



## Science and Actions for Species Protection – Noah’s Arks for the 21st Century



Conference 13-14 May 2019 | The Papal encyclical *Laudato Si'* represents a strong critique of modern consumerism and its catastrophic effects on biodiversity. It warns us about the planet's endangered ecology and points to the need for science and politics to engage with religious and moral authorities to review the current situation and propose joint strategies aimed at changing the trajectory of humankind. In principle, all major world religions are committed to respecting and preserving nature and can agree on joint actions for this objective. The subtitle “**Noah’s Arks for the 21st Century**” refers to the Bible’s story of the destructive flood and Noah rescuing humankind and species with his ark following God’s order (*Genesis* 6-9). The story seems based on older Mesopotamian references, i.e. the Epic of Gilgamesh and other sources that appear in the 20th-16th century BCE. Today, our common fascination with nature leads us to preserve species in zoological and botanic gardens threatened by manmade environmental destruction, including climate change and the related loss of species. In these, as well as in natural history museums, endangered and/extinct species can be studied, so that conservation can have a sound basis. We understand that these attempts to build “Noah’s Arks for the 21st century” may not be sufficient to comprehensively prevent the threats of global loss of species by building and studying islands of protection. Nevertheless, the worldwide communities managing natural history museums, zoological and botanic gardens and engaging in research around them, as well as inspiring millions of visitors, have the potential to become catalytic and significant allies in the global drive toward species protection and nature preservation.

The **Pontifical Academy of Sciences** has addressed these challenges before, i.e. with conferences on...

Biological Extinction - How to Save the Natural World on Which We Depend, PAS-PASS Workshop 2017 <http://www.pas.va/content/accademia/en/events/2017/extinction.html>

Health of People and Planet: Our Responsibility, PAS-PASS Conference 2017, with a focus on climate change <http://www.pas.va/content/accademia/en/events/2017/health.html>

Science and Sustainability. Impacts of Scientific Knowledge and Technology on Human Society and Environment, 2016 [http://www.pas.va/content/accademia/en/events/2016/science\\_and\\_sustainability.html](http://www.pas.va/content/accademia/en/events/2016/science_and_sustainability.html)

Sustainable Humanity, Sustainable Nature: Our Responsibility 2014, <http://www.pas.va/content/accademia/en/events/2014/sustainable.html>

Evolving Concepts of Nature, 2014, <http://www.pas.va/content/accademia/en/events/2014/nature.html>

This conference draws on these earlier conferences and related statements by the Academy, and takes note of consultations related to the topic, such as The Assisi Declarations (1986): Messages on Humanity and Nature from Buddhism, Christianity, Hinduism, Islam & Judaism <http://www.arcworld.org/downloads/THE%20ASSISI%20DECLARATIONS.pdf>

We note at the outset that the global context of species extinction and loss of biodiversity in the Anthropocene is a consequence of human actions, competition for land and water use, global environmental change, and climate change in particular, as elaborated in the above-mentioned PAS conferences. During these conferences it has been estimated repeatedly that about one fifth of all non-bacterial organisms will be in danger of extinction in the next few decades, and as many as half by the end of the 21st century. These insights provide the background of this conference.

The different **focus of this PAS conference** and its expected contribution is to bring together the three important communities that engage in science and action for biodiversity and species protection under the umbrella of the Academy; i.e. partners from **natural history museums, zoological and botanic gardens**. All three of these communities combine research on conservation and species protection with communications and educational activities, reaching millions of people, including youth. Combining elements of political engagement, public education and conservation knowledge and action, the global communities of natural history museums, zoological and botanic gardens are positioned exceptionally well to bring together stakeholders for a conference that leverages the strengths of science and social and spiritual engagement to propose actions that can reach large populations worldwide. Each community can do so from a different and complementary angle:

**Natural history museums.** Natural history museums and natural history collections are the key to learn about nature – its past, its present, and its future. Several thousand organizations worldwide have assembled billions of specimens and associated information. These collections are a unique and truly global scientific infrastructure for science and society as well as the source of much of the information on which effective conservation action can be based. These collection-based, cutting-edge research institutes also attract millions of visitors every year. Gaining in number and scope in the 18th century Age of Enlightenment, they have been reaching people of all ages and classes, instilling a deep love for nature and nurturing scientific inquiry and curiosity for more than four centuries.

**Zoological gardens.** The European Association of Zoos and Aquaria (EAZA), and other regional and global zoos maintain high-level contacts with local, national and regional legislators, global conservation bodies and in situ conservation projects, zoological researchers, educational institutes, and organizations with a similar interest in learning about and preserving biodiversity. Campaigns run by EAZA and similar institutions point to a strong social justice agenda whereby the preservation of biodiversity must also support the development of communities in biodiverse regions globally, providing education and alternative solutions to the conservation challenges of the modern age, from human/wildlife conflict to the exploitation of the natural world for extrinsic gain at all levels.

**Botanic Gardens.** Botanic gardens, which were first established in modern times as adjuncts to medical schools during the Italian Renaissance in the early 16th century, immediately began to house herbarium collections. Research in plant systematics and evolution is carried out mostly in botanic gardens, natural history museums, and universities, and becomes the factual basis on which plant conservation can be carried out.

The displays held by botanic gardens were largely for ornamental and educational purposes until the world as a whole became broadly concerned about our dire and rapidly growing need to preserve biodiversity for future generations in the late 1970s. Since then botanic gardens, like zoos, have become increasingly involved in (plant) conservation globally; they have a great advantage over their zoological counterparts in that many different tissues of plants can be induced to grow, giving rise to new individuals, and their seeds can be stored for centuries or even longer under the proper circumstances.

The format of the conference will offer each of the three communities the opportunity to present their cutting-edge research and communications outreach activities. However, the conference will also attempt to explore new synergies among these communities for enhanced impact on people's world views and new collective actions to address extinction problems. Together with members of the Pontifical Academy of Sciences, this will include assessment of potentials and challenges of building "Noah's Arks" in our times with new virtual and practical approaches. In this pursuit, the conference will also seek engagement with different faiths.