The Hourglass

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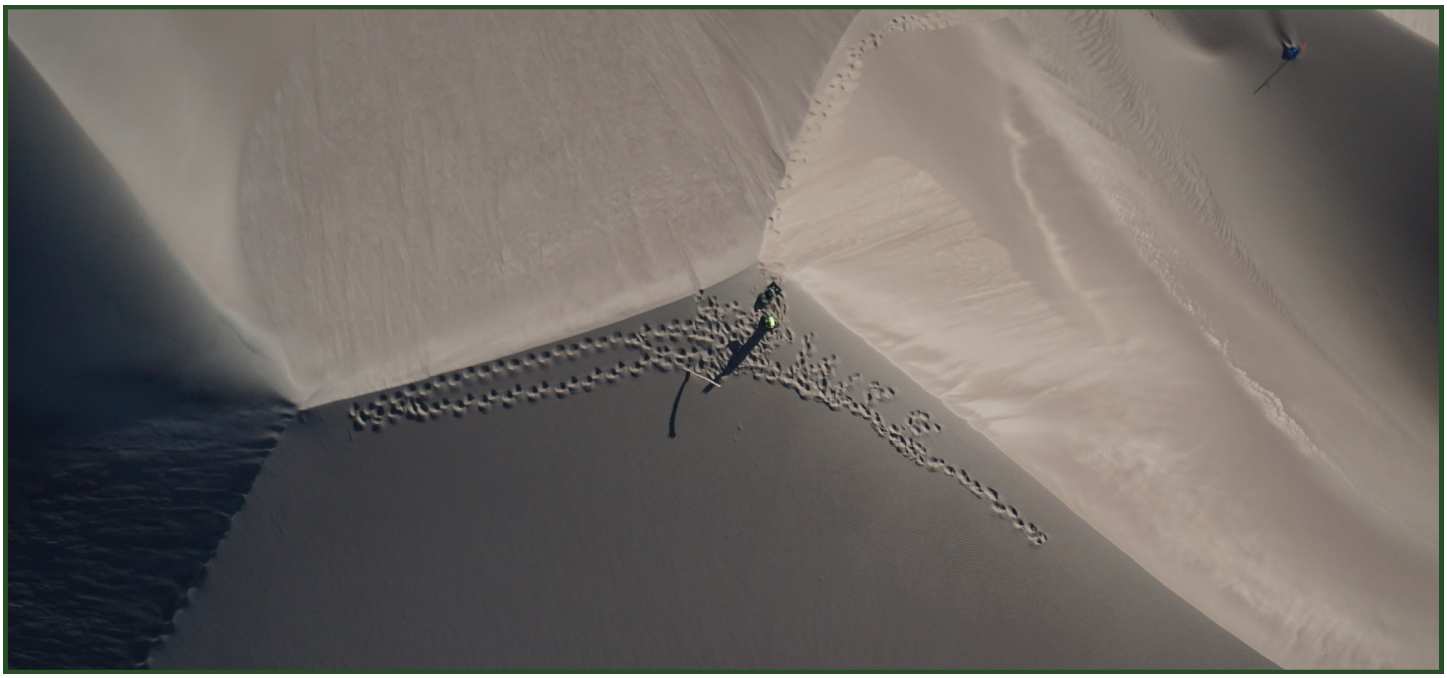

An aerial view of Star Dune taken by a researcher controlled drone. The researcher is on top of Star Dune directly below the drone (note the researcher's shadow). The use of Unmanned Aircraft Systems at national Parks is greatly restricted to protect visitor and wildlife experiences, but can also be an efficient and inexpensive method for gathering valuable data. *Image courtesy NPS*

Unmanned Aircraft Systems at Great Sand Dunes

Contributed by Fred Bunch, Chief of Resource Management

The resource management branch at Great Sand Dunes National Park and Preserve successfully utilized Unmanned Aircraft Systems (UAS), commonly called "drones" for research purposes in October 2016. The use of drone technology on federal lands requires operators to follow strict guidelines. To accomplish this research initiative, park staff coordinated with Alamosa County, which obtained a COA (certificate of authorization) from the Federal Aviation Authority in order to fly in the San Luis Valley. Some of the requirements of the COA and National Park regulations include: no launching or landing in national parks (unless user obtains official research permit from the National Park Service), no landing of UAS in wilderness, line of sight and real-time communication must be maintained at all times between the pilot and craft or observer/craft with pilot and observer. In addition to meeting these requirements, the NPS associate Director of Visitor & Research Protection needs to approve flights in National Parks. *No general public use of UAS is authorized in national parks*.

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Researchers using UAS mapped the Star Dune – a dune that Andrew Valdez, park geologist, has been surveying the movement of for over fifteen years. This technology allowed researchers to map the dunes in an hour – a process that normally requires an all-day hike. It also maps the entire dunes and not just the ridge like traditional survey methods allow. The fixed-wing drone type was utilized to map the Star Dunes and allows researchers to cover a larger area of land and for a longer duration of time. Northern Colorado's Wohnrade Civil Engineering and Black Swift Technologies were the principle investigators for this survey.

Constantin Diehl of UAS Colorado was the pilot of a multicopter, a craft with several propellers, and this type of drone was selected to map the interesting feature on the north end of the park (a possible crater). The multicopter has a shorter flight duration time but is good for rough terrain landings.

There are many possible applications for this type of technology including geological and surface mapping, vegetation mapping, LIDAR, visual, infrared, multispectral photography, meteorological mapping, archaeological mapping, wildlife tracking, search and rescue and many more possibilities, provided all regulations are followed.

This crater-like feature near the north end of the park has been the subject of much research to determine whether it was formed from a meteor impact or some other cause. UAS technology provides aerial photos to assist the research efforts.

Image courtesy NPS

New Date Set for Junior Ranger Day

Junior Ranger Day will be **Saturday, August 5, 2017**, from 9:00 am to 1:00 pm. On Junior Ranger Day, children have the opportunity to participate in a variety of fun educational activities at the park and to earn a variety of keepsakes. This summer activity has been very popular with hundreds of participants on a typical day. Be sure to put it on you calendar. But if you can't bring the important young people in your life to the park that day, don't worry. The traditional Junior Ranger program is always available to children in the park every day.

Emerging Technologies and Preserving Parks for Future Generations to Enjoy

By Dirk Oden

About a decade ago during my descent from a hike to the top of High Dune I paused at the top of a steep ridge near the base of dunes to watch the families playing in Medano Creek. An electric, hummingbird-like whir caught my attention because it seemed out of place. A Frisbee-sized white helicopter-looking device with four blades suddenly rose in front of me from below the dune. It hovered at eye level for a moment, seemingly examining me from just ten feet away, and then went on it's way. I noticed a couple of visitors controlling the drone from the flats about a hundred feet below me.

I am fortunate to be able to hike the dunes frequently, and seeing my first drone was an exciting experience. But I also saw the "writing in the sand" and could foresee the myriad of problems that would arise if the technology wasn't regulated and if safety and courtesy norms weren't established. For many visitors a hike on the dunes is a rare event and it would be hard to contemplate wilderness and enjoy solitude when a mechanical device appears before you and is invasively recording your reaction. A 2014 drone crash in Yellowstone's 200 ft deep Grand Prismatic Spring was problematic on a number of levels. Drones can capture amazing videos of wildlife, but their use can also influence/distress the wildlife being pursued. The NPS banned the use of drones in parks by the general public a few years ago. Still, there is an appropriate use (and a process for approval) of this amazing technology in furthering research and assisting fire fighters and search and rescue operations within national parks.

The past three decades have been witness to amazingly rapid technology developments. Computers have replaced typewriters, cell phones are replacing landlines, smartphones are replacing pda's which for many replaced pocket calendars. And social networking has fostered both the best and worst in human connections.

Emerging technologies offer great benefits and potential problems. Each of us, as a citizen in a digital world, has a responsibility to reflect on our own use of technology and its potential impact on others. The last time I climbed High Dune this past fall, I was among a small group of strangers sharing the common experience of admiring the amazing view and contemplating the significance of preserving such places for future generations to enjoy. There was one person there having a loud video call on his cell phone with a friend and live-streaming his experience, but the conversation quickly turned to the typical everyday phone conversations friends have. I am reminded of a sign a pre-school posted in the pick-up area admonishing parents to get off their phones and pay attention to their kids getting in their cars. Of course, I saw it on social media.

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