



**Faculty of Science**

Institute for Biodiversity and Ecosystem Dynamics (IBED)

**Mr. Enrique Peñalosa**

Alcalde, Bogotá, D.C.  
Colombia

**Administration**

Science Park 904  
1098 XH Amsterdam  
P.O. Box 94248  
1090 GE Amsterdam  
The Netherlands

T +31 20 525 7954  
F +31 20 525 7832  
[www.science.uva.nl/ibed](http://www.science.uva.nl/ibed)

Date

23 augustus 2016

Contact person

A.M. Cleef

H. Hooghiemstra,

Email

[A.M.Cleef@uva.nl](mailto:A.M.Cleef@uva.nl)

[H.Hooghiemstra@uva.nl](mailto:H.Hooghiemstra@uva.nl)

Telephone

+31(0)20 525 7857

Enclosed

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Your reference

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Our reference

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Subject

'Reserva Forestal Productiva Thomas van der Hammen'

Dear Mr. Peñalosa,

The undersigned professors of the 'Institute for Biodiversity and Ecosystem Dynamics' of the University of Amsterdam learned about the ill-fate of the 'Thomas van der Hammen Forest Reserve' ('Reserva Forestal Protectora Productora Thomas van der Hammen'), located between Bogotá and Chia, in this letter further referred to as 'TvdH Reserve'. We immensely regret the intention of urbanising of this protected area. Urbanisation will result in a continuum of about 50 km of buildings and streets from Chia up to Usme.

For a healthy climate in a big city *green areas* are of great importance. For example, in the Netherlands, we were during the last decades confronted with urban expansions in the cities of Amsterdam (the capital) and The Hague (residence of the government). The solution was found in developing satellite urban centers (e.g. Almere and Hoorn) and leaving the landscape in between green. Well designed highways and public transport provide connections. The green space around the large cities is intensively used for recreation, agriculture, nature and wildlife, as well as for planted forests with native species. It would be most counterproductive, and a great loss forever proceeding with paving the rural landscape of the 'TvdH Reserve'. We will point out some important issues for consideration.

The 'Sabana de Bogotá' reflects an *iconic and traditional equatorial Andean altiplano landscape*. Professors Van der Hammen and Hooghiemstra have studied the environmental history of the Sabana de Bogotá since the 1950s. This precious landscape already developed during the last ice age and developed further during the warm climate conditions of the last 10,000 years. Pre-Columbian indigenous people developed the wetland agriculture and the

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present-day Sabana de Bogotá contains the last remnants of this historical landscape. Urbanisation of the 'TvdH Reserve' would lead to a loss of this monumental landscape. Instead of urbanisation, a development into an UNESCO World Heritage monument should better be the ultimate goal. The history of this landscape is now better understood on the basis of much published scientific research, and the general appreciation of the inhabitants of big cities of green areas has increased. In our view it will be a serious mistake to let urbanisation expand over the 'TvdH Reserve'.

Considering the *present-day status of the Sabana de Bogotá* we see realistic opportunities of upgrading the landscape into the conditions of the first half of the last century. The affluent quebradas of río Bogotá with remnants of bogs and associated wetlands can be improved. The composition of the original forest which covered large parts of the Sabana is known from Van der Hammen's palynological studies. Van der Hammen showed in his finca 'Santa Clara' (Chia) that these forests with native tree species re-grow within 15 to 20 years. After 20 years his 'Sabana forest' currently attains a height of about 15 m and attracted a lot of native wildlife and spontaneously arriving understorey species, mostly brought in by birds. Small remnants of the former original Sabana forest are present in the reserve and can be used as nuclei to expand the native Sabana forest with aliso, sauce, chilco and arboloco among others. The remnants of wetlands can be restored to the original status with original frailejón populated Sphagnum-moss bogs, as have been documented near Torca around AD 1850. Wildlife will also return spontaneously on such upgraded wetland sites.

*The high plains of Bogotá and Fúquene are the best studied and the best understood ancient lake floors in tropical mountains on a global scale.* The late professor Van der Hammen (Amsterdam, Chia), and the professors Hooghiemstra and Cleef (both Amsterdam) among others have published over one hundred publications on the geology, environmental and climatic history, archaeology, vegetation, and nature valuation. We will only mention a single publication where much information can be found: Flantua SGA, Hooghiemstra H, Vuille M et al., 2016. Climate variability and human impact in South America during the last 2000 years: synthesis and perspectives from pollen records. *Climate of the Past* 12, 483-523 (DOI: 10.5194/cp-12-483-2016). For the general public the book 'Plan Ambiental de la Cuenca alta del Río Bogotá (CAR, 1998, Bogotá) by the late professor Van der Hammen is an excellent primer.

The *planned urbanisation* of the 'TvdH Reserve' is the 'easy way' of making decisions without including the ecological and other consequences on the long term. We strongly believe that after the establishment of the 'TvdH Reserve' (appointed by the Ministry of the Environment, whose recommendations were later supported by the Consejo de Estado) no new facts are known which justify urbanisation. With much respect for your responsibilities for the city of Bogotá we recommend using the experiences in other densely populated metropolitan centres of the world and combining these experiences with the detailed knowledge of the development of the Sabana de Bogotá.

We like to introduce here the modern concept of cyclicity. Until recently society produced many 'end products' which became a burden to get rid of. Cyclicity occurs on all

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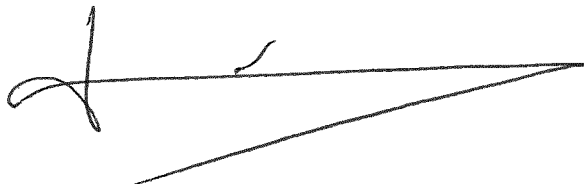
scales: astronomical galaxy cycling, geological plate tectonics cycling, climatic change cycles, city urbanisation cycling, and raw material cycling. Modern understanding shows there is no 'waste material', neither a city has to expand for ever over rural areas. Less functional parts of a city can be restructured into new, more state of the art urban areas while precious traditional elements can be conserved. This reflects the *principle of 'recycling' at the level of a metropolitan city*. Such a process of increasing density of urbanisation and protecting green areas will be seen worldwide and will perfectly concur on improvement of the quality of life in the Bogotá metropolitan area.

We are available to provide further information if necessary.

Sincerely yours,



**Antoine M. Cleef** Ph.D., Emeritus Treub Professor of Tropical Vegetation Ecology, University of Amsterdam (correspondent member of the Academia Colombiana de Ciencias Físicas, Exactas y Naturales),



**Henry Hooghiemstra** Ph.D., Emeritus Full Professor of Paleo-ecology and Landscape-ecology, University of Amsterdam (member of the Royal Netherlands Academy of Sciences & correspondent member of the Academia Colombiana de Ciencias Físicas, Exactas y Naturales).