorax, legs, and to complicate matters, they often are all “**beat-ed**” up in collections – lacking parts of antennae, gills, cerci, and legs.

In keying them out, after working through all the interesting features that they ***don't*** have:

- 1) the antennae are ***usually*** twice as long or more than the head width,
- 2) an emarginate labrum,
- 3) less than 10 mm in body length



Problems in identification:

- 1) Regional variation in color patterns (few have been described from New England)
- 2) Sexual variation in color patterns (see *Plauditus*)
- 3) Individual variation in color patterns (see *Baetis*)
- 4) Color pattern changes in blackwings
- 5) Published descriptions of many larvae are old and are not thorough
- 6) Very few thorough species-level revisions (maybe “none”)
- 7) The largest family in terms of numbers of species
- 8) The group with the largest percentage of undescribed larvae
- 9) The group with the most poorly known distributions

7. New England and the Adirondacks (Upper New York)

Species	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov
<i>Baetis</i> species									
<i>Acentrella turbida</i>									
<i>Paraleptophlebia adoptiva</i>									
<i>Epeorus pleuralis</i>									
<i>Ephemerella subvaria</i>									
<i>Ephemerella invaria</i> and <i>rotunda</i>									
<i>Litobrancha recurvata</i>									
<i>Drunella cornuta</i>									
<i>Stenonema vicarium</i>									
<i>Ephemerella dorothea</i>									
<i>Ephemera guttulata</i>									
<i>Attenella attenuata</i>									
<i>Isonychia bicolor</i>									
<i>Stenonema ithaca</i>									
<i>Anthopotamus distinctus</i>									
<i>Ephemera varia</i>									
<i>Tricorythodes</i> species									
<i>Ephoron leukon</i>									

Hatch guide from Knopp and Cormier (1997) for New England.



Previously known distributions of three *Baetisca*

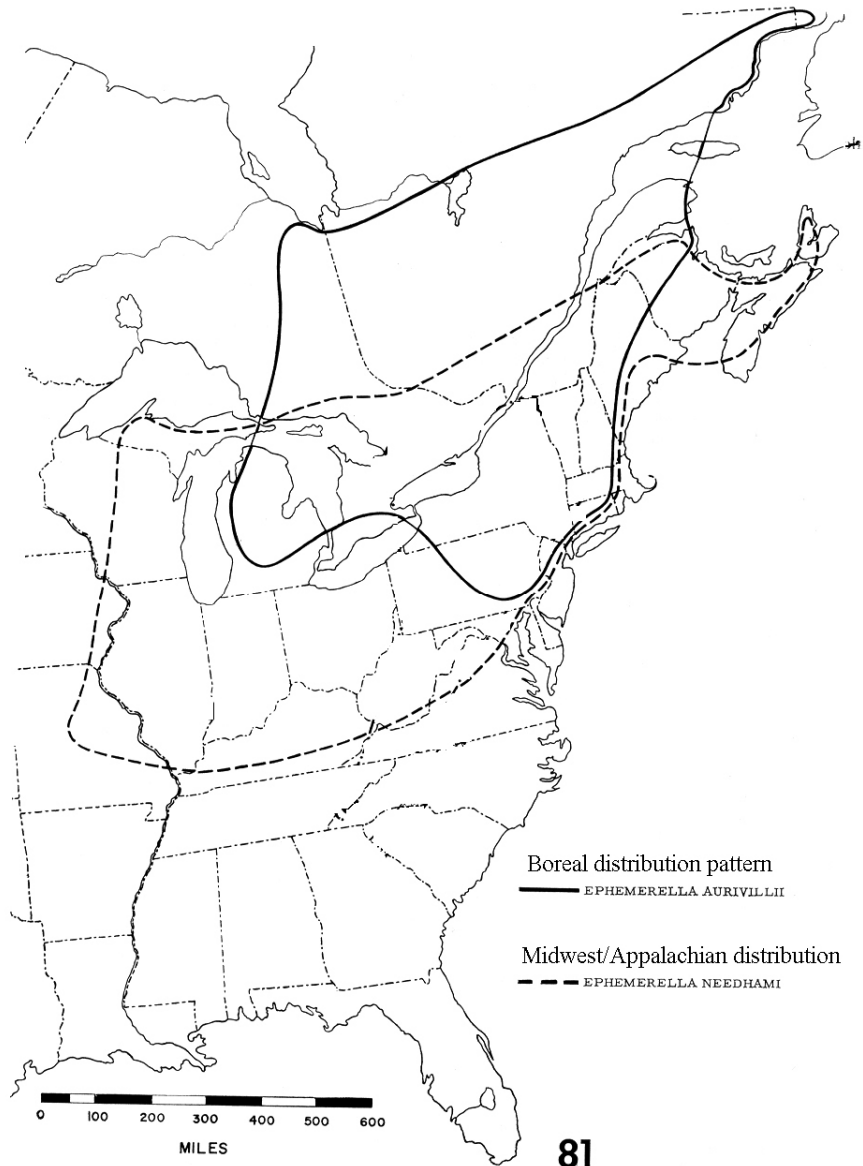


FIG. 81.—Distribution map of *E. argo*, *E. aurivillii*, *E. berneri*, *E. fratercula*, *E. needhami*, *E. rossi*, and *E. septentrionalis*.

Boreal and Midwest/Appalachian distribution patterns



Ameletus browni, still known only from New England/adjacent Canada

Ameletus tertius, a “New England” species just discovered in Great Smoky Mountains NP



Appalachian, or Appalachian/Boreal distribution pattern

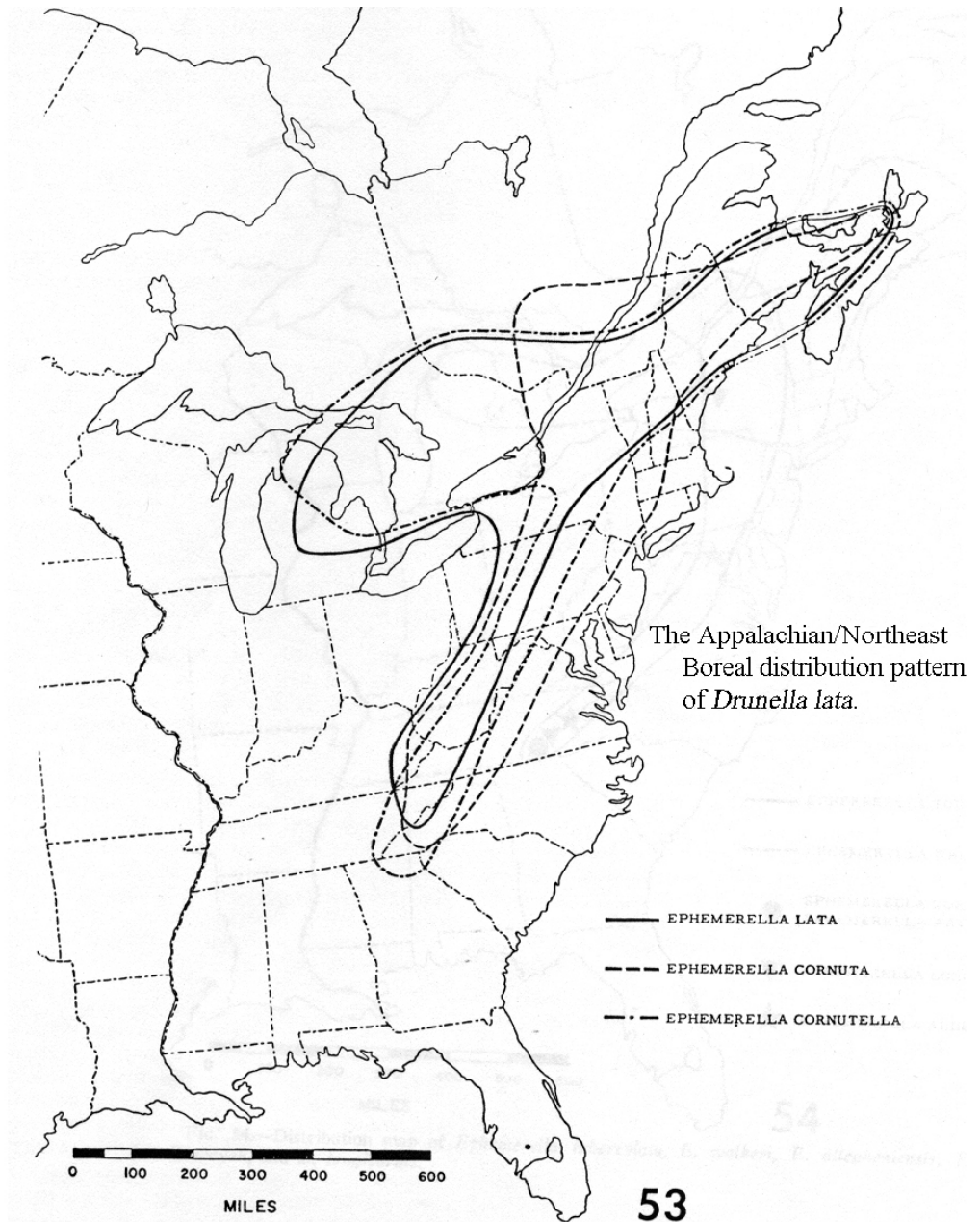
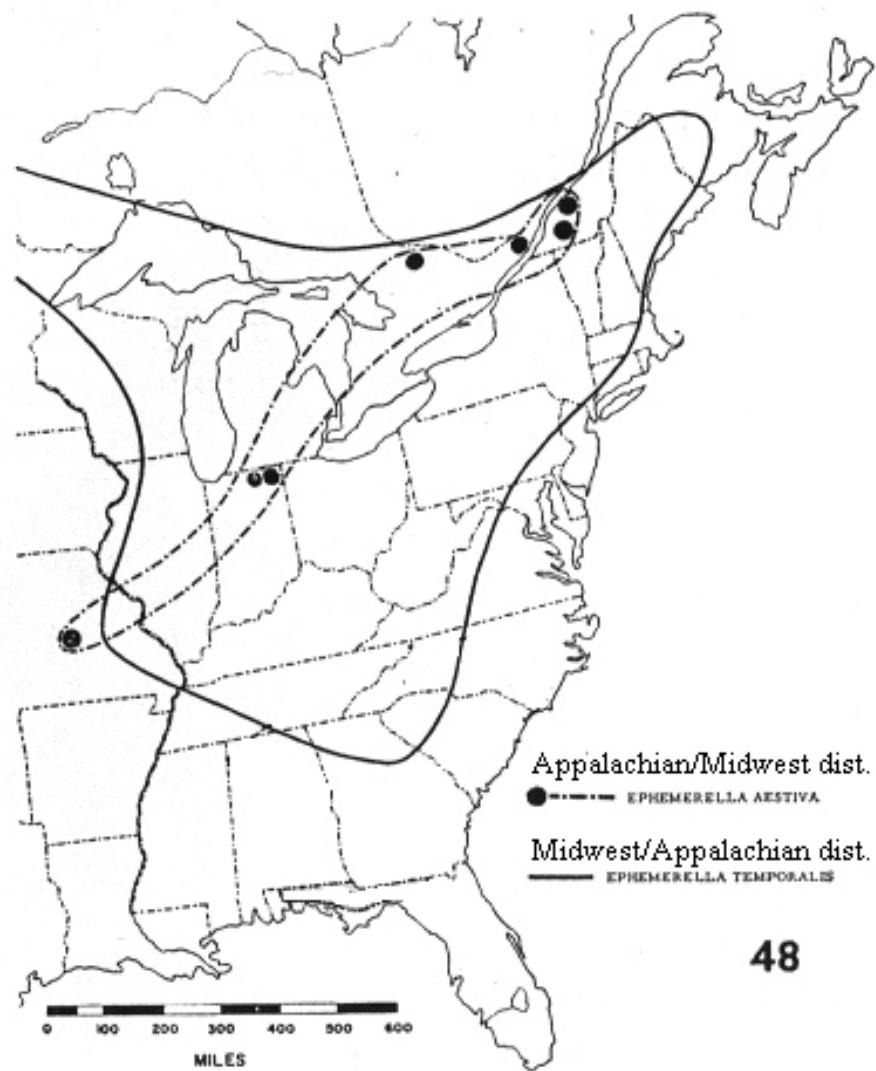
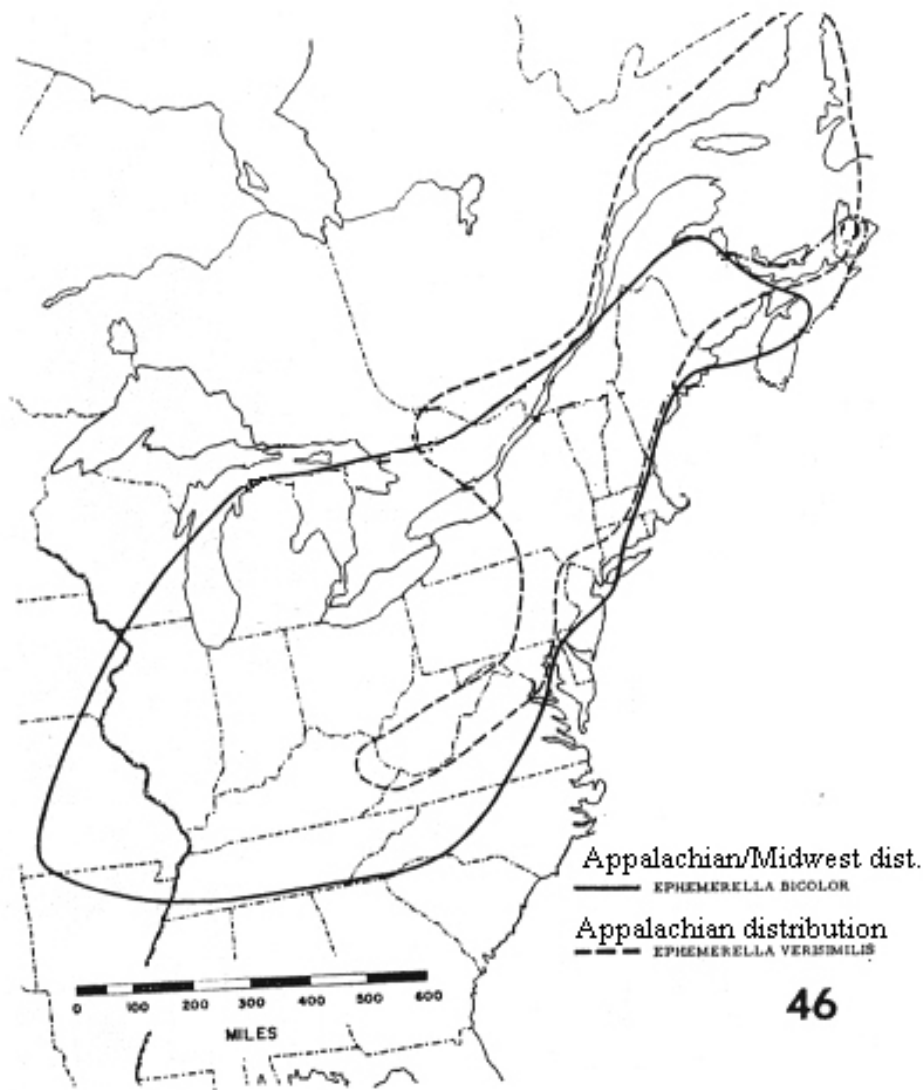


FIG. 53.—Distribution map of *Ephemera lata*, *E. cornuta*, and *E. cornutella*.



Additional reference:

Wiersema, N.A., C.R. Nelson, & K.F. Kuehnl. 2004. A new small minnow mayfly (Ephemeroptera: Baetidae) from Utah, U.S.A. *Entomological News* 115: 139-145. [key to North American *Baetis*]

Quiz!

What is this species?





Quiz!

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Quiz!

What is this species?