



## **Global Heritage Stone**

**Circular No 6**

**March 2013**

[www.globalheritagestone.org](http://www.globalheritagestone.org)

**Information and discussion on the**

### **'Global Heritage Stone Resource' (GHSR)**

**A new international designation recognising natural stone resources  
that have achieved widespread utilisation in human culture**

**This project operates as the "Heritage Stone Task Group" (HSTG) of the "International Union of Geological Sciences" (IUGS) and under "Commission C-10 Building Stones and Ornamental Rocks of the International Association of Engineering Geology and the Environment" (IAEG C-10)**

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#### **OPENING MESSAGE**

The primary purpose of this Circular is to advise all HSTG Corresponding Members of the excellent programme at the 1<sup>st</sup> Heritage Stone Conference to be held in Vienna, Austria on Friday 12 April 2013. All correspondents are invited to attend.

Our conference is being held as part of the Annual General Assembly of European Geosciences Union, as Session ERE 3.4 "Natural stone research and Heritage stone designation".

Please see inside for full information on the programme, presenters and times.

In addition in this Circular you will find an updated and revised "Interim list of potential GHSRs", following suggestions and review of the abstracts being offered in Vienna.

Given that little comment has been received we also reissue our "Check List for 'Global Heritage Stone Resource' designation" in this Circular. It is suggested here that this becomes an accepted guide for GHSR nomination if no further comments have been received by 1 June 2013.

Following a request we have also drafted a "Check List for a 'Global Heritage Stone Province' ". This is published herein and is also open for comment.

It is hoped that both of these “Check Lists” will also be part of the discussion held in association with the Vienna conference.

An HSTG progress report is scheduled to be published in the coming issue of *Episodes*. Heritage Stone use will also be featured on the front cover of this issue. A progress report, originally offered at the Global Stone Congress, Alentejo (Borba), Portugal, last July has now been published in *Key Engineering Materials* 548 (2013): 329-335.

Finally, we include a suggested HSTG logo. It has been designed by our Vice President Southern Europe, Lola Pereira. Please let us know what you think.

Our numbers of correspondents continue to increase. As of 1 March 2013 we have 176 members from 42 countries. Please feel free to nominate additional HSTG Corresponding Members.

Barry Cooper  
Secretary General

### **1<sup>st</sup> HERITAGE STONE CONFERENCE, VIENNA, AUSTRIA, 12 APRIL 2013**

This conference forms part of the European Geosciences Union, General Assembly, 7-12 April 2013 being held in the Austria Center Vienna, Bruno-Kreisky-Platz 1, 1220 Vienna. The Congress Centre website is [www.acv.at](http://www.acv.at).

For Conference Registration and Heritage Stone Conference participation see [www.egu2013.eu/registration.html](http://www.egu2013.eu/registration.html). A single day conference registration is available. A detailed schedule of the 1<sup>st</sup> Heritage Stone Conference is as follows:

#### **Session ERE3.4:**

#### **“Natural stone research and Heritage stone designation”, Friday 12 April 2013**

Convener: Dolores Pereira

Co-Conveners: Brian Marker, Sabina Kramar, Barry Cooper and Björn Schouenborg

#### **Oral Programme**

*Friday 12 April 2013*

*08:30–10:00, Room G12*

**Chairperson:** D. Pereira

08:30– [EGU2013-1410](#)

08:45 **Barry Cooper**

The "Global Heritage Stone Resource": Past, Present and Future

08:45– [EGU2013-230](#)

09:00 **Brian Marker**

Basis for application of criteria for definition of Global Heritage Stone

09:00– [EGU2013-12657](#)

09:15 **Björn Schouenborg**, Jenny Andersson, and Mattias Göransson

Natural stones of historic and future importance in Sweden

- 09:15– [EGU2013-11327](#)  
 09:30 **Tom Heldal** and Rolv Dahl  
 Global stone heritage: larvikite, Norway
- 09:30– [EGU2013-4695](#)  
 09:45 **Hannu Luodes**, Paavo Härmä, Elena Panova, Heikki Pirinen, and Olavi Selonen  
 The use of local natural stone in construction of St. Petersburg region and south-east Finland
- 09:45– [EGU2013-5616](#)  
 10:00 **Sabina Kramar**, Mojca Bedjanič, Breda Mirtič, Ana Mladenović, Boštjan Rožič, Dragomir Skaberne, and Nina Zupančič  
 The Significance of Podpeč limestone in the Cultural Heritage of Slovenia

### **COFFEE BREAK, 10.00-10.30**

*Friday 12 April 2013,  
 10:30–12:00 Room G12*

**Chairperson:**B. Schouenborg

- 10:30– [EGU2013-1670](#)  
 10:45 **Walter Prochaska** and Silvana Maria Grillo  
 Methods for tracing the origin of white marbles used in antiquity
- 10:45– [EGU2013-12900](#)  
 11:00 **Vincenzo Simeone** and Angelo Doglioni  
 Preliminary notes about Heritage Stone Resources from Apulia region South Italy
- 11:00– [EGU2013-9394](#)  
 11:15 Rafael Fort, **Mónica Álvarez de Buergo**, M José Varas-Muriel, and Elena Mercedes Pérez-Monserrat  
 Colmenar limestone as a resource for built heritage
- 11:15– [EGU2013-851](#)  
 11:30 **Rafael Navarro**, Dolores Pereira, Carlos Rodríguez-Navarro, and Eduardo Sebastián-Pardo  
 Sierra Nevada serpentinites. An important element in the architectonic heritage of Granada (Spain).
- 11:30– [EGU2013-1107](#)  
 11:45 **Dolores Pereira**, Ana Gimeno, and Santiago del Barrio  
 Piedra Pajarilla: A candidate for nomination as Global Heritage Stone Resource from Spain
- 11:45– [EGU2013-1641](#)  
 12:00 **Hirokazu Kato**, Teruki Oikawa, Masayo Fujita, and Shunji Yokoyama  
 Introductory overview of Stone Heritage in Japan

### **POSTER SUMMARY AND DISCUSSION SESSION 12.15-13.00**

## **Poster Programme**

*Display Time: Friday 12 April 2013, 08:00–17:00*

*Attendance Time: Friday 12 April 2013, 13:30–15:00, Room R5*

**Chairperson: S. Kramar**

- 1 [EGU2013-1741](#)  
**Andrey Bulakh**  
Building and Ornamental Stone in the History of St Petersburg Architecture
- 2 [EGU2013-2427](#)  
**Dmitry Vlasov**, Elena Panova, Elena Alampieva, Elena Olhovaya, Tatyana Popova, Alexey Vlasov, and Marina Zelenskaya  
Biofouling of granite-rapakivi in St. Petersburg monuments and in the quarry in Russia and Finland.
- 3 [EGU2013-2433](#)  
Anders Wikström and **Dolores Pereira**  
The Kolmården serpentine marble in Sweden, a building stone found at many levels in the society.
- 4 [EGU2013-13007](#)  
**Ákos Török**  
Hungarian travertine: a historic and current stone resource of Central Europe
- 5 [EGU2013-12869](#)  
**Valentina Cetean**  
Ruschita Romanian marble - 130 years of official exploitation and 130 m depth of architectural beauty around the word
- 6 [EGU2013-3431](#)  
Afat Serjani and **Sabina Kramar**  
Drropulli Stone and Gjirokastra World Heritage in Albania
- 7 [EGU2013-9097](#)  
**Kostas Laskaridis**, Michael Patronis, Christos Papatrechas, and Björn Schouenborg  
The Marble Types of Thassos Island through the Ages
- 8 [EGU2013-9096](#)  
Alessandro Borghi, Daniele Castelli, Emanuele Costa, Anna d'Atri, **Giovanna Antonella Dino**, Sergio Favero, Simona Ferrando, Chiara Groppo, Luca Martire, Rosanna Piervittori, Franco Rolfo, Piergiorgio Rossetti, and Gloria Vaggelli  
The geological heritage of Piedmont Region: Turin a "Stone-Town"
- 9 [EGU2013-2899](#)  
**Alessandro Cavallo** and Giovanna Antonella Dino  
The OSMATER project: promotion of stone materials from the Verbano-Cusio-Ossola region (Italy) and the Canton Ticino (Switzerland).

- 10 [EGU2013-4175](#)  
**Silvana Maria Grillo**, Carla Del Vais, and Stefano Naitza  
Multidisciplinary studies on ancient sandstone quarries of Western Sardinia (Italy).
- 11 [EGU2013-4252](#)  
**Rafael Navarro**, Ana Sol Cruz, Lourdes Arriaga, and José Manuel Baltuille  
White Macael marble: a key element in the architectonic heritage of Andalusia for over 25 centuries
- 12 [EGU2013-4297](#)  
**Rafael Navarro**, Eduardo Molina, and José Manuel Baltuille  
The relevance of "Santa Pudia" calcarenite: a natural stone to preserve heritage buildings in Andalusia (Spain)
- 13 [EGU2013-4325](#)  
**Rafael Navarro**, Josefina Sánchez-Valverde, and José Manuel Baltuille  
"Piedra Dorada: a natural stone as an intrinsic part of two World Heritage Cities in Andalusia (Spain)
- 14 [EGU2013-12263](#)  
**Jacinta Garcia-Talegon**, Adolfo Iñigo, and Santiago Vicente-Tavera  
Villamayor stone (Golden Stone) as a Global Heritage Stone Resource from Salamanca (NW of Spain)
- 15 [EGU2013-8658](#)  
**Luis Lopes** and Ruben Martins  
Portuguese Marbles as Stone Heritage
- 16 [EGU2013-12406](#)  
**Silvia Aires**, Cristina Carvalho, and Fernando Noronha  
Eucisia schist a natural stone from Northern Portugal
- 17 [EGU2013-13342](#)  
**Angela Almeida** and Arlindo Begonha  
Contribution of Portuguese two-mica granites to stone built heritage
- 18 [EGU2013-8727](#)  
**Jana Horak**, Terry Hughes, and Graham Lott  
Welsh Slate: A Candidate for Global Heritage Stone Status
- 19 [EGU2013-2475](#)  
**Antônio Gilberto Costa**  
Steatite and schist as contenders for the Global Heritage Stone Resource due to their importance in Brazil's natural stone built heritage

## **FUTURE CONFERENCES**

A conference session closely related to HSTG efforts and entitled “Cultural Geology: Heritage Stone, Buildings, Parks, Exhibits, and More” will be part of the next Geological Society of America (North Central Section) conference in 2-3 May 2013 in Kalamazoo, Michigan. Session Convenors are Nelson Shaffer and Joe Hannibal. All correspondents are welcome in Kalamazoo, Michigan next May. HSTG will co-sponsor this session. More information can be found at [www.geosociety.org/sections/nc/2013mtg/techprog.htm](http://www.geosociety.org/sections/nc/2013mtg/techprog.htm)

A 2014 conference is envisaged as a session of the XII IAEG conference to be held in Turin, Italy, 15-18 September 2014. A session entitled: “Building stones & Ornamental rocks: resource evaluation, technical assessment, heritage designation” has been proposed.

Another edition of the “Global Stone Congress” is also currently planned for Antalya, Turkey in October 2014. Please watch [www.globalstone2014.org/](http://www.globalstone2014.org/) for further details.

A 2015 conference is being planned for North America (USA or Canada) by Joe Hannibal, Brian Pratt and Nelson Shaffer.

The 2016 conference will likely be linked with the 35<sup>th</sup> International Geological Congress to be held in Cape Town, South Africa, 27 August – 4 September 2016.

## **INTERIM GHSR LIST (REVISED MARCH 2013)**

With formal HSTG establishment, creation of an interim or standing list of potential GHSRs has become a major HSTG objective.

The attached Excel File is a revised Interim GHSR List that has been updated following suggestions as well as a review of presentations being offered at the Vienna conference.

The interim list is just that, a list (in an Excel File) that is arranged alphabetically by country with summary details of a potential name, geological age, heritage aspect, contact person, action status, etc. It provides only a tentative guide for future prioritising of our efforts.

## **Comments and proposals for additions to our Interim GHSR List are always welcome.**

Following placement on the interim list, the following general procedures for subsequent GHSR designation are suggested:

- Use a Check List (see next section) to gather the essential defining information of each GHSR nominee.
- Prepare a research paper around this essential information with an introduction, review of the nominee, together with a concluding statement which compares this nomination with other potential GHSRs.
- Publish the GHSR nomination as a research paper in a peer reviewed technical Journal.

This publication can then be assessed by the HSTG Board and the nominated stone approved, if deemed acceptable.

Obviously this procedure is subject to change based on practical experience.

Research articles are possible in *Episodes* (the IUGS Journal), *Geoheritage*, *Journal of Architectural Heritage* or other peer reviewed journals with a distinctive tendency towards construction and architectural heritage topics. Special volumes are an alternative publication outlet.

### **CHECK LIST FOR GHSR DESIGNATION AND MODEL GHSR NOMINATION**

In Circular 5 (December 2012), we offered a “Check List for ‘Global Heritage Stone Resource’ designation”.

This checklist has now recently been published in the following research paper:

Cooper, B.J., Marker, B.R. Marker and Thomas, I. 2013. Towards international designation of a heritage dimension stone. *Key Engineering Materials* 548 (2013): 329-335.

It will also be published in a paper in the next issue of *Episodes*.

It is here suggested that this Check List becomes an accepted guide for GHSR nomination, if no further comments have been received, by 1 June 2013. Obviously it remains subject to change, if so desired by the HSTG Board. In the meantime it can continue to be provided to all those planning or preparing a GHSR nomination.

A paper nominating Portland Stone from the United Kingdom as a suitable GHSR has also been submitted to *Episodes*. This is undergoing review and it is hoped that this will provide a model for future GHSR nominations.

**The GHSR Check List is reprinted in the box below and is open for comment, revision and hopefully general approval from all Correspondents until 1 June 2013.**

**CHECKLIST**  
**FOR**  
**“GLOBAL HERITAGE STONE RESOURCE”**  
**DESIGNATION**

*(December 2012)*

**Formal Name** for this proposed “Global Heritage Stone Resource”:  
*(This should be the commonly used name)*

**Origin of Name** (optional):

**Stratigraphic (or Geological) Name:**

**Other Names:**

*(This may include the names given to different types or variants of the designated stone)*

**Commercial Designations:**

*(This should list any additional common commercial names that are used to market the designated stone)*

**Area of Occurrence:**

*(This means the geographic area where the designated stone occurs in nature, a general map also needed for publication)*

**Principal Location of Quarry or Quarries:**

*(This should specify active and abandoned quarries of the designated stone and their location. A detailed map may be necessary. One or several typical locations may be specified as a type quarry in the same way as a geological type section)*

**Geological Age and Geological Setting:**

*(Information on geological setting is optional but may include details of sedimentary basin/ fold belt, tectonic domain, igneous activity etc that place the designated stone in a wider geological perspective)*

**Petrographic Name:**

*(Technical name of stone as determined by geological assessment)*

**Primary Colour(s) and Aesthetics of Stone**

*(This include major colours, colour variations and descriptions of ways that a stone may be used aesthetically)*

**Natural Variability:**

*(Comment here on any natural changes in the designated stone)*

**Composition (optional):**

*(This should add any distinguishing mineralogical characteristics)*

**Geotechnical Properties:**

*(The characteristics listed below provide a guide only, some of which may be omitted, whilst others deemed important may be included)*

|                              |                                  |
|------------------------------|----------------------------------|
| Water Absorption(%)          | Density (kg/m <sup>3</sup> )     |
| Porosity (%)                 | Compressive Strength – Dry (MPa) |
| Flexural Strength –Dry (MPa) | Salt Crystallisation (%)         |
| Saturation Coefficient       |                                  |

**Suitability:**

*(This should provide an assessment on how the stone has been utilised, for example: cut building blocks, sculpting stone, roofing, monuments, polished decorative use, technological objects etc. A comment on stone quality may be useful for example sculpting stone that provides international reference)*

**Vulnerability and Maintenance of Supply:**

*(This should assess the availability of stone supply for future use and for the renovation/ extension of existing buildings and monuments, as well as the possibility of constraints on supply through conservation measures or resource depletion or other factors)*

**Historic Use and Geographic Area of Utilisation:**

*(This should provide a brief general statement on the historic and geographic use of the stone especially in significant heritage or archaeological applications)*

**Buildings:**

*(This should provide an extensive list the significant buildings, monuments, sculptures etc, especially the most famous including dates of construction if available)*



***Related Heritage Issues:***

*(This should include information on significant heritage issues that affect the designated stone for example, alternative heritage listing of buildings or quarry areas associated with the stone, supporting museums, sculpture parks etc.)*

***Other Designations (optional):***

*(Here it can be proposed that the stone may be assigned additional designations, for example the epithet 'Classic World granite/marble/etc', 'Global Ornamental Stone', 'International Decorative Stone Icon' etc.)*

***Related Dimension Stones:***

*(Discuss here any other dimension stones that are closely related geographically, geologically or utilised together with this stone. Under current draft rules it is possible to propose separately a "Global Heritage Stone Province" that links several "Global Heritage Stone Resources")*

***Principal Literature related to the Designated Stone:***

*(list major scientific papers, books and popular literature dealing with the designated stone)*

***Images:***

*(images, historic photos and line illustrations necessary for presentation and publication)*

## **CHECKLIST FOR GLOBAL HERITAGE STONE PROVINCE (GHSP)**

Early in the development of the Global Heritage Stone project it became clear that more than one internationally significant stone type could occur in the same region and that these could also be associated and related geologically. The Carrara Marble region in north western Tuscany in Italy is an obvious case in point.

As a consequence, under the approved HSTG Terms of Reference, the following definition was included:

*"A Global Heritage Stone Province (GHSP) is a designated area, where two or more GHSRs are associated in close geographic proximity and by their common geology".*

Furthermore the Terms of Reference state that GHSP designations shall be an HSTG responsibility and those GHSP definitions shall, where feasible, "include similar data to that recommended for GHSRs or be designated simply as that a region in which a group of specified GHSRs are located".

Following from this advice, the Secretary General has been requested to provide information, as to what is required for a GHSP proposal and nomination.

The GHSP Checklist as shown in the box below represents the first draft of a GHSP check list.

Correspondents should become aware that there are some different challenges that arise with GHSP recognition by the HSTG Board.

Some of these are as follows:

- There will likely be instances where GHSRs will occur within a Heritage Stone province that is not deemed to have international importance by the HSTG Board.
- At present two GHSRs are needed for the HSTG Board to recognise a GHSP. Given this constraint, it is also possible that that only one GHSR could occur in a heritage stone province that has great international significance.

**This Global Heritage Stone Province (GHSP) Check List is now open for discussion, comment and revision by all HSTG Correspondents**

**CHECKLIST**  
**FOR**  
**“GLOBAL HERITAGE STONE PROVINCE”**  
**CITATION**

**(Draft March 2013)**

**Formal Name for this proposed “Global Heritage Stone Province”:**

*(This should be the commonly used name)*

**Origin of Name (optional):**

**Other Names:**

*(This may include other names given to the designated province)*

**Area of Occurrence:**

*(This specifies the geographic area where the designated province occurs)*

**List of constituent “Global Heritage Stone Resource” designations:**

*(This must list those stone types within the province for which a separate formal description as a designated ‘Global Heritage Stone Resource’ has been prepared.)*

**List of other known constituent heritage stone types, not otherwise designated, with assessment of international/national/regional status that are also included within this designated Province:**

*(This lists other heritage stone types having international, national or regional significance)*

**Geological Setting:**

*(Information on geology that places the designated province in a wider geological perspective)*

**Unifying geological characteristics within this province:**

*(Information on the geology that specifies the unifying geological features of heritage stone within the province)*

**Natural variation of geology within this province**

*(Information on any natural changes within the designated province)*

**Vulnerability:**

*(This should assess the overall availability of stone types in the province for future use and the constraints on supply and quarrying)*

***Historic Use and Geographic Area of Utilisation:***

*(This should provide a brief summary statement on the historic and geographic use of the stone from designated province)*

***Construction:***

*(This should provide an exemplary list of the most significant use of specified stones from this province)*

***Principal Literature related to the Designated Stone Province:***

*(list major scientific papers, books and popular literature dealing with the designated province)*

***Any other items:***

## **A LOGO FOR HSTG**

HSTG Vice President Southern Europe, Lola Pereira, felt that HSTG needs an identifying logo. She has produced the draft design shown below.

**Please let Lola or the Secretary General know your opinion on this design.** Thanks Lola for your time and effort on this project.



## **NEW HSTG CORRESPONDING MEMBERS**

Since our last Circular the following people have been added to our list of HSTG Corresponding Members. Please welcome all these stone enthusiasts to the world of heritage stone.

|                  |                    |                        |
|------------------|--------------------|------------------------|
| <i>Albania</i>   | <i>Croatia</i>     | <i>Portugal</i>        |
| Afat Serjani     | Katerina Kos       | Rogério Bordalo da     |
| <i>Belgium</i>   | <i>France</i>      | Rocha                  |
| Karel Breda      | Jacques Touret     | Pedro Santarem Andrada |
| Marleen de Ceuke | <i>Japan</i>       | <i>Slovenia</i>        |
| Hilde de Clerc   | Masayo Fujita      | Duška Rokavec          |
| Michiel Duser    | <i>Netherlands</i> | <i>Switzerland</i>     |
| David Lagrou     | Wim Dubelaar       | Martine Vernooij       |
|                  | Timo Nijland       |                        |

Do you know of other people or organisations that are interested in HSTG work? Please let us know, so they can be added to our list of correspondents.

As of 6 March 2013 we have 177 corresponding members from 42 countries.

## **HSTG BOARD MEMBERS, 2012-2016**

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PLEASE ADDRESS ALL CORRESPONDENCE TO THE  
HSTG SECRETARY GENERAL, WHO IS ALSO EDITOR AND COMPILER OF THIS  
CIRCULAR