



Grand Canyon UAS Program 1 year Report

10/01/2017



Overview

In the fall of 2015 the Grand Canyon (GRCA) Fire and Aviation Division proposed a UAS program through an aviation enhancement. Blanket approval was obtained from the Associate Director, VRP for takeoff and landings in National Parks for a three year trail period (2016-2018). The GRCA UAS program was the first NPS UAS Fleet program.

In September of 2016 Office of Aviation Services conducted an A-450 Small Unmanned class and GRCA certified six UAS operators, three from Law Enforcement and three from Fire and Aviation.

Between September 2016 and September 2017 GRCA safely conducted thirteen UAS missions on SARs, fire, projects and events for a total of 145 sorties and over 23 hours of total flight time. Six of this missions were in GRCA and seven were in support of other National Parks and the US Forest Service. GRCA turned down one SAR assignment to another Park due to a lack of availability of a UAS pilot.

GRCA UAS Missions Sep 2016-Sep 2017

- 11/15/2016 SAR- Roberts search- NPS GRCA
- 11/15/2016 Project- Vehicle removal from canyon- NPS GRCA
- 12/01/2016 SAR- Pipe Creek body search/recovery- NPS GRCA
- 12/12/2016 SAR-Twin Overlooks body search/recovery - NPS GRCA
- 03/14/2017 SAR-Dang search- NPS GRCA
- 04/16/2017 SAR-Merrell search- NPS GRCA
- 05/02/2017 LE-Organ Pipes (AAR available)- NPS ORPI
- 05/11/2017 SAR- Seiver search NPS YOSE
- 06/21/2017 Fire-Boundary Fire (AAR available)- USFS Coconino/Kaibab NFs
- 08/08/2017 SAR- Joshua Tree search- NPS-JOTR
- 08/09/2017 Project- MOCA Photogrammetry- NPS-MOCA
- 09/10/2017 LE- Flight 93 Memorial (AAR available)- NPS FLNI
- 09/20/2017 Project- 5 Mile Commo Site Photogrammetry- USFS- Coconino NF

GRCA UAS Program Goals

- ❖ Reduce risk to personnel, resources, and visitors
- ❖ Establish proof of concept and develop best practices for future UAS integration into NPS units and assist park managers in determining the most safe, efficient and cost effective way to integrate UAS operations with park missions

Successes

- Six GRCA UAS Pilots certified
- Thirteen safe UAS missions
- Assisted five other NPS units with UAS flights (SAR and LE)
- Assisted the Forest Service with two UAS missions (fire and project)
- Assisted other parks, regional and national office on UAS program establishment and with UAS subject matter expertise
- GRCA has become the leading park for UAS activities and instruction/education for other park units throughout the US
- GRCA Aviation Officer provides expertise to the NWCG Interagency Fire Unmanned Aircraft System (IFUAS) operations group
- The GRCA UAS program has been featured in several local, regional and national news stories providing positive public relations messaging for GRCA and the entire NPS
- GRCA is developing a UAS instructor cadre for future NPS UAS courses/trainings
- GRCA is working with OAS to analyze and evaluate newer and increasingly sophisticated UAS platforms/technologies for use in the parks
- Upgraded one UAS to an infrared (IR) camera platform

Challenges

- Time commitment for UAS pilots- all UAS pilots are collateral duty with their normal park positions and there can be difficulty keeping up to date with UAS re-currency requirements, maintaining UAS platforms and associated equipment
 - Staying current after the initial training requires a minimum commitment of approximately 2hrs/week not including missions
- Time commitment for aviation oversight- UAS flights require similar (and often more) paperwork to that of other aviation assets
 - This may change in the future as UAS becomes more standard
- As the first NPS fleet operator, GRCA receives numerous information requests from other NPS units, other agencies and public sources
- The GRCA UAS program started in the 'Crawl' phase of the 'Crawl-Walk-Run' model and has transitioned into the 'Walk' phase. With this transition comes an increase in workload and necessary oversight of the program by a dedicated UAS Program Manager

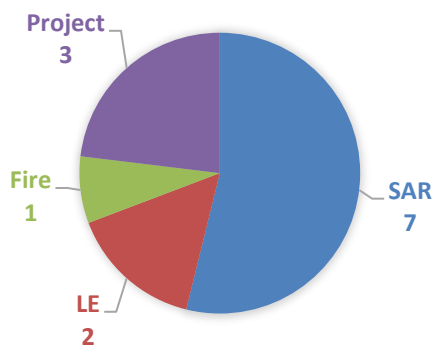
Lessons Learned

- 3DRsolo is a solid platform for the majority of SAR missions to date, though longer battery duration would be ideal
 - GRCA is evaluating new technologies with longer battery life and further duration capabilities
- There is difficulty viewing the standard tablet in the sun and the tablets are fragile and break easy in the field
 - GRCA is trying ipad minis that have brighter displays and are more durable
- UAS deployment should occur with a proper laptop computer capable of reviewing video at minimum full HD as well as exporting that video to a larger screen
 - GRCA has purchased two laptop computers to be deployed in the field
- FLIR One Pro has proven to be extraordinarily helpful during early morning, evening and night flights
- Utilization of the Interagency Fire Unmanned Aircraft System guide on fires was extremely helpful
- There is a need for mapping software during some flights

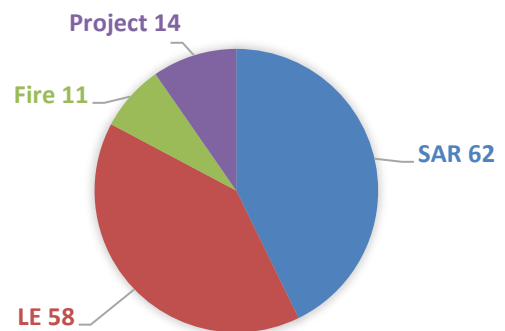
Looking Forward

- Grand Canyons UAS program continues to grow and the park is helping other parks establish safe, effective UAS programs of their own
- GRCA will continue to assist the NPS National Office and NPS Regional offices establishing a NPS Fire UAS program with NPS Hotshot crews and Wildland Fire Use modules
- GRCA will continue to evaluate new UAS technologies, platforms and accessories for SAR, fire and project UAS missions
- GRCA hosted the second A-450 class in September of 2017 with six UAS pilot trainees from NER, IMR and Alaska regions. GRCA plans to host a spring and fall UAS class in 2018
- The complexity and time commitments of taking the GRCA UAS program to the 'Run' phase and operate as the premier NPS UAS for both SAR, fire, LE, administrative support and data management/processing will require a dedicated UAS Program Manager

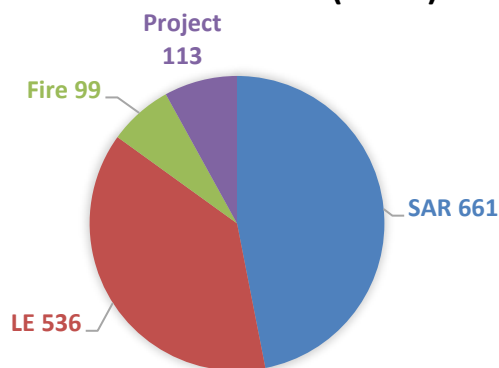
UAS MISSIONS



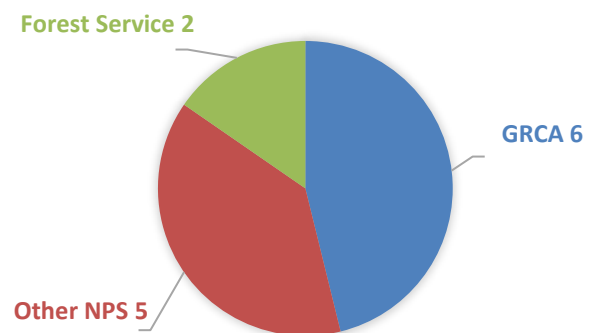
UAS SORTIES



UAS FLIGHT TIME (MINS)



MISSIONS BY UNIT



For questions on the GRCA UAS program contact:

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