

**EXPLANATION OF UNITS**

**INTRUSIVE ROCKS**

Carboniferous - Devonian (?)  
 CDg Granite and pegmatite. Biotite-muscovite granite and pegmatite.

**METAMORPHOSED INTRUSIVE ROCKS**

Devonian (?)  
 Dmd Metadiorite. Medium-grained, foliated, gneissic metadiorite.

**STRATIFIED ROCKS**

Devonian (?)  
 Der East Rochester Formation (of Hussey and others, 2008). Well-bedded medium to dark gray muscovite-biotite-garnet-staurolite schist and micaceous quartzite. The schist commonly contains pseudomorphs after andalusite, and locally contains andalusite or sillimanite. Rhythmic bedding is common, with graded beds indicating stratigraphic tops in some places. Probably equivalent to the Carrabasset Formation (Eusden and others, 1987).

Silurian (?)  
 St Towow Formation. Rusty-weathering to very rusty-weathering medium to dark silvery gray, fine-grained porphyroitic quartz-mica schist and phyllite with minor quartzite. The high concentration of iron sulfides causes the rock and overlying soil to weather readily, producing distinctive bright orange to orange-brown colors. Probably equivalent to the Smalls Falls Formation.

Sgo Gully Oven Formation (of Thompson, 2004). Well-bedded muscovite-biotite-staurolite-andalusite-garnet schist and micaceous quartzite with rare pink quartz-garnet granofels (cotecule). Probably equivalent to the Perry Mountain Formation (Eusden and others, 1987; Thompson and others, 2004).

Sr Rindgemere Formation. Poorly-bedded to moderately well-bedded biotite-muscovite-garnet = sillimanite schist. Inferred to underlie a small area at the northeast corner of the map, projected from a large area of exposure in the Sanford quadrangle to the north. Probably equivalent to the Rangeley Formation.

Silurian (?)  
 Sph Unnamed phyllonite. Silvery-gray muscovite-biotite-garnet-staurolite phyllonite with abundant deformed quartz veins. Formerly mapped as Gonic Formation (Hussey, 1962), reinterpreted as phyllonite by Hussey and others (2008). Locality 2, on Turkey Street, North Berwick, was described by Thompson and others (2004) as their stop 5.

Silurian  
 Sb Berwick Formation. Medium-bedded, medium brownish gray, feldspathic quartz-biotite granofels, greenish calc-silicate granofels, and subordinate quartz-biotite schist. The type locality of the Berwick Formation is just downstream of the Salmon Falls River dam, near locality 1 on the map (Thompson and others, 2004, p. 12-13). Analysis of detrital zircon from this locality is interpreted to indicate a Silurian age for the Berwick (Wintsch and others, 2007).

Silurian - Ordovician  
 SOK Kittery Formation. Variably thin-bedded to thick-bedded, buff-weathering feldspathic and calcareous metawacke. Characterized by well-developed primary sedimentary structures including graded bedding, channel cut-and-fill structure, small scale cross-bedding, flame structure, and flute casts.  
 SOe Eliot Formation. Generally thin-bedded, medium gray, calcareous and ankeritic quartz-biotite-chlorite phyllite and metasilstone, and dark gray biotite-chlorite-muscovite phyllite.

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**GEOLOGIC TIME SCALE**

Geologic Age	Absolute Age*
Cenozoic Era	0-65
Mesozoic Era	Cretaceous Period 65-142 Jurassic Period 142-200 Triassic Period 200-253
Paleozoic Era	Permian Period 253-300 Carboniferous Period 300-360 Devonian Period 360-418 Silurian Period 418-443 Ordovician Period 443-489 Cambrian Period 489-542
Precambrian time	Older than 542

\* In millions of years before present. (Okulitch, A. V., 2004, Geological time chart, 2004, Geological Survey of Canada, Open File 3040 (National Earth Science Series, Geological Atlas) - REVISION.)

**Bedrock Geology of the Somersworth Quadrangle, Maine**

Bedrock geologic mapping by  
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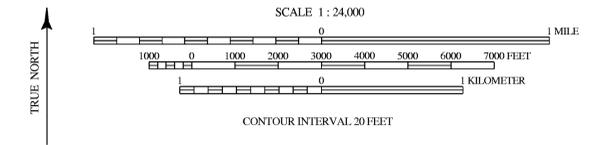
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**Progress Map 12-31 2012**



**SOURCES OF INFORMATION**

Field work by A. M. Hussey II (1970-2003).  
 Topographic base from U.S. Geological Survey Somersworth, Maine-N.H., quadrangle, scale 1:24,000, using standard U.S. Geological Survey topographic map symbols.  
 The use of industry, firm, or local government names on this map is for location purposes only and does not implicate responsibility for any present or potential effects on the natural resources.

**EXPLANATION OF SYMBOLS**

- Note: Structural symbols are drawn parallel to strike or trend of measured structural feature. Barb or tick indicates direction of dip, if known. Annotation gives dip or plunge angle. For planar features, symbol is centered at observation point. For linear features, tail of symbol is at observation point. Multiple measurements at a site are represented by combined symbols.
- Outcrop of mapped unit
  - 20° p f Felsic dike: p = pegmatite, f = felsic (inclined, orientation unknown)
  - 20° b Felsic dike: b = basalt, d = diabase (inclined, dip unknown)
  - 20° Bedding, tops unknown (inclined, vertical)
  - 20° Bedding, tops known (upright, overturned)
  - 20° Schistosity, or foliation in metadiorite (inclined, vertical)
  - 20° Cleavage (inclined)
  - 20° Mineral lineation (plunging)
  - ④ Notable locality. 1 = Type locality of the Berwick Formation. 2 = Outcrop described by Thompson and others (2004).

**EXPLANATION OF LINES**

- Contact between mapped units. Interpreted to be of stratigraphic or intrusive origin. Location is constrained by bedrock outcrops indicated by symbols on the map, or inferred by projecting rock units from adjacent areas. (See regional map by Hussey and others, 2008.) Additional information may have been used. Solid line where precisely located. The location of some contacts is not well constrained.
- T U D - Brittle, high-angle fault. In the Milton quadrangle (Thompson, 2004), this fault is marked by bull quartz, breccia, and offset map units. U = upthrown side, D = downthrown side. Interpreted to be of Mesozoic age (Hussey and others, 2008).
- U D - Fault inferred from stratigraphic relationships, existence and nature uncertain. U = upthrown side, D = downthrown side. (approximately located)
- ..... Projection of mapped fault into area of poor outcrop. (schematic)
- - - - - Inferred thrust fault. Teeth are on upper plate. (approximately located)
- - - - - Fault boundary between intensely sheared and less sheared rocks. Arrows indicate dextral shear within zone. Of Carboniferous-Devonian(?) age (Hussey and others, 2008).
- + + + + + Inferred axial trace of upright fold (antiform, synform).
- + + + + + Inferred axial trace of overturned synform. Fold limbs dip in direction of arrows.

A label on each fold gives its relative age, with F1 being oldest, according to the regional interpretation of Hussey and others (2008).

Fold shape and location are interpreted from the pattern of mapped units, together with observed minor folds, bedding and cleavage orientations, and stratigraphic facing directions as determined from relict tops indicators in bedding. Most of the large scale folding is probably of Acadian (Devonian) age (Hussey and others, 2008).