

## Astrobiology, Mars Exploration and Lassen Volcanic National Park David J. Des Marais, NASA – Ames Research Center

The search for evidence of life beyond Earth illustrates how the charters of NASA and the National Park Service share common ground. The mission of NPS is to preserve unimpaired the natural and cultural resources of the National Park System for the enjoyment, education and inspiration of this and future generations. NASA's Astrobiology program seeks to understand the origins, evolution and distribution of life in the universe, and it abides by the principles of planetary stewardship, public outreach, and education. We cannot subject planetary exploration destinations to Earthly biological contamination both for ethical reasons and to preserve their scientific value for astrobiology. We respond to the public's interest in the mysteries of life and the cosmos by honoring their desire to participate in the process of discovery. We involve youth in order to motivate career choices in science and technology and to perpetuate space exploration. The search for evidence of past life on Mars illustrates how the missions of NASA and NPS can become synergistic. Volcanic activity occurs on all rocky planets in our Solar System and beyond, and it frequently interacts with water to create hydrothermal systems. On Earth these systems are oases for microbial life. The Mars Exploration Rover Spirit has found evidence of extinct hydrothermal system in Gusev crater, Mars. Lassen Volcanic National Park provides a pristine laboratory for investigating how microorganisms can both thrive and leave evidence of their former presence in hydrothermal systems. NASA scientists, NPS interpretation personnel and teachers can collaborate on field-oriented programs that enhance Mars mission planning, engage students and the public in science and technology, and emphasize the ethics of responsible exploration.