

**Archaeological Predictive Map
Saba, Caribbean Netherlands
February 2015**

M.S. de Waal, J. Lesparre, M.L.P. Hoogland & R. Espersen

Initiated by: A.P.M. Bersee MSc, director Cultural Heritage, Ministry of Education, Culture and Science, The Hague (the Netherlands).
Produced by: dr. M.S. de Waal & J. Lesparre MSc, ARGE**O**graph, Leiden (the Netherlands).
Directed by: prof. dr. C.L. Hofman & prof.dr. M.L.P. Hoogland, Faculty of Archaeology, Leiden University, Leiden (the Netherlands).
Supported by: R. Espersen MPhil, Saba Archaeological Center (SABARC), Saba (Caribbean Netherlands).
Supervised by: R. Stelten MA of St. Eustatius Center for Archaeological Research (SECAR), Oranjestad (Caribbean Netherlands).

Products

- GIS format: 5 ArcGIS shape files, one for each of the archeological map layers listed in the legend.
- PDF format: 2 versions, one at B1 paper size for printing at scale 1 : 10 000 and one at A3 paper size for printing at scale 1 : 25 000.

Approach

- The map displays the information available in February 2015, as based on surveys carried out by J.B. Havisers [1][2] in the 1980's, by M.L.P. Hoogland and C.L. Hofman [3][personal communication] from the 1980's until 2013 and by R. Espersen from 2008 until February 2015 [personal communication].
- No distinction was made between pre-colonial and historic sites or between pre-colonial and historic expectancy zones.
- Excavated areas have not been indicated.
- Archaeological sites are displayed as complexes (such as plantations), not showing individual structures.
- Extensive terracing (possibly related to the agricultural periphery of Palmetto Point) is indicated as a site. Individual terraces have not been mapped.
- The archaeological sites are mapped by satellite image mapping [4] using expert knowledge of R. Espersen and M.L.P. Hoogland or by handheld GPS survey [5].
- The historic city has been mapped using the outlines of The Bottom as indicated by R. Espersen, based on expert knowledge. These outlines have been checked on the 1816 map [6] and on the 1850 map [7] of Saba.
- Zones have been labelled as having a high expectancy for archaeological values when:
 - they directly border known archaeological sites of which the limits have not yet been well established, and the archaeological remains can be expected to expand beyond the indicated site boundaries (based on expert knowledge of M.S. de Waal and M.L.P. Hoogland);
 - contour lines (as provided in the planning office GIS [8]) and detailed views in Google Earth (consulted in April 2014) suggest that they are flat or relatively flat;
 - they offer attractive conditions for pre-colonial habitation or exploitation (based on expert knowledge of M.S. de Waal and M.L.P. Hoogland);
 - they are indicated on the 1850 map [7] as being the location of activity of which the remains have not (yet) been discovered.
- Zones have been labelled as having a medium expectancy for archaeological values when:
 - they immediately surround a zone of high expectancy, thus creating a buffer area towards low expectancy zones taking local topography into account (based on expert knowledge of M.S. de Waal and M.L.P. Hoogland);
 - they offer mediocre conditions for pre-colonial habitation or exploitation (based on expert knowledge of M.S. de Waal and M.L.P. Hoogland);
 - referred to in a book of sales records, between 1815-1875, currently held by Will Johnson in Saba [9] as being a location to be used as government burial ground for the poor (Espersen [personal communication]).
- The remainder of the island has been classified as having low expectancy for archaeological values.
- The displayed topographic information is a selection of the classes of the planning office GIS [8].

Precision

Due to the use of satellite image, handheld GPS, and recent and historic topographic maps, the precision of most of the map is about 10 m. The precision of the used sources was estimated by J. Lesparre (based on expert knowledge) and is listed below.

- Maps and site location sketches from Havisers 1983 field notes [1] and 1985 publication [2] could not be georeferenced at all. They have been used as a general source only.
- Maps from Hooglands 1996 PhD thesis [3] could not be georeferenced at all. They have been used as a general source only.
- The satellite image [4] is a orthorectified, pansharpened RGB image with 0.8 m resolution. Its 19 degree off-nadir viewing angle is orthorectified with an accuracy of 10 m. This results in mapped points with at best comparable precision, provided that the points are recognisable in the image. Many mapped points are situated in densely vegetated areas and are expected to be less precise.
- Espersens 2013 and 2014 handheld navigation GPS survey data has a precision of < 10 m.
- The 1816 map [6] could not be georeferenced at all. It has been used as a general source only.
- The 1850 map [7] could not be georeferenced accurately.

Recommendations for future work

Following SECAR's demand, the map has been created with the idea that a first quick map version should appear and that the first update should be made within one year after release (which would be in 2016).

Following updates are recommended at least every five years. The following improvements are recommended.

- Mapping newly discovered sites or updated information on known sites, underwater archaeology sites, Second World War sites, monumental trees and places of remembrance.
- Adding site data to the GIS layers, including site ID's and digital site information.
- Adding distinctions between pre-colonial and historic sites and pre-colonial and historic expectancy zones.
- Adding excavated areas.
- Mapping (protected) archaeological monuments (when indicated by island's local government).
- Mapping local government regulations and archaeological advice for different areas in Saba (requirements: research agenda and requirements for archaeological research in Saba).

Acknowledgements

- The map was created by ARGEOgraph in MapInfo. M. Verbruggen (MA), director of RAAP Archeologisch Adviesbureau (the Netherlands), was so kind as to allow ARGEOgraph to use one of RAAP's MapInfo licenses.

Sources

- [1] Havisser, J.B., 1983. *Field notes, Saba Survey, July 1983*. Unpublished field notes.
- [2] Havisser, J.B., 1985. An Archaeological Survey of Saba, Netherlands Antilles. Phase I report. *Reports of the Institute of Archaeology and Anthropology of the Netherlands Antilles*, No. 3.
- [3] Hoogland, M.L.P., 1996. *In Search of the Native Population of Pre-Columbian Saba (400 – 1450 A.D.). Part Two*. Unpublished PhD thesis, Leiden University.
- [4] Ikonos-2 orthorectified satellite image of 23 november 2007 14:55 GMT, purchased by ARGEOgraph from e-GEOS.
- [5] Handheld navigation GPS survey data acquired by R. Espersen during surveys in 2013 and 2014.
- [6] *The Island of Saba, by Capt E.H. Columbine, RN. With view of part of the Island. About 2½ inches to 1 mile. Published by the Admiralty, 1816*. Held by the National Archives, Kew.
- [7] *West Indies, Leeward Islands, St. Christopher and Nevis, surveyed by Capt. E. Barnett, assisted by J. Ward & W.F.B. Edwards, H.M.S. Thunder, 1848. Eustatius and Saba, surveyed by Lieut. G.B. Lawrance, Lieut. W. Mooney and J. Parsons, H.M.S. Scorpion, 1850*. National Maritime Museum, Greenwich, London.
- [8] Topographic GIS layers obtained from planning office of Sint Eustatius.
- [9] *Saba Sales Records 1815-1875*, Will Johnson Collection, Saba: 20/1/1873.