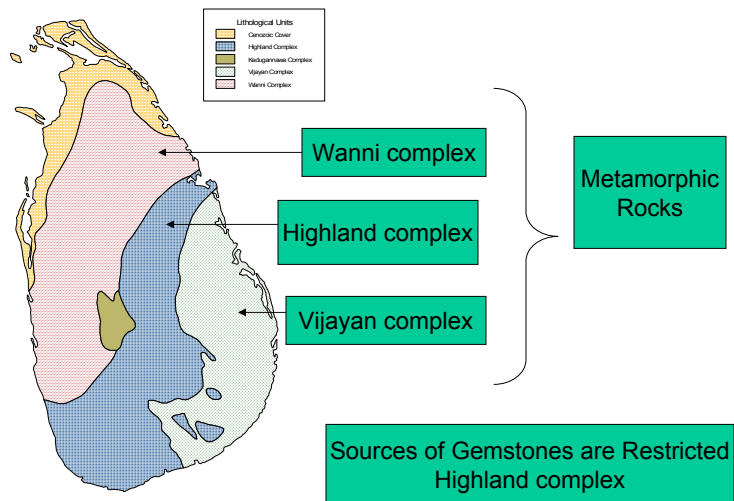


Supporting the Development of Gem Industry with Sound Geo-Scientific Information

Sarath Weerawarnakula
Director, Geological Survey and Mines Bureau
SRI LANKA

General Geology



Types of Gem deposits

- Alluvial (Secondary) deposits

Nearly 100% gem mining is carried out in Alluvial Terrains

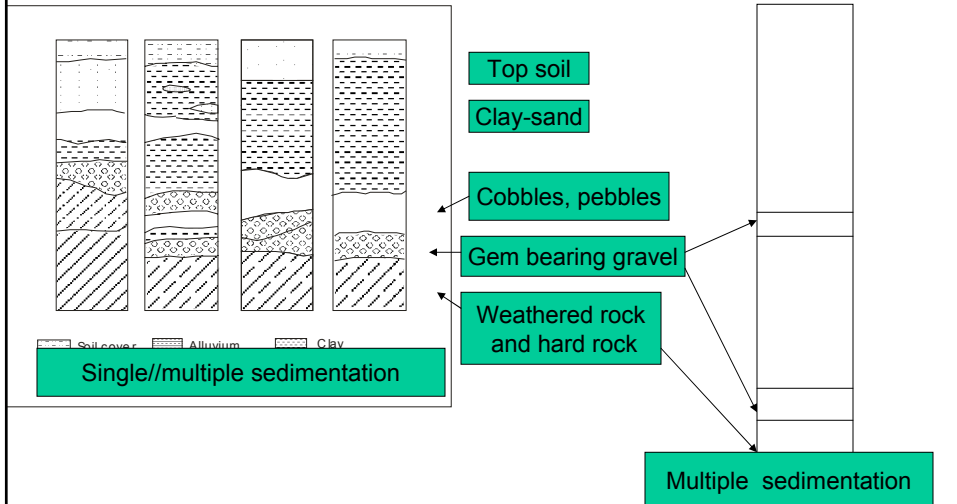
- In situ (Primary) deposits

Accidentally found deposits are mined

Alluvial (Secondary) deposits

- Single sedimentation with single gem bearing gravel layers
- Multiple sedimentation with multiple gem bearing gravel layers(Two gem bearing gravel layers are common when compared three or more layers)

Alluvial (Secondary) deposits



Scientific approach to Identify Secondary Deposits

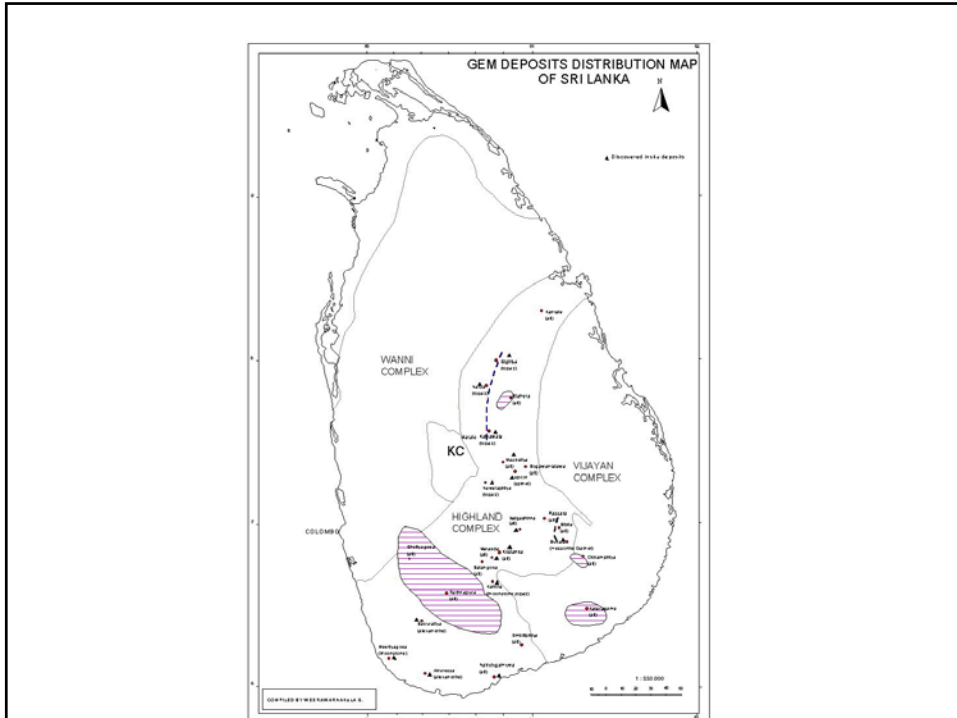
- Such terrains could be easily identify by RS data (With basic aerial photo interpretation) followed by auger sampling. Depth of the Gem bearing gravel layer could be easily found using Geophysical investigation methods
- Do the mining organization and miners use such information or techniques ?
- The answer is NO..or very rarely
- Why?
- They generally depend on traditional steel rod method to identify the depth of the Pebble/Cobble layer which over lie the Gem bearing gravel layer...this has lead to haphazard mining of alluvial terrains with or without gemstones
- Have we prepared such maps for the assistance of miners?
- Except few individual cases the answer is NO?
- So can we blame the small scale miner for haphazard mining and destroying the environment?

Gem pit in a Alluvial Terrain



In -situ deposits (Primary Deposits)

- Occur as Aggregate of stones in the weathered overburden
- Accidentally found deposits makes “ GEM RUSHES”
- Such deposits are scattered throughout the highland complex
- There are no systematic mining of such deposits in Sri Lanka
- Have we got geological Information on such occurrences?
- When compared to distribution of gemstones in alluvial occurrences(one or two or none in a pit)and as we have not really got into insitu mining we still have large resources of gemstones to be mined



Geological setting of Insitu

Mineralizations in association with Mega lineaments
 (Maradola, Koslanda, Idalgashinna, Upcot, Maskeliya,
 Bogawanthalawa) Corundum family, spinal,
 Hessonite Garnet

Pegmatite-Moonstones(Meetiyyagoda) , Topaz with or
 without aquamarine (Sigiriya,
 Naula, Kaltota, Mathale and Nawalapitiya)

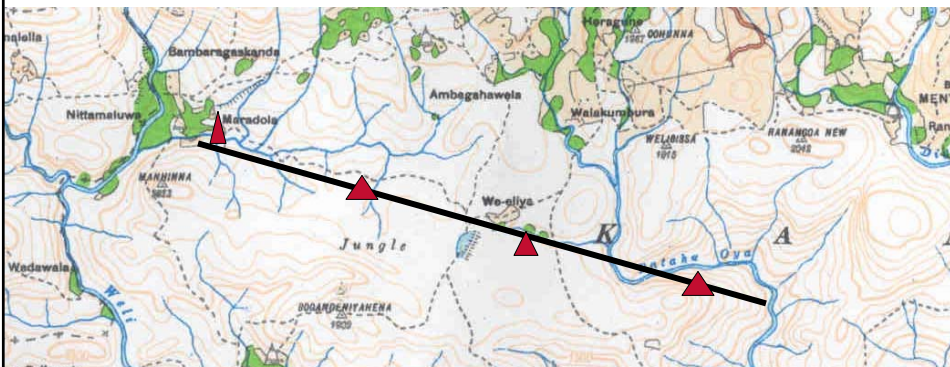
Scarn Type- Associated with Carbonate rocks
 Corundum family (Katharagama)

Contact Metasomatic Alterations
 Corundum family(Hatharabage, Balangoda)

Mineralizations in association with Mega lineaments



Mineralizations in association with Mega lineaments



Approx. 7 Km long

Mineralizations in association with Mega lineaments



In Pegmatites



In Pegmatites



In Carbonate Rocks



In Carbonate Rocks

← Approx. 5 km →



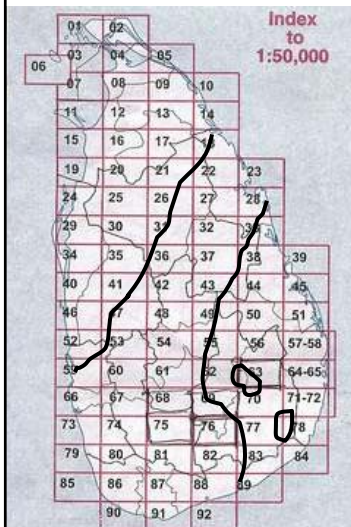
In Carbonate Rocks (Small scale miners limits)



In Carbonate Rocks Mechanized mining



With all these geo scientific
information.....?



Preparation of
Gem Potential Maps of Sri Lanka
based on 1:50 000 maps