

# ***Pegmatite Minerals from New Hampshire's White Mountain Igneous Province***

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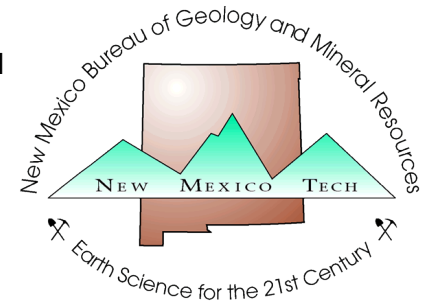
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The symposium is organized each year by the [Mineral Museum](#) at the [New Mexico Bureau of Geology & Mineral Resources](#).



Abstracts from all prior symposiums are also available: <https://geoinfo.nmt.edu/museum/nmms/abstracts>

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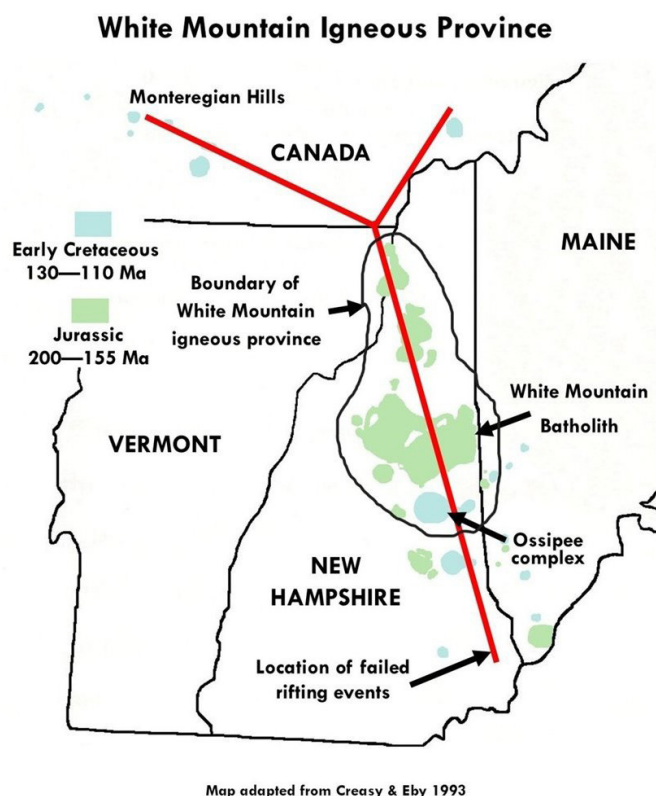
## Pegmatite Minerals from New Hampshire's White Mountain Igneous Province

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New Hampshire is the 46th smallest state, but has 367 confirmed mineral species (Mindat accessed 2025), ranking it as the 33rd state with the most mineral species. The abundance of species can be attributed to the many pegmatites in New Hampshire that were formed as the supercontinent Pangea coalesced approximately 300Ma, and continuing during its breakup approximately 200Ma.

know today. The first event occurred during the Jurassic, 200-155 Ma, and the second during the Early Cretaceous, 130-110 Ma (Fig. 1). Although in both cases the rifting was halted by other geological forces, the crust was thinned and allowed magma to rise, emplacing granites and their associated pegmatites.



*Fig.1 Map outlining the White Mountain Igneous Province in black. Red line depicts center of failed rifting events with green indicating first event and blue the second event.*

The New Hampshire White Mountain Igneous Province (WMIP) was emplaced during two failed rifting events as Pangea landmasses continued on their path to the position of the continents we



*Fig. 2 Smoky quartz, microcline, and albite 8.7 cm tall from Moat Mountain, Hales Location, Carroll County, New Hampshire.*

Pegmatites in the WMIP are anorogenic, with a NYF (Niobium, Yttrium, Fluorine) signature, as described by Černý & Ercit's revision of pegmatite classification (Černý & Ercit, 2005). They also contain rare earth elements, CO<sub>2</sub>, and are water-poor.

Pegmatite miaroles are either isolated in the host

granite or form where thin pegmatite dikes swell or intersect. The size of mostmiaroles ranges from a few centimeters to 20 cm but occasionally reach sizes of 5 meters or more. Over 70 mineral species occur with microcline, albite, and quartz (primary constituents of granite), the most common minerals in the miaroles (Fig 2). Many uncommon or rare species also occur such as danalite (Fig. 3), bazzite, and milarite. The size of different species also has a wide range from crystals of a meter to 0.1 mm or less. Quartz crystals by far are the largest found with a few reaching 1 meter. Bazzite crystals on the other hand rarely achieve 0.5 mm.



*Fig. 3 Etched danalite crystal 5.25 cm tall from Government Pit, Albany, Carroll County, New Hampshire.*

There are 12 beryllium species found in the WMIP, but beryl itself is quite rare. In the LCT (Lithium, Cesium, Tantalum) pegmatites in NH, beryl crystals are quite common but do not occur in pockets, while they are uncommon and generally form in pockets in the NYF pegmatites.

Topaz crystals were first found in 1888 on South Baldface Mountain (Fig. 4) and are abundant there as well as at Government Pit and the Moat Mountain locations. Crystals generally range from a few millimeters to 4 centimeters, but most are 2 cm or

less. Occasionally, larger crystals have been found. A single topaz crystal from South Percy Peak in Stratford (the Northernmost portion of WMIP) reached 13.5 cm. Color varies from colorless to blue to brown. Many crystals were faceted through the years, with those from South Baldface Mountain referred to as “Baldface diamonds” (Fig. 5). The only other common gemstone from the WMIP is smoky quartz (the New Hampshire state gem), with faceted gems up to several hundred carats. A brief overview of the geology will be followed

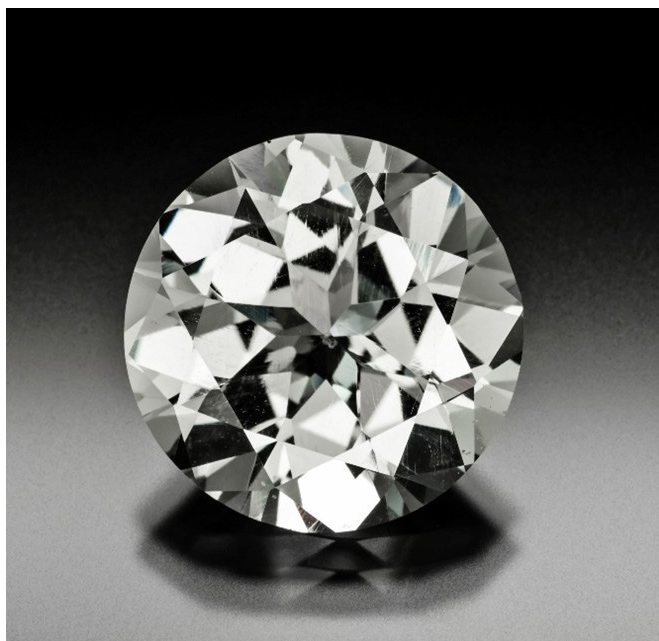


*Fig. 4 Topaz 3.65 cm wide from South Baldface Mountain, Chatham, New Hampshire. Kevin Downey photo.*

by a review of the minerals from the WMIP from larger common specimens to the rare and small. A few important collectors will be included along with some historical content.

## References

- Černý, P. and Ercit, T.S. (2005) The classification of granitic pegmatites revisited. *Canadian Mineralogist*, V.43, p.2005-2026.
- Dallaire, D. A., and Nizamoff, J. (2017) Topaz in New Hampshire’s White Mountains. *Rocks & Minerals*, V. 92(6), p.508–36.
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*Fig. 5 1.77 ct. Topaz faceted gem from South Bald-face Mountain, Chatham, New Hampshire. Jeff Scovil photo.*