

MOONSTONE HILL FELDSPAR LOCALITY

Gem quality feldspar found on this small hill known informally as 'Moonstone Hill' between Hughenden and The Lynd in North Queensland is of interest to amateur gem collectors and lapidary enthusiasts. The material is suitable for cutting as faceted gems or cabochons and some rarer material may exhibit the bluish adularescence of moonstone. Attractive specimens in matrix are also found.

The locality is surrounded by Blackbraes National Park. Moonstone Hill was excluded from the Park as a small multiple-use Resources Reserve, so as to allow fossicking to continue while still ensuring conservation of its natural values.

The Resources Reserve was gazetted in 1998 under the *Nature Conservation Act 1992*, with joint Trustees of the Director-General, Department of Environment and Heritage and the Director-General, Department of Mines and Energy. Provision for fossicking is contained in the draft Management Plan for the Reserve. The Trustees have agreed to give a "general permission" under the *Fossicking Act 1994* for fossicking and camping under certain conditions.

Access

Moonstone Hill is a low isolated hill on the east side of the Kennedy Development Road (unsealed) about 90km south of The Lynd. The Reserve is 5km north of the Blackbraes turnoff, or about 16km north of the Chudleigh Park turnoff (peridot collecting locality). At the grid crossing in the main road look for a simple wire gate in the fence and a track leading to the hill.

A sign showing the details of conditions that apply is erected on the

Reserve and boundary markers have been surveyed in.

Geology

Late Cainozoic basaltic volcanism is well developed in north Queensland in twelve separate 'provinces'. Moonstone Hill is within the Chudleigh Province which is characterised by broad, partly dissected lava plains between numerous pyroclastic cones, some composite cones and several lava shield volcanoes (Stephenson and others, 1980).

Moonstone Hill is one of several scoria vents which are surrounded by flat-lying basalt lavas, some of which were erupted from the vents. Scoria (lava with a high proportion of gas bubbles) is exposed on top of the hill and is typically reddish-brown in colour, and is characterised by its vesicular texture. The feldspar occurs as megacrysts filling some gas cavities in the lava. The lava plains overlie older metamorphic rocks of Precambrian age, Palaeozoic sediments and granitoids, and Cretaceous sediments.

Fossicking

The gem variety of feldspar called moonstone is characterised by the sheen effect "adularescence" or "schiller" it exhibits. This silvery-white to blue effect can be seen when the stone is turned in certain directions. It is caused by light reflecting from microscopic (layers) of two types of feldspar namely orthoclase ($KAlSi_3O_8$) and albite ($NaAlSi_3O_8$). Most gem moonstone comes from Sri Lanka, India, Brazil and Madagascar.

The feldspar from this locality has been identified as anorthoclase, an alkali feldspar in which sodium is in excess of potassium ($Na,KAlSi_3O_8$) which is unusual as anorthoclase-

moonstones are uncommon and somewhat of a rarity for collectors. In detail, Brown (1986) determined it to be an anorthoclase-crypto-perthite antiperthite. It is of triclinic symmetry and twinning is very common, in a combination of the pericline and albite twin laws. Cleavage is perfect in two directions nearly at right angles, and it has a vitreous lustre, but may be pearly on cleavage surfaces. The hardness is 6 (Mohs'), specific gravity (2.61), refractive indices (1.526 - 1.534), and biaxial negative optical sign.

Generally the material is colourless and transparent, but some is milky white to yellowish and translucent to opaque. However, some specimens show a silvery-white to bluish adularescence (presumably because of separation into albite and orthoclase crypto-perthitic layers) and hence can be classed as moonstone.

Gem quality material commonly occurs as blocky cleavage fragments of 10-30 cts and rare specimens 5-6 cms in length. A lot of material is unusable for cutting due to incipient cleavages, or fractures and other inclusions, but clean sizeable material is common.

The material has weathered out of the host rock and can be found on the ground surface or in the soil around the lower flanks of the vent. Specking the ground surface and simple shallow excavation and dry sieving are the best methods to use.

Requirements

Fossicking for gemstones requires a Fossickers Licence which can be issued for varying periods upon payment of the relevant fee at Departmental District Offices or from agents at various locations throughout the State.

At Moonstone Hill, licensees must comply with the conditions of the “general permission” given by the Trustees of the Resources Reserve.

Conditions of “general permission”

- permission is given only to holders of a Fossickers Licence
- requirements of the *Fossicking Regulation 1994* must be complied with
- no fires are to be lit to avoid the danger of grass fires escaping to the adjacent National Park
- gates and fences must be left as found
- water supplies are to be brought from elsewhere and must not be obtained from the grazing operations on the adjacent National Park
- the adjacent National Park must not be entered for fossicking or in vehicles
- all rubbish must be removed

Camping

Camping is permitted under the “general permission” for a maximum of 5 nights. A camping permit is required under the Nature Conservation Regulation and fees apply. A permit can be obtained from Department of Environment and Heritage offices. Camp sites must be within the bounds of the Resources Reserve and not encroach the surrounding Blackbraes National Park. The best sites are probably on the eastern side of the hill out of sight from the main road. **Camp fires are not permitted** and gas stoves or barbecues are needed for cooking.

Code of conduct

In addition to the conditions of the “general permission” a person fossicking under a Fossickers Licence must comply with the requirements of the Fossicking Act and Fossicking Regulation to maintain safety, hygiene and a high standard of behaviour during their visit.

References

Brown, G., 1986: Australian Gem Feldspars. *Australian Gemmologist*. **16**, 81.

Stephenson, P.J., Griffin, T.J. and Sutherland, F.L., 1980: Cainozoic volcanism in northeastern Australia; in Henderson, R.A., & Stephenson, P.J., (editors), *The Geology and Geophysics of Northeastern Australia*. Geological Society of Australia, Queensland Division, Brisbane, 349-374.

For further information:

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