

National Park Service  
Grand Canyon National Park  
Science and Resource Management

# Resource Advisors Pocket Guide



2018



# **Grand Canyon National Park Resource Advisors Pocket Guide**

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# RESOURCE ADVISOR POCKET GUIDE

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## **SECTION 1: OVERVIEW**

### **Purpose**

This document is intended to serve as a guide for Resource Advisors working on fire management activities at Grand Canyon National Park.

## **The Decision Making Process**

Each unplanned fire ignition in the Park is assessed for appropriate management actions. Management actions include managing the incident for a protection objective (suppression response) or a combination of objectives that focus on protection and resource management related objectives (management for multiple objectives). All human caused ignitions are suppressed.. Unplanned fire events are an emergency situation. All fires are managed for safety of human life and property and protection of resources. Depending on the size of the incident, a resource advisor may assist fire personnel in development of the Wildland Fire Decision Support System document (WFDSS) , incident action plans (IAPs) and related activities.

The Park Superintendent is responsible for deciding how an unplanned ignition will be managed and that decision will be documented in WFDSS document. Depending on the complexity of the incident and the selected course of action an interdisciplinary team (IDT) comprised of Fire Management and Science and Resource Management (SRM) personnel may meet and identify/develop mitigation measures that will be carried forward throughout the incident duration. Fires managed for multiple objectives are managed for resource objectives and to allow fire to return as a natural process within the park. The IDT and resource advisor are involved throughout the duration of the fire. Managing fires for multiple objectives relies on the Adaptive Management Approach. Adaptive management is implemented as a result of several factors, including field observation of fire effects and discussions among the fire team

and SRM staff. Management adapts to desired outcomes and conditions on the ground through daily planning meetings involving READs who are in contact with IDT staff. READs not only relay information from SRM IDT members to the Incident Management Team (IMT), but also work in the field to mitigate potential negative effects to natural and cultural resources during fire activities.

## **WILDLAND FIRE MANAGED FOR MULTIPLE OBJECTIVES**

### **Role of the Resource Advisor**

The role of the READ is to provide advice to Incident Management Team (IMT) on how to best consider resource management concerns in the Park in relation to managing the fire and corresponding management activities. This includes advising the IMT on resource concerns, locations of sensitive resources, and necessary mitigation measures to protect these sites.

The resource advisor should work closely with the IMT and crews assigned to the fire. Working on the line with crews will ensure mitigation measures are followed and will help crews to understand the resource concerns of the Park. It is essential to become familiar with personnel in the Park's Fire Program and Science and Resource Management. The READ should attend morning briefings and planning meetings, making themselves available to Fire managers and providing information and guidance. They should also participate in fire activities as much as possible, as this is the best way to get fire crews involved and interested in the resource issues of the Park. In addition, keep Park resource specialists (IDT) informed of fire activities by emailing information, calling the fire liaison officer or fire duty officer, bringing maps and photos to meetings, and inviting appropriate Red-carded personnel to tour the fire with you and attend briefings, etc.

## **Who the Resource Advisor works for**

The READ reports to the Agency Administrator (AA) and works closely with the Agency Representative (AREP)( if one has been established) and all members of the IMT in the planning and management of the fire. The READ ensures all fire personnel are familiar with resource concerns, provides resource messages for the Incident Action Plans (IAP), and may assist with writing/reviewingWFDSS documents, participates in planning meetings, and provides input on prep standards, rehabilitation guidelines, placement of fire management “infrastructure” (i.e. pumpkins, spike camps, helispots), and other duties as they arise. An essential part of the job is for the READ to serve as a liaison between Science and Resource Management (SRM) and Fire personnel by providing fire updates, consulting specialists on resource concerns, reviewing planning documents with appropriate specialists, and calling inter-disciplinary team (IDT) meetings as necessary. Most SRM personnel are located on the South Rim or in Flagstaff and rely on the READ for accurate and timely information that could trigger resource concerns. Communications with SRM staff is most often facilitated by the READ communicating with the SRM Fire Liaison Officer and the Cultural Program Manager who will then make contact with SRM subject matter experts for information exchange.

The lead READ may have a staff of READS and resource specialists (Fire Archaeologists, Fire Biologists, etc.) working under them who will complete line activities, such as survey or implementation of resource-specific mitigations. Having at least 1 archaeologist on the fire at all times is important at GRCA, due to the number of known sites in the park and the lack of

inventory in many areas. Technical specialists may also include those who conduct northern goshawk, spotted owl, or sensitive vegetation surveys. It is essential that the READ have sufficient resources available to perform field work so he/she is available to participate in planning and management activities with the IMT. Plan ahead and communicate additional resource needs necessary to implement field activities to the IMT and SRM Fire Liaison Officer.

GRCA resource specialists work with fire personnel prior to the fire season to update sensitive resource maps. We share information in pre-season meetings, READ pre-season training, and through the READ Guide Binder. The Guide is updated yearly and can be found on the divisions drive [V:/Science/Fire/Read Guide](#) as of the current year. A copy of the guide should be printed and available in SRM offices and in READ vehicles. A copy is shared with fire management staff. It's essential that we are well prepared for fire season and stay well in advance of fire activity in all survey and mitigation activities (see Sensitive Resources Map on the divisions drive [V:/Science/Fire/FIRE-SENSITIVE RESOURCE MAP](#)).

Resource advisors from the Park are best equipped with local knowledge of resources, issues, the area, and contacts. The Park will try to fill the READ role with a local person first, but it may be necessary at times to order a READ resource from out of Park. At such times, this guide will provide the information necessary to manage the resources of the Park for those unfamiliar with park resources. See the READ guide for the list of current off park personnel available for name requests under the "Communications" tab.



## Appropriate Interactions for the Resource Advisor:

<b>When Interacting With:</b>	<b>The Resource Advisor Will:</b>
Agency Administrator*	Receive direction, offer advice, update, consult, provide written reports, photos, etc.
Agency Representative	Work with to provide team with direction on resource concerns, mitigations, political influences, local information and history, etc.
Incident Commander*	Provide information to inform on fire management tactics (e.g. minimum impact tactics, prep guidelines, etc.), resource values, concerns, and mitigations; land management direction; political influences; report on observations of fire management activities, base and spike camps, etc.
Planning Section Chief	Provide information for the IAP (i.e. prep guidelines, resource concerns, reporting forms, rehab standards); report on observed conditions of line, prep work, etc.; provide input and information as needed for planning documents, status reports, IAP's, etc.

Operations Section Chief	Monitor and advise on fire management activities and projected needs for help with resource mitigation; provide archaeologists and/or READ assistant to crews as needed; provide advice on Park standards for minimum impact tactics.
Logistics Section Chief	Monitor and advise on spike camp locations, trash and human waste disposal, request needed supplies to comply with mitigation measures.
Air Operations Branch Director	Monitor and advise on condor issues in regard to air ops, helispot locations, flight paths; request documentation of bucket/retardant drops and condor sightings
Resource Specialists	Coordinate assignments, provide direction as to type and extent of information to gather, provide for safety, coordinate contacts with operations, coordinate funding
Assistant / trainee READs*	Provide training and assignment. Provide needed written material for their communication with crews, spike camps, etc. Receive information on their activities and observations.

\*The Incident Action Plan (IAP) for any given fire will list the individuals who fill these rolls. The IAP is generally made available during the morning briefing and can also be obtained from the Plans Section.

## **READ Duties (See READ Checklist)**

The READ is an important member of the IMT and it is your responsibility to ensure you are participating as an essential part of this team. Maintain open communication with the IMT, fire crews, and the SRM personnel. Make sure you are providing the team with the information and direction they need to ensure conservation of Park resources while meeting objectives.

Request the resources you need to do your job, including supplies (e.g. pumpkin covers), technical specialists, aerial recon flights, copies of planning documents and fire behavior modeling data, etc. After planning documents are completed and the IMT is settled into a routine managing the fire with appropriate resource concerns addressed, the resource advisor should have more flexibility to engage in field activities between routine tasks. The following is a list of READ duties:

- A. Participate in all planning meetings. Provide information and data to the IMT and make recommendations relating to areas of critical environmental, natural resources, archaeological, and social science concerns. This information could include, but is not limited to:
  - a. Threatened and endangered species and associated mitigation measures
  - b. Sensitive species or species of concern and associated mitigation measures
  - c. Archaeological sites and concerns
  - d. Recommended wilderness areas

- e. Air quality standards and concerns
  - f. Prep and rehab guidelines
  - g. Sensitive ecological areas
  - h. Water sources
- B. Ensure Threatened and Endangered species mitigation measures and archaeological site protection measures are being followed.
- C. Provide input for the WFDSS documents. Monitor and assist in updating these documents. Ensure WFDSS documents are available to the Science Center for review and consultation.
- D. Act as a liaison for SRM personnel. Notify and update resource specialists of fire activity, location, resources at risk, etc. Updated fire information is essential in ensuring resource concerns are identified as well as in providing for the safety of Science Center personnel potentially working adjacent to active fires.
- E. Monitor fire behavior, location, growth, etc. to assess when it may be necessary to call an IDT meeting or to order additional resources. Work with fire effects monitors, when time permits, to get an accurate idea of expected fire behavior and growth.
- F. Participate in the development of the IAP. Provide resource messages when necessary, particularly information on prep guidelines, recording forms, rehab standards, etc. Make sure resource personnel are

accounted for in operational plans. Attend all morning briefings. Brief incoming crews on resource concerns and speak at morning briefings as necessary.

- G. Provide recommendations for rehabilitation of fire activity sites. Prioritize rehab items/areas. Provide rehabilitation specifications for use by the crew and provide assistance in implementing these specifications.
- H. Monitor fire crew activities such as prep or rehab; work with crews when possible
- I. Document fire activity (*Daily Monitoring – Fire Size and Severity*, Section 8-5), crew activities (see *Unit Log ICS 214-CG-1A*, Section 8-14), your activities, resource concerns, resource impacts, mitigation implemented, areas surveyed, prep work (see *Daily Tracking Form – Prep Work*, Section 8-6), dips and drops (see *Informational Needs – Bucket Dips in the Colorado River*, Section 8-7, and *USFWS Reporting Requirements Aerial Fire Retardant or Water Drops*, Section 8-8), etc. Keep copies of the IAPs. It is essential to keep good records during fire events to provide the information needed to prepare year end reports on fire activity. See Section 8 for additional forms.
- J. Prepare a brief summary of activities, accomplishments, and an evaluation of the resource advisor role every two weeks, preferably with the rotation of IMT's's (or for your assignment). Submit this report to the plans section chief to be included in the team files.

## **How to Proceed When a Fire Breaks Out**

Who the READ talks to and how they spend their time in the first few hours of their assignment will in a large part determine how effective they are. It is essential that the READ be easily accessible to the agency representative and IMT, including attending all planning meetings and interacting with team members during discussions.

- A. Talk to local fire personnel to discuss management plans for the fire. Discuss resource concerns, political or social implications, resources ordered, status of ordering an IC (if not already on scene), status of the WFDSS process, notifications to the Science Center, status of IDT meetings, what resources you anticipate needing, etc.
- B. Contact members of the Fire IDT to inform them of any details you know about the fire (see Contacts section in READ Binder). Record their concerns and arrange an IDT meeting, if necessary.
- C. Assemble maps, plans, and any other information you need for the area.
- D. Ensure the Cultural Program Manager is arranging for appropriate personnel to report to the fire to locate and flag known combustible sites and to inventory unsurveyed areas in advance of the fire's spread.
- E. Check in with operations and make sure you have provided them with the information and resources they need regarding resource concerns and Park guidelines.
- F. If time permits, get out to the fire or request to get on an aerial reconnaissance flight. On the ground observations of fire location, behavior, fuels, fire management activities, etc. are essential in providing input to SRM personnel and the IMT.
- G. Review this resource guide; particularly the READ Checklist.

## **Who Works for the Resource Advisor**

The Park will try to supply the resource specialists who will perform appropriate mitigation and inventory work. These resource specialists will work for the lead resource advisor. Generally, the fire archaeologist oversees the archaeological technicians and the Park wildlife biologist oversees natural resource technicians working on the fire. An assistant resource advisor may be necessary during fire complexes or other complex fire situations. Assistant resource advisors can be assigned to accompany crews in the field, to a spike camp, to a certain fire operation, etc. Assistant resource advisors are particularly valuable during large incidents or during the preparation of planning documents, as there is little time for the resource advisor to be in the field. Make sure crews know the identity and role of assistant resource advisors. Ask the operations section chief to relay to appropriate fire personnel the role and responsibility of the assistant resource advisor so they receive appropriate respect and consideration.

## **Safety**

### *Your Safety*

Always wear appropriate PPE and carry a radio cloned to the frequencies for the incident. The Resource Advisor often works alone, so it is imperative that you let the operations section chief and other appropriate people know your plans when working in the field. Radio communication is sketchy in many areas of the canyon; therefore, be prepared to potentially be out of radio contact at times. Also contact the Division Supervisor (or appropriate person) when entering and leaving an area to keep them updated as to your location and activities. Carry maps, compass, GPS, and other appropriate safety items.

### *Safety of the Resource Specialists*

The safety of resource specialists is your responsibility. Assure they are included in operational plans so appropriate people are aware of their plans for the day. Make sure everyone is Red-carded at the Arduous Duty level, wears appropriate PPE at all times, and that the crews have sufficient radios. Instruct them to contact the Division Supervisor (or appropriate person) when entering and leaving areas. Make sure they are aware of LCES, and that they carry any necessary maps, compass, GPS, and other field gear. Evaluate the safety of daily assignments; safety involves making decisions about what needs to be done and whether it can be done safely.



## **Debriefing**

Following a fire management effort or during the transition of IMT's, a debriefing will be held to discuss management of the incident. Be prepared to evaluate your role as a resource advisor including what went well, what didn't go as well, suggested improvements, etc. Make sure to receive feedback from the agency administrator, agency representative, and members of the IMT on your performance and effectiveness as a resource advisor. Document this feedback for use by future resource advisors. One of the most valuable things the Park will gain from ordering a resource advisor from out of Park will be feedback and suggestions.

## **Tactical Standards within Grand Canyon National Park**

- No bulldozers will be used within Park boundaries unless approved by the Superintendent
- The use of fire retardant will be reserved as a last effort, and all retardant lines will be surveyed for carcasses (condor mitigation measure) as soon as it is safe to do so.
- Chainsaws, helicopters, air tankers, or pumps will be used when necessary (refer to the MRAs prepared by the Wilderness Coordinator).
- If helicopters are used, landing sites requiring no modification to the natural environment, or established helispots must be

used when available. Landing sites should not be located in sensitive locations identified by the resource advisor unless there are no alternative areas to land.

- Motor vehicles, UTV's, and heavy equipment use is limited to existing roads. Refer to the READ guide for current maps of the North and South Rims showing road closures.
- Water drops are preferred over fire retardant. Under no circumstances will retardants be used within 100 feet of the Colorado River or perennial streams that flow into the Colorado River. There are certain areas where dipping is prohibited (see No Dip Zones in Section 5-17 for general locations, and the "River Dipping Zones" East 1/2 and West 1/2 maps for specific locations). Keep a record of these activities (see *Informational Needs – Bucket Dips in the Colorado River*, Section 8-7, and *USFWS Reporting Requirements Aerial Fire Retardant or Water Drops*, Section 8-8)
- Firelines will be no wider than necessary to stop the spread of the fire. Wetlines will be used whenever possible in meadows. Keep a record of these activities (see *USFWS Reporting Requirements – Fire Activity Sites/Fireline Created form*, Section 8-9).
- Snags will be felled only when they pose a threat to firefighter safety or the fireline. Keep a record of these activities (see *USFWS Reporting Requirements – Trees and Snags Cut >= 18" dbh form*, Section 8-9).
- Stumps from any trees or snags cut during suppression efforts will be flush-cut.
- Avoid the creation of windrows by scattering or piling fuels. Avoid bucking up down trees unless the rounds can be piled and burned.

## REPORT SUMMARY

Complete an *ICS form 214 (Unit Log)* at the end of each operational shift (see Unit Log ICS 214-CG-1A, Section 8-14).

Complete the *Read Summary Reporting Form* (see Section 8-16) as often as necessary (copies are in the READ form binder. Electronic copies can be found on the Divisions drive (<\\nps.doi.net\grcadfs01>) under Fire & Aviation/Science and Resource Management/ Forms for Fire Activities). Complete all fields that you can, including water drops, trees felled, etc. These forms will help all S&RM staff complete yearly reporting requirements.

## NOTES

## NOTES

## **SECTION 2: REHAB, PREP & MONITORING**

### **REHABILITATION GUIDELINES**

#### **Objective**

To mitigate adverse impacts to natural and cultural resources, human safety, and wilderness values resulting from fire activities and to comply with the conservation measures presented in the USFWS Biological Opinions for fire activities. (See the READ Check-list of Activities for Managed Wildland Fires, Section 8-2, and Fire Activities Daily Reporting Requirements, Section 8-4).

#### **Goals**

Protect cultural resources, critical threatened and endangered species habitat, and T & E plant communities.

1. Manage designated and proposed wilderness to preserve and protect wilderness, scenic, and roadless values and aesthetics.
2. Maintain existing trails and open roads to allow for safety, utility, and aesthetic value.
3. Protect all cultural resource sites.
4. Maintain safe road access on previously existing roads.
5. Stabilize soils disturbed by fire activities and minimize erosion losses to maintain soil productivity.
6. Protect water quality.

## **Requested Activities**

- 1.** Remove and properly dispose of garbage and litter from control lines, roads, buildings in use, drop points, helibases, water source, spike camps, and fire camp.
- 2.** All flagging and signs will be removed from firelines, roads, hazard trees, escape routes, trails, drop points, archaeological sites and other resources flagged for avoidance, etc.
- 3.** If cultural resources are found during rehabilitation work or if condors are perching, roosting or foraging in the immediate area, cease work and report the sighting to a Resource Advisor.

## **Required Activities for Fireline Rehabilitation**

- 1.** Rake the line to scarify the soil surface, decreasing compaction and increasing chances for revegetation.
- 2.** Pull soil, duff, litter and rocks back onto mineral soils to bring it back up to natural grade. Rehabbed line should blend in with surrounding soil contours. Covering lines with brush only is not adequate.
- 3.** Scatter cut brush over the line to cover at least 90-100% of the fireline (scatter duff and brush to overlap over the edges of the line as well).
- 4.** Scattered slash should appear random to eliminate the appearance of a straight line disturbance. In general, the amount of duff, litter, and brush should match the amount

in the surrounding areas. For example, in meadows and areas of open understory, very little brush should be placed over the line.

5. Avoid water bars, use temporary berms containing topsoil, duff and slash 2-4" deep instead. Berms are short-lived devices to break overland water flow without creating permanent trail features.
  - a. Establish at a 45 degree angle to the contour of the slope.
  - b. On slopes 30% or more, place berms every 20'. On slopes 15-30%, place berms every 50'.
6. Replace larger rocks with weathered or lichen side up.
7. Obliterate cup trenches and ditches.
8. Remove all flagging, signs and garbage along the line; including all microtrash.
9. Flush cut stumps along the fireline.
10. Obscure cut log ends by facing away from trails or roads or covering with dirt or brush.
11. Arrange bucked up log pieces to simulate the original log so that the rounds appear to be an in-tact log to a casual observer rather than a pile of firewood.
12. Firelines that intersect roads and system trails are to be camouflaged with nearby materials and made inaccessible to any type of traffic.

## **Required Activities for Drop Point, Helibase, Helispot, Dip-site, and Spike Camp Rehabilitation**

- 1.** Collect all trash and garbage, including microtrash.
- 2.** Rake the disturbed area to disguise impacts and scarify the soil surface.
- 3.** If in a wooded area, pull duff from surrounding areas to cover trampled areas.
- 4.** Where more than 20% of the total area is disturbed to mineral soil, grass plugs should be directly transplanted into the disturbed area. Advise a resource advisor of the area and an NPS revegetation crew will complete this work at a later date.
- 5.** The rehabilitated area should blend in with the surrounding contours and vegetation.
- 6.** Deep furrows in meadows should be recontoured to the grade and slope of the meadow. Any loose soil should be replaced into the furrow. Due to compaction, some scarification of the soil and vegetation may be necessary. Litter and duff should be pulled onto the area to conceal the impacts and also to provide microsites for seed establishment.



## **Required Activities for Footpaths and Pullouts in and adjacent to Meadow Areas**

- 1.** Rake footpaths to disguise the impact and scarify the soil.
- 2.** If in a wooded area, pull duff from surrounding areas to cover trampled areas. In burned meadows with a visible trail through the burn, ash should be scattered onto the trail to disguise it. As much duff as possible should be pulled onto the trail.
- 3.** The rehabilitated path should blend in with the surrounding contours and vegetation.
- 4.** Operation of vehicles and machinery in meadows should be discouraged whenever possible. If meadows cannot be avoided, any deep furrows from turn-outs in meadows should be recontoured to the original grade and slope of the meadow. Any loose soil should be replaced into the furrow. Due to compaction, some scarification of the soil and vegetation may be necessary. Litter and duff should be pulled onto the area to conceal the impacts and also to provide microsites for seed establishment.
- 5.** Where more than 20% of the total area is disturbed to mineral soil, grass plugs should be directly transplanted into the disturbed area. Let a resource advisor know of these areas, and an NPS revegetation crew will complete this work at a later date.

## **Specifications for Hazard Tree Removal along Roads**

- 1.** Hazard trees will be evaluated 1½ chains (approx. 100 feet) from all trails, roads, vehicle pull-offs, and parking areas; only trees with potential to fall on roads will be evaluated for dropping. All stumps should be flush cut to the ground.
- 2.** Trees should be felled across the slope and away from any trails or roadways. This will contribute to site stability and decrease erosion and runoff in severely burned areas.
- 3.** The butt ends of the trees that are felled should not be visible from roads or trails. The exposed ends should be bevel cut.
- 4.** Any trees or snags over 18" dbh felled will be reported using the READ Summary Reporting Requirements form (see Section 2-7, and copy of USFWS Reporting Requirements form, Section 8-9).

## **Rehabilitation of Prepped areas along roads**

- 1.** Areas along roads that were prepped for fires will be prioritized by the Resource Advisor based on natural, cultural and wilderness concerns, visitor experience concerns, and visitor safety concerns. Every effort will be made to address these prioritized areas in future projects and with future funding.

# FIRE MANAGEMENT PREP GUIDELINES FOR WILDLAND FIRE EVENTS

## Snags

### Cut

- Snags less than 18" that you are confident will burn
- Snags with loose bark or no bark
- Snags that have a jackpot of fuel directly on the stump

### Do Not Cut

- Snags with tight bark on the bole
- Snags located in grassy or meadow areas that will not burn
- Snags that are easy to line and the fuel loading around or near the stump is light
- Snags over 20" dbh (rake around instead)

### Do not cut live aspens

- Flush cut stumps as low as possible
- Buck up and move all cut snags at least a chain into the burn area
- Scatter slash in areas that will burn
- Try to hide stumps and log ends by spreading dirt/duff on top, cutting log ends at angles, or covering with limbs/woody material

Utilize Minimum Impact Management Techniques during Wildland Fire events in Proposed Wilderness areas.

## **DAILY FIRE EFFECTS MONITORING STRATEGY**

When managed wildland fires exceed certain acreage, the increased size makes on-the-ground monitoring difficult and potentially unsafe. Fire severity and behavior monitoring can be done in conjunction with daily aerial recon and GPS'ing flights

In addition, compliance with the Biological Opinion for the Fire Program is a critical component of managing fires at GRCA. Monitoring burn severity is critical in complying with the BO to ensure we are staying within the high and moderate-high severity thresholds that have been established. The most efficient and effective way to monitor fire severity is during aerial recon and GPS'ing flights.

As in the past, fire weather and fire behavior will be monitored as described below.

### **Fire Severity Monitoring**

The following is strictly informational and not actually directed or overseen by the READ: To ensure fire severity objectives are met during wildland fire events, fire severity will be monitored through aerial observation (see Daily Monitoring – Fire Size and Severity form, Section 8-5).

### **Fire Weather Monitoring**

The following is strictly informational and not actually directed or overseen by the READ: As long as personnel are conducting operations in the fire area, personnel will collect daily weather observations in the vicinity of the fire. Fire personnel should collect weather observations from various representative areas around and adjacent to the fire (i.e. different fuel types, along the rim, interior, on different flanks, etc. as needed).

If personnel are not conducting fire operations, consider monitoring fire weather using the nearest RAWs and a fire weather monitor at the helibase.

### **Fire Behavior Monitoring**

The following is strictly informational and not actually directed or overseen by the READ: Monitor fire behavior daily through aerial operations. When available, have an FBAN/ LTAN fly the fire, preferably when the fire is most active and visibility is good and write a brief narrative describing fire behavior on each fire flank.

### **Smoke Monitoring**

The READ should communicate any smoke-related concerns with the fire liaison officer who will work with the physical science program manager and the Arizona Dept. of Environmental Quality (ADEQ) to assess whether there is a need for smoke monitoring.

## NOTES

## **SECTION 3: CULTURAL RESOURCES**

### **Introduction**

As a Resource Advisor you need to be concerned with impacts that fire can have on fire-sensitive resources and impacts fire management activities can have on cultural resources in general. One of the roles of the archaeological staff during a fire incident is the identification and protection of fire-sensitive sites and artifacts and avoidance to non-fire-sensitive sites during ground disturbing activities. Fire-sensitive sites and artifacts include dendroglyphs, wooden structures, fences, corrals, pictographs, petroglyphs, glass objects, or any other class of cultural material that could be significantly damaged or destroyed by fire. You must also be concerned with the protection of sites that are not fire-sensitive, but could be impacted by activities associated with fires, i.e., equipment staging areas, line construction, and helispot construction or improvement. This section outlines some of the specifics associated with serving as a cultural resource advisor (READ) during fire activities.

Additional reference: see the oversized “Sensitive Resources – Grand Canyon National Park” map in the READ Guide.

## Fire-sensitive Sites

To determine if a site is fire-sensitive, answer these questions:

- Would fire effects diminish site integrity by destroying character defining features and elements?
- Would fire effects destroy our ability to assess site cultural affiliation?
- Would fire effects destroy our ability to assign site chronology?
- Would fire destroy features, artifacts, or structural elements?

If you answered yes to these questions, the site IS fire-sensitive.

Fire-sensitive sites contain features that will burn outright or be adversely affected by fire. Adverse effects are those that would destroy or significantly diminish the National Register integrity of a site. Adverse effects could result from spalling of rock containing inscriptions, petroglyphs, or pictographs, combustion of wooden structures, buildings, and objects, melting, bursting, or severe fracture of bottles and other glass objects, combustion of other site materials made of organic materials such as leather, yucca fibers and the like, or that result in disturbance to burials.



## Priority Categories

Grand Canyon fire-sensitive cultural resources have been prioritized so that cultural staff and fire crews can direct efforts towards preserving sites that could be adversely affected by fire. Fire-sensitive site priorities have been established by examining site feature types and the information potential that a site contains. The priorities help fire managers and cultural staff focus treatment efforts and increase work efficiencies.

Fire-sensitive site priorities are:

**Priority 1 (High):** If a site has exceptional or high data potential and contains features or objects that can be adversely affected by fire they are Priority 1 fire-sensitive sites (red dot on the sensitive resource map).

**Priority 2 (Moderate):** If a site has moderate data potential and contains features or objects that can be adversely affected by fire they are Priority 2 fire-sensitive sites (orange dot on the sensitive resource map).

**Priority 3 (Low):** If a site has low data potential and contains features or objects that can be adversely affected by fire they are Priority 3 fire-sensitive sites (yellow dot on the sensitive resource map).

## Treatment Guide

The treatment guide is intended to inform fire managers of appropriate treatments for archaeological sites in the event of fire activities. Each site is given a single preferred treatment. These treatments are reflected on the sensitive resource map. The code only indicates the primary treatment. You can implement as many of the treatment measures as are necessary and appropriate to protect fire-sensitive sites and objects. The primary treatment is noted so that the best treatment is implemented if there is limited time to act to reduce potential adverse effects.

### 7 Treatment Types

Treatment 1: Fuel reduction around a structure or a feature.

Treatment 2: Physical exclusion of fire through line construction.

Treatment 3: Physical exclusion of fire through the application of water, foam, or fire shelter material (“cabin wrap”).

Treatment 4: Physical exclusion of fire through the application of shelter fabric only.

Treatment 5: No ground disturbance. Water, foam, fuel reduction not resulting in ground disturbance, and shelter fabric can be used as alternative treatments.

Treatment 6: Artifact removal (temporary for important, but portable artifacts, see SOP fire treatments for details).

Treatment 99: No treatment. We have used this code primarily for fences that have been determined ineligible for the National Register.

## 13 Mitigation Strategies

Mitigating the impacts of fire activities is as important as the protection of fire-sensitive sites from fire. The following mitigation measures are standard practice at Grand Canyon. As a READ, you are responsible for making sure these mitigations are implemented as much as possible.

**1. Fire projects using aerial ignitions:** As much as possible, the perimeters of the fire-sensitive sites OR FEATURES must be marked so that they can be seen from the air, using photo target fabric or GPS coordinates. Orange-colored, plastic flagging has been found to be effective. Markings consist of crosses that have arms that are at least four feet long, and are placed in an open area, easily viewed from a helicopter. If an entire site area is fire-sensitive, then the markings should be around the boundary of the site. If only particular features are fire-sensitive, then the markers can be placed around the perimeter of the fire-sensitive features. An archaeologist familiar with the sites and the method used to mark them may fly a reconnaissance flight with fire personnel to make certain that the locations of these sites are known and that the sites, or areas, can be avoided during aerial ignition activities.

**2. All fire projects:** During project prep, ignition, and mop-up activities, no dragging, piling, or burning of piled slash may occur within any site boundaries. Archaeologists will mark site boundaries to avoid effects to sites from such activities. The flagging used must be pink with black stripes.

**3. All fire projects:** Staging vehicles or equipment on archaeological sites is prohibited.

4. **All fire projects:** No ground disturbing activity may occur in an archaeological site without an archaeologist present to ensure that effects are minimized.
5. **All fire projects:** If previously unidentified or concealed archaeological resources are encountered during project activities, all necessary steps will be taken to protect them and to notify a Grand Canyon National Park archaeologist or the Cultural Resource Manager immediately following discovery if one is not present during the project (refer to READ GUIDE, S&RM contact list for details).
6. **All fire projects:** Site-specific treatments (see Treatment Guide in previous section) are to be determined by fire personnel in consultation with a Grand Canyon National Park cultural READS.
7. **All fire projects:** All fire-sensitive sites shall be evaluated post-fire and any effects from fire will be documented (see hardcopy forms *GRCA Archaeological Post-Fire Monitoring Form* and *Grand Canyon National Park Post-Fire Site Damage Assessment Form*). All sites within high-severity burn areas shall be assessed post-fire and any effects documented. In addition, all unsurveyed areas within moderate-high and high-severity burn areas within the burn boundary shall be surveyed post-fire and all effects to cultural resources documented. Note, post-fire survey may be delayed until a fire area is deemed safe.
8. **All fire projects:** Because dead snags are so susceptible to fire, pay close attention to their location in or in close proximity to archeological sites. Mitigation measures to lessen their threat can include: excavating containment line around snags to prevent fire from creeping into their base, pre-treat snags with

water or foam to lessen the likelihood they'll take fire, or remove them entirely from the site when possible.

9. **Prescribed fire projects:** "Jackpots" of large diameter dead and down woody debris located near sites should either be scattered away from the site or piled outside site boundaries and burned prior to ignition day.

10. **Prescribed fire projects:** All piles of woody debris and wood rounds generated through hazardous fuels reduction near sites should be burned prior to ignition day.

11. **Prescribed fire projects and other incidents as appropriate:** A simplified map showing the general location of archeological sites should be given out to all module leaders. The map must be at a scale that makes land navigation possible. Maps greatly simplified communications between ignition teams and helped ensure the safety of all personnel on the Buggeln burn.

12. **Prescribed fire projects:** Small ignition teams with one or more archaeologists could burn around sites prior to the arrival of the main ignition teams. This has proven to be very effective for Rx burns.

13. **All fire projects (when possible):** Daily patrols to cultural sites within a burn unit after main ignition is necessary until the area surrounding fire-sensitive sites has adequately cooled and fire no longer poses a threat to combustible features.

## 10 Resource Messages

The following guidance should always be included in the fire Incident Action Plan (IAP). You should advise fire overhead personnel of these concerns during planning meetings as appropriate. You, or another resource advisor, should state concerns to line crews during morning briefings.

1. Fuels around archaeological sites and features need to be removed with care under the supervision of an archaeologist.
2. All fire-sensitive archaeological sites will be marked with pink and black striped flagging. These areas should be prepared to be able to take fire following site preparation activities. Site preparations strategies include:
  - ◆ Fuel reduction around a structure or a feature.
  - ◆ Physical exclusion of fire through line construction.
  - ◆ Physical exclusion of fire through the application of water, foam, or fire shelter material (“cabin wrap”).
  - ◆ Physical exclusion of fire through the application of shelter fabric only.

◆ No ground disturbance. Water, foam, fuel reduction not resulting in ground disturbance, and shelter fabric can be used as alternative treatments.

◆ Artifact removal (archaeologists only temporary for important, but portable artifacts, see SOP fire treatments for details).

3. Sites that must be avoided during line construction or when crews are developing fire activity areas (parking areas, vehicle turn-arounds, helispots, spike camps) will also be marked with pink and black striped flagging.

4. Leave all artifacts where you find them. Do not damage, break, move, pile or remove artifacts. Artifacts you might see at Grand Canyon include historic bottles and cans, automobile parts, tools and equipment, and remnants of historic structures. Old bottles and cans look like trash but can be important elements of the cultural history of the park.

Common Native American artifacts include pottery pieces, grinding tools (manos and metates), chipped stone items (flakes and arrowheads), wooden structures (wikiups and sweatlodges) and other historic items (food containers, pales, buckets, etc.).

5. Do not carve on aspen trees or write on other objects like rock art panels, historic water tanks, or old signs. Crew photos or specially designed t-shirts are a great way to remember your time on a fire here.
6. Don't drag fuels through archaeological site boundaries. Carry it out.
7. Don't pile slash or dead and down debris within site boundaries.
8. Don't stage vehicles or equipment on sites.
9. An archaeologist should be present during ground disturbing activities to prevent damage to archaeological deposits. If an archaeologist cannot be present during the activity, they will check the area when possible before the line is dug and flag the route to avoid archaeological site disturbance or they will check the line as soon as possible after it has been dug.
10. Report any unmarked or recently uncovered archaeological materials to an archaeologist or resource advisor as soon as possible following your discovery.



## Work Strategies

Rapid changes in fire management priorities demand quick response and shifting work strategies for archeologists. The resource advisor must be up-to-date on the fire situation and be prepared to adjust work efforts and priorities based on fire behavior and fire management objectives. **Remember that your first priority is for the safety of your crew.** Your next priority is to identify and protect fire-sensitive sites. Major duties are outlined below. The resource advisor has to stay informed about fire activity, spread, predicted fire behavior, and fire operations planning to adequately prioritize archaeological work efforts. And always, remember the ten standard firefighting orders and the Watch Out Situations!

### Priorities for Previously Recorded Archaeological Sites

- Identify (using flagging) all previously recorded fire-sensitive sites that are in the path of the fire or are likely to be impacted by the fire. Flag access routes to sites if needed. Use **ONLY** pink and black striped flagging.
- Prepare these sites by digging line around them, clearing brush and heavier fuels from the interior of the site, remove fuels from the site boundary and from sensitive artifacts and features. Wrap fire-sensitive features with fire-resistant shelter materials or prepare hose lays to deliver water and/or foam when possible. The task of preparing sites in advance of the fire should be completed with assistance from fire crews if possible, but don't let their availability prevent you from doing what you can to physically protect the sites. Communicate needs for assistance with incident management team (see the fire treatment SOP).

- Notify fire personnel about the nature and location of fire-sensitive sites within the management area. Provide fire personnel with site coordinates, map plots, and site location descriptions, to make sure they can avoid/protect such sites.
- Flag non-fire-sensitive sites that have the potential to be impacted by fire activities, i.e., adjacent to parking areas, near planned or known helispots or fire lines, equipment staging areas, and crew spike camps. Flag only what needs to be flagged, not every site. Use ONLY pink and black striped flagging.
- Give the incident management team the locations of areas where they should not stage vehicles, set up equipment or spike camps, drive, turn vehicles around, or build fire line. These areas can be shown as polygons on maps as well as being marked in the field.
- If time allows, update site location information (if needed) and condition. This is a low priority activity and should ONLY be undertaken if the fire is spreading very slowly, we have plenty of staff, and we have no other priority work, such as new survey, to conduct. Do not rerecord previously recorded sites during a fire event unless it is necessary for the protection of the site.
- If the project is a prescribed burn and you are preparing sites or monitoring post-burn, you must get updated condition information for all treated fire-sensitive sites (see 2009 Programmatic Agreement prepared for the Fire Management Plan for additional details).

## New Site Survey Strategy

- Unsurveyed areas adjacent to surveyed locations with high site density;
- Areas within 1/2 mile of canyon rims or major side canyons;
- Burn unit boundaries lacking survey, equipment staging areas, hand lines and along access routes;
- Known historic travel corridors and traditional use areas;
- Areas within 1/2 mile of permanent or intermittent water sources;
- Open drainage bottoms and meadows; Flat, open ridge tops; Pinyon/Juniper woodland; Sinkholes with standing water, large drainage routes, sinkholes along drainages, and open meadows along drainages.
- Upon site discovery, record and prepare the site for fire (See Cultural Resources GPS Data Collection Log, Section 8-10). Do not use the same field number designation for Isolated Occurrences (IOs) as for actual Sites. In general, use IO numbers for isolated occurrences and FS numbers for field sites, and assign separate crew designations if there are multiple crews. *Grand Canyon National Park Archaeological Site Inventory Data* forms (i.e., “site forms”) will be filled out as time allows or at a later date. Notify fire personnel about the nature and location of new fire-sensitive sites. Provide fire personnel with coordinates, map plots, and site location descriptions. Flag non-fire-sensitive sites that have the potential to be impacted by fire activity centers (dip tank locations, staging areas, etc.). Use ONLY pink and black striped flagging. Give the incident management team the locations of areas where they should not stage vehicles, set up equipment or spike camps, drive, turn vehicles around, or build fire line.

## Daily Reporting

Detailed record keeping is critically important for preparing the post-season fire report. The person preparing that report may not have been on your fire incident and will be relying on you to provide critical information.

1. Complete an *ICS form 214 (Unit Log)* at the end of each operational shift (see Unit Log ICS 214-CG-1A, Section 8-14).
2. Be sure to include:
  - What you did during the operational period/ what your assignment was and what you did (**be specific**).
  - Fire-sensitive site treatments (**be specific**).
  - If you monitored sites, list which sites you monitored and record whether fire treatments were worked or not.
  - If the treatments were not effective, list why they failed and what you would recommend to improve treatments.
  - Did you survey? Where? How many acres were inventoried, details of survey (crew spacing, sites discovered, etc).
3. Complete the *Read Summary Reporting Form* (see Section 8-16) as often as necessary (copies are in the READ form binder. Electronic copies can be found on the Divisions drive (\\nps.doi.net\grcadfs01) under Fire & Aviation/Science and Resource Management/ Forms for Fire Activities). Complete all fields that you can, including water drops, trees felled, etc. These forms will help all S&RM staff complete yearly reporting requirements.
4. Supplement your written reports with digital pictures (for the post-season report) and black and white photographs to document fire-sensitive sites/features, pre-fire conditions, treatments, and post-fire conditions.

## **Safety Concerns**

Safety applies to all resource advisors, archaeological or otherwise. You and your crew are working in a fire environment. Consider the assignment you have given the crew or have taken on for yourself. Is it necessary and safe? Make sure the archaeological crew attends morning briefings and understands important issues like communications, current and expected fire behavior. Just like any fire crew, archaeologists need to follow safe fire work practices. That means watching out for changes in weather, planning for, and knowing escape routes, and other watch out situations. See the Grand Canyon archaeology general safety plan and fire-related job hazard analysis. Think Safety, work safely AT ALL TIMES!

## Examples of Combustible Prehistoric Features at Grand Canyon National Park



Wickiups and Hogans



Corrals and other brush structures

## Examples of Combustible Historic Features at Grand Canyon National Park



Historic corrals and other structures



Historic dendroglyphs (Aspen carvings)

## Examples of Non-Combustible Features which can be Impacted by Fire at Grand Canyon National Park



Prehistoric petroglyphs and pictographs (Rock Art)



Historic glass and wooden artifacts



## NOTES

## NOTES

## **SECTION 4: VEGETATION**

### **Introduction**

As a Resource Advisor you need to be concerned with impacts that fire can have on fire-sensitive resources and impacts fire management activities can have on local vegetation. One of the roles of the Resource Advisor during a fire incident is the identification and protection of local vegetation of concern. This includes both protecting threatened or endangered species and reducing/eliminating the introduction of invasive plants during fire related activities. This section outlines some of the specifics associated with serving as a resource advisor (READ) during fire activities.

Additional reference: see the oversized "Sensitive Resources – Grand Canyon National Park" map.

## Native Plants of Concern

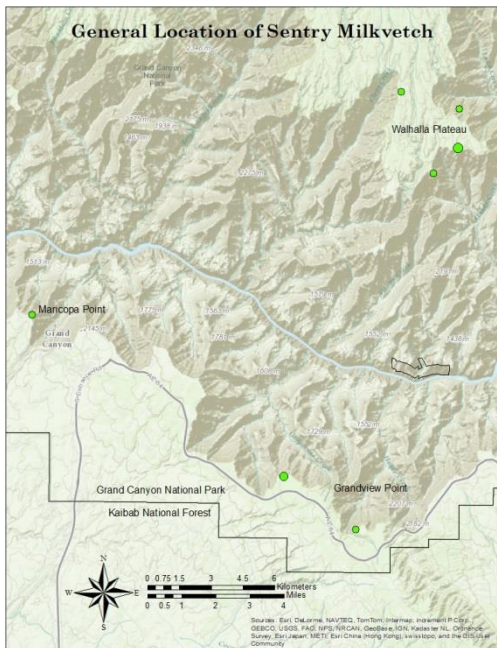
Sentry milkvetch (*Astragalus cremnophylax* var. *cremnophylax*) - both ENDANGERED and ENDEMIC



**General Information:** A member of the pea family (Fabaceae), sentry milk-vetch is a tiny, perennial herb that grows only in unshaded, shallow soil pockets in cracks and crevices of the Kaibab Limestone, within 25 feet of the rim of Grand Canyon. Plants grow to only one inch (2.5 cm) tall and one to six inches (2.5 - 15.0 cm) in diameter. Their short, creeping stems have compound leaves composed of 5-9 tiny leaflets. Mature plants bloom in the spring, and produce many tiny lavender flowers: 100-200 per plant is not uncommon, and they may bloom again after summer rains.

**Locations:** Only about a dozen populations of this tiny plant are known to exist, with over 16,700 individual plants living in the wild in 2016. The largest populations are at Maricopa Point, on Hermit Road near the Grand Canyon Village, Lollipop point, along East Rim Drive, and the Cape Final area on the North Rim.

## General Location of Sentry Milkvetch at the Grand Canyon



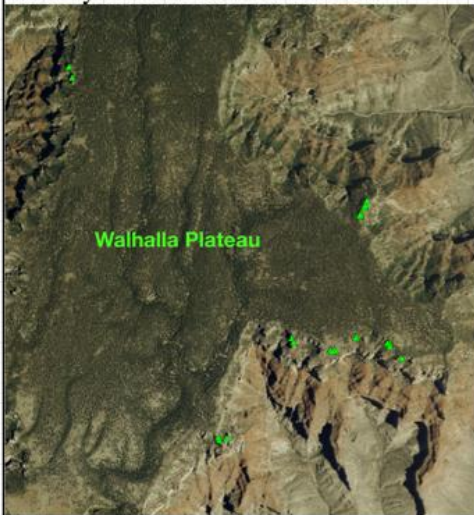
# Known Locations of Sentry Milkvetch North Rim

Grand Canyon National Park  
Arizona

National Park Service  
U.S. Department of the Interior



## Sentry Milk-vetch North Rim



0 0.25 0.5 1 Miles



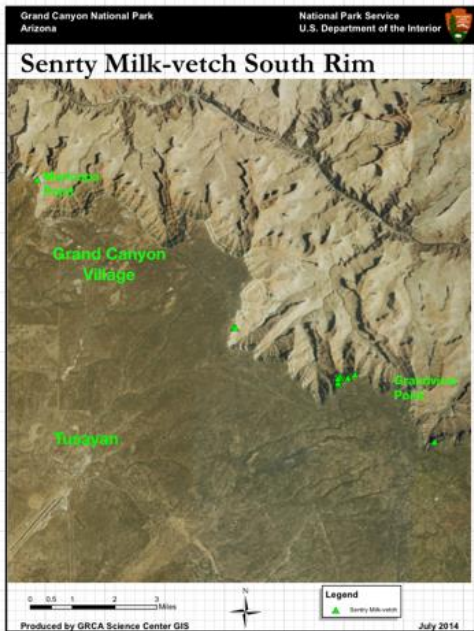
Legend

▲ Sentry Milk-vetch

Produced by GRCA Science Center GIS

July 2014

# Known Locations of Sentry Milkvetch South Rim



## **Exotic Plants**

### **Keeping Exotic Plants Out of the Wilderness**

Prevention is the single most important way to stop the spread of exotic plants. Please help by doing the following:

- Clean vehicles inside and out before entering the park from another fire. Wash the outside of the vehicle including the undercarriage and wheel wells, sweep out the cab, shake out floor mats.
- Visually inspect boots, socks, clothing, tools, equipment, and personal belongs for soil, seeds, and plant parts before entering the park and when moving throughout the fire.
- Dispose of any seeds into trash receptacles.
- Be aware of common invasive species in the area.
- Locate fire line and spike camps away from patches of exotic plant species whenever possible.



## Common Invasive Species

Bull thistle (*Cirsium vulgare*)



Dalmatian toadflax (*Linaria dalmatica*)



## Common Invasive Species

Whitetop (*Lepidium draba*)



Musk thistle (*Carduus nutans*)



## Common Invasive Species

Houndstongue (*Cynoglossum officinale*)



Canada thistle (*Cirsium arvense*)



## Common Invasive Species

Scotch thistle (*Onopordum acanthium*)



### NOTES

## NOTES

## NOTES

## **SECTION 5: WILDLIFE**

### **Introduction**

As a Resource Advisor you need to be concerned with impacts that fire can have on fire-sensitive resources and impacts fire management activities can have on local WILDLIFE. One of the roles of the Resource Advisor during a fire incident is the identification and protection of local species of concern. This includes protecting both threatened and endangered species. This section outlines some of the species? of special concern associated with serving as a resource advisor (READ) during fire activities.

Additional reference: see the oversized "Sensitive Resources – Grand Canyon National Park" map.

## **Wildland Fire Biological Opinion Briefing: Species of Special Concern and Associated Conservation Measures**

The US Fish and Wildlife Service issued a Biological Opinion on the Grand Canyon National Park Fire Management Plan on November 10, 2009. This document is intended to summarize the portions of the Opinion most applicable to personnel managing fire within the Park (note: much of the language to follow throughout Section 6 of the READ-PG is directly from the Biological Opinion and does not reflect current fire management language). This includes descriptions of the main species and critical habitat addressed in the Opinion and the conservation measures and reasonable and prudent measures that must be adhered to during management of these fires. This is not a complete list of threatened, endangered, or sensitive species that occur within the park. In the event of a fire, a Park Wildlife Biologist will need to identify additional species of concern and their associated conservation measures.

The following summarized conservation measures are found in full on pages 14-15 of the Biological Opinion, which has been provided to fire personnel; all Reasonable and Prudent Measures are found on pages 33-36 of the Opinion. In addition, the Park is committed to "limiting the combined percentage of high and moderate/high severity to no more than 30% of the total acreage of the designated critical Mexican Spotted Owl habitat. Specific direction to fire personnel on sensitive species and implementation of the Opinion will be provided by a resource advisor familiar with the Park's resource issues.



## Species of Special Concern

### Mexican Spotted Owl



### Distinguishing Characteristics

- No ears visible
- Solid black eyes
- Brown with irregular brown and white spots
- Medium size (16-19 inches in height)

## **General Information**

The Mexican spotted owl (MSO) was listed as a Threatened species by the US Fish and Wildlife Service (USFWS) in 1993. As of 2016, all PAC's have been located below the rim in steep walled canyon habitat. Limited detections of owls have also been made in forested habitat on the South and North Rims within 0.25 miles of the rim. When a MSO is found, an approximately 600 acre Protected Activity Center (PAC) is established around those locations. Within PAC's, management actions are restricted and a Park Wildlife Biologist needs to be consulted prior to any action, unless doing so would jeopardize human safety.

## **Conservation Measures**

- 1) Contact the Resource Advisor immediately if a MSO is encountered during any project. The Resource Advisor will maintain a record of MSO encountered during suppression activity and will include location, date, time of observation, and general condition of each owl.
  
- 2) Fire management teams will provide the following information to the resource advisor throughout the fire (the READ will complete daily reporting forms including the items listed below & will keep notes on daily interactions with fire personnel):
  - a) Fireline length created in each location
  - b) Total trees and snags >18" cut by location
  - c) Fireline length created in each location
  - d) Total trees and snags >18" cut by location

- e) Location of new or rehabilitated support sites (i.e. helispots, drop points, dip tank locations, camps)
  
- 3) Number of helicopter flights
  
- 4) Number of water and/or fire retardant drops
  
- 5) To the maximum extent possible, aircraft will remain at least 1,200 feet (400 meters) from the boundary of any designated Protected Activity Center (PAC).
  
- 6) Locate areas associated with fire-related activities, such as dip sites or drop points, at least 1,200 feet (400 meters) from the boundary of any designated PAC.
  
- 7) Inform all field personnel who implement any portion of the proposed action about MSO regulations and protective measures.
  
- 8) Integrate data from reports to FWS on fire activity into the adaptive management program.

## **Reasonable and Prudent Measures**

- 1) GRCA shall minimize effects to MSO PACs.
- 2) Personnel education/information programs and well-defined operational procedures shall be implemented.
- 3) Fire activities shall be carried out in a manner to reduce potential for take of MSO through habitat loss outside of PACs.
- 4) GRCA shall document all actions, report incidental take and owl occurrences, and monitor the effects of the proposed action on MSO habitat. Those findings shall be reported to us by January 31 of each year and shall, with our involvement, be incorporated into the adaptive management program.

## **Mexican Spotted Owl Critical Habitat**

The mixed conifer forested areas of the North Rim (including ponderosa pine with white fir encroachment, per habitat type definitions included in the Recovery Plan) are designated MSO Critical Habitat. In order to maintain the primary constituent elements of MSO Critical Habitat, conservation measures will be adhered to as outlined in the BO. Conservation measures are intended to protect the following primary constituent elements as provided in the Federal Register's designation of MSO Critical Habitat: high basal area of large diameter trees, moderate to high canopy closure, wide range of tree sizes suggestive of uneven-age stands, multi-layered canopy with large overstory trees of various species, high snag basal area, high volumes of fallen trees and other woody debris, high plant species richness,

including hardwoods, and adequate levels of residual plant cover to maintain fruits, seeds, and regeneration to provide for the needs of MSO prey species. Critical Habitat is protected under the Endangered Species Act.

- 1) The fire will be managed as a low intensity wildfire in order to minimize negative effects on the primary constituent elements of critical habitat.
- 2) If fireline construction is necessary, the Park will minimize the cutting of trees and snags larger than 18 inches dbh, and no trees or snags larger than 24 inches dbh will be cut unless absolutely necessary for safety reasons.
- 3) Park wildlife biologists will be consulted in the decision-making process for wildland fires.
- 4) Rehabilitate all constructed fireline.

Additional references for MSO critical habitat-see the oversized "Sensitive Resources-Grand Canyon National Park" map.

## Species of Special Concern

### Northern Goshawk



### Distinguishing Characteristics

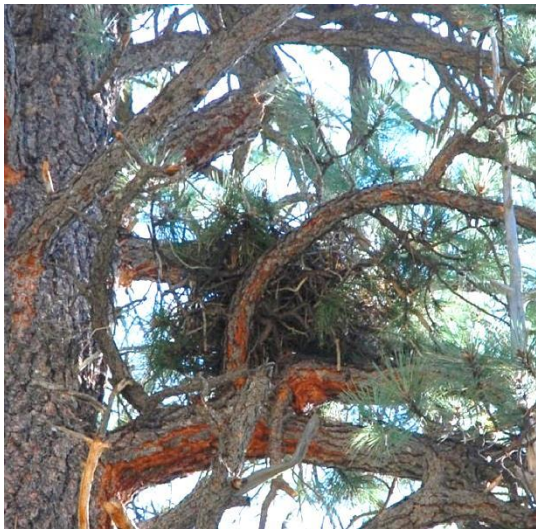
- Dark, slate gray above with pale gray, barred underparts
- Dark head with white stripe over the eye
- “Kak-kak-kak” alarm call in nesting habitat
- Large size (20-25 inches in height)

## General Information

The northern goshawk is listed by the state of Arizona as a sensitive species. Per NPS management policy, “the National Park Service will inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species, to the greatest extent possible.” The North Kaibab Plateau contains one of the largest and most studied populations of northern goshawks known in the continental US. There are known goshawk-nesting territories on both the north and south rims within the Park. Surveys are conducted prior to planned management actions, and known territories are monitored and mitigated for during fire management events. The resource advisor will provide the management team with information on goshawk territories and necessary mitigation measures.

Goshawk pairs will use more than one nest tree within a nesting territory but show nest fidelity to the 40-acre nest stand within their territory. Typically, nest trees are large diameter ponderosa pine found within or close to drainages with dense (>80%) canopy cover but low mid-story density. The nests are large stick nests that, when active, are frequently decorated with green foliage. Breeding adults are known to be aggressive when nest trees are approached so caution should be used. Prey remains, feathers, or pellets located beneath nests should be collected for later identification. Any evidence of current breeding status found at nest sites should also be recorded.

## Goshawk Nest



The above photo shows a typical Goshawk nest located in the branches of a Ponderosa pine tree.



## Mitigation Measures

- 1) All known goshawk nest trees will be lined with a 5 foot scrape.
- 2) Any Evidence of activity at the nest site will be recorded (if necessary, refer also to the Goshawk Survey Form, Section 8-11).
- 3) Nesting territories will be monitored during breeding season during and following a fire to determine reproductive status.
- 4) Firefighters will not use mechanized equipment within ½ mile of a known active goshawk nest.
- 5) If goshawks are encountered, firefighters will not approach or haze the birds. Goshawk sightings should be recorded and a resource advisor should be contacted as soon as possible.

When sufficient time is available, a 10 acre low intensity burn-out should occur around nest trees. This will help to insure that high intensity fire does not destroy critical nesting habitat.

# Species of Special Concern

## California Condor



### Distinguishing Characteristics

- Black with striking white patches under wings
- Bald head (orange or black in color)
- Number tags on wings
- Large size (9 1/2 foot wingspan)

## General Information

The California Condor is listed as a 10j or experimental population and is managed as a threatened species in the Park under the full protection of the ESA. The population of condors that use the Park are monitored regularly by NPS Wildlife staff and the Peregrine Fund.

The condors are naturally inquisitive and have been known to frequent areas with concentrations of people and/or activities. The condor recovery team has gone to great effort to prevent the condors from becoming habituated to people. In support of this effort we attempt to avoid condor-human interactions at all times. If a condor approaches fire activity or personnel, a permitted individual must be contacted to haze the bird from the area. Fire personnel and aircraft should maintain a minimum of 300 feet from condors at all times, except when moving away from the condor would jeopardize human safety. Peregrine Fund personnel and Park biologists are permitted to haze condors and will haze any condors reported in the vicinity of human activity. The resource advisor will be in contact with the Peregrine Fund to receive updated location and information on condors. (*Peregrine Fund may be contacted at 928.606.5155 or 585.747.5885* )

## **Conservation Measures**

- 1) Cover all water dip tanks when not in use.
- 2) Keep camp areas free of trash.
- 3) Provide all fire personnel literature or instruction regarding condor concerns.
- 4) Record and report immediately any condor presence in the project area to the Resource Advisor or a GRCA wildlife biologist.
- 5) Avoid any condors that arrive at any area of human activity associated with fire management activities. Notify the assigned Resource Advisor or a GRCA wildlife biologist, and only permitted personnel will haze the birds from the area.
- 6) Survey any fire-retardant chemical application areas to the extent possible and remove any contaminated carcasses before they become condor food sources.
- 7) Minimize aircraft use along the rim to the greatest extent possible.

- 8) Keep aircraft at least 1200 feet (400 meters) from condors in the air or on the ground unless safety concerns override this restriction. This restriction does not apply to the North Rim helispot.
- 9) If airborne condors approach aircraft, aircraft will give up airspace to the extent possible, as long as this action does not jeopardize safety.
- 10) Prescribed fire projects will not occur within 0.5 mile of active condor nesting sites.
- 11) If a condor lands at an active manual/mechanical thinning project site, thinning would cease until the condor leaves on its own or until permitted personnel arrive to haze the condor from the area.

## Other Wildlife Concerns

### Northern Leopard Frog (*Lithobates pipens* - formerly *Rana pipens*)

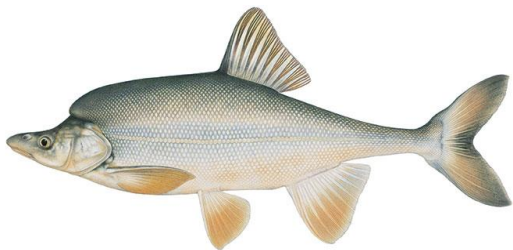


These frogs are a smooth-skinned green, brown, or sometimes yellow-green frog covered with large, oval dark spots, each of which is surrounded by a lighter halo. Adult body lengths range from 2 to 4.5 inches. See photos below. More information can be found on the [USFWS website](#).

If working on the North Rim, in particular anywhere near water, please keep an eye out for Northern Leopard frogs (*Lithobates pipens* - formerly *Rana pipens*). If seen

- Record their location (GPS if possible) and photograph of the frog and the area in which it was found. Report sightings to GRCA wildlife staff.

## **Humpback Chub (*Gila cypha*) – ENDANGERED:**



### **General Information**

The humpback chub is a medium-sized freshwater fish of the minnow family, Cyprinidae. The adults have a pronounced hump on their back, a narrow flattened head, large fins, and small eyes. It has silvery sides with a brown or olive-colored back. The humpback chub is only found in the Colorado River Basin and, and GRCA contains the largest remaining population. Humpback chub attain a maximum size of about 20 inches, can weigh up to 3 lbs. and can live 20-30 years.

The NPS has introduced humpback chub to Shinumo and Havasu creeks through translocations. Within GRCA, the species spawns primarily in the lower 13 miles of the Little Colorado River, but occasional spawning is suspected in other areas of the Colorado River. The species occurs within 9 aggregations within GRCA, and per consultation with U.S. Fish and Wildlife Service (2011-2014, these areas are designated as NO DIP ZONES (see conservation measures).

The Shinumo, Havasu, and Bright Angel Creek watersheds within GRCA contain sensitive aquatic resources, including translocated endangered fish (Havasu, Shinumo). The Little Colorado River

watershed (mostly outside the park) is critically important to endangered fishes. Fire retardant use should be avoided in these areas. Fire management should be evaluated on a case-by-case basis in these areas. Consult with the fisheries program manager when fires occur in these watersheds.

## **CONSERVATION MEASURES**

### **No Dip Zones**

The following general locations are off-limits for drafting water for bucket drops due to the presence of Humpback chub:

<b>General Location</b>	<b>River Miles*</b>
30-Mile	30 - 32
Little Colorado River Inflow	57 - 66
Lava Chuar	68 - 69
Hance	72 - 73
Shinumo Creek Inflow	108 - 110
Stephen Aisle	117 - 121
Middle Granite Gorge	127 - 129
Havasu Creek Inflow	156 - 159
Pumpkin Spring	213 - 218

\*River miles are based on the Belknap river guide.

**Potential effects to humpback chub may also be decreased if water dipping is conducted in the mid-channel of the**



**mainstem of the river and avoids tributaries associated with the aggregations, eddy complexes, and shorelines.**

Additional reference: see the “River Dipping Zones” East 1/2 and West 1/2 maps for more detailed No Dip Zone locations.

Keep a record of bucket dips and drops (see *Informational Needs – Bucket Dips in the Colorado River*, Section 8-7, and *USFWS Reporting Requirements Aerial Fire Retardant or Water Drops*, Section 8-8)

Key Points:

- Sensitive Areas for fish are highlighted on the Sensitive Resources Map (Shinumo and Bright Angel Creek watersheds below the rim)
- Minimize monsoon season (July-Aug esp.) or pre-monsoon high-severity fire (before July) over the in Shinumo and Bright Angel Creeks
- Avoid dipping, to the extent practicable, in areas established by the USFWS staff (see Sensitive Resources map) including below river mile 180
- Follow USFS guidelines for aquatic nuisance species for bucket dips
- Call Brian Healy, fisheries program manager 928-638-7453, with any operational concerns

## NOTES

## NOTES

## SECTION 6: WILDERNESS

### WILDERNESS OVERVIEW

#### Background

- Total acres recommended as GRCA wilderness: 1,139,077 (or approximately 94% of total park area)
- General description of wilderness boundary

North Rim Wilderness: Approximately 90% of the North Rim is recommended wilderness. Many of the open roads currently used for fire management are within the recommended wilderness (see attached Minimum Requirement Analysis and non-wilderness road corridors described below).

North Rim Non-Wilderness: include the developed village and administrative areas, the paved road corridors (600 feet-wide), and primitive road corridors (300 feet-wide) to Swamp Point (W-4) and Point Sublime (W-1). The landfill adjacent to the W-1, the W-1a road, and the overlooks at Point Sublime, Cape Royal, and Point Imperial are excluded from wilderness.

South Rim Wilderness: The wilderness boundary extends from the Pasture Wash area to Hermit's Rest west of the GC village. The east boundary begins near Straight Canyon where it intersects with the Cape Solitude trail.

South Rim Non-Wilderness: Hermit's Rest to Desert View. The "Pasture Wash" road (300 feet-wide) to the South Bass trailhead and Havasupai Point. The boundary road (W-1).

Inner Canyon Wilderness: Nearly all of the inner canyon including the Colorado River.

Inner Canyon Non-Wilderness: The Cross-Canyon bounded on the south east by the South Kaibab trail, and on the south west by a ridge from Powell Point to the river; on the north it is well within the Bright Angel fault.

NPS Management Policies direct GRCA to manage the areas as wilderness.

## Policy

- Director's Order 41: Wilderness Preservation and Management, sets general policy that all categories of wilderness (i.e. suitable, study, proposed, recommended) be treated as though it is designated wilderness. The NPS will take no action that would diminish wilderness suitability until a legislative process is completed. This policy also states that all management decisions affecting wilderness will apply the concepts of minimum requirements for the administration of the area regardless of wilderness category. (See section 6.3, DO 41).

- GRCA Standard Operating Procedures, 8213-004, “Process Determining the Minimum Requirements for Management Actions in Recommended Wilderness in Grand Canyon National Park.” This requires all projects and management actions to document the decision-making process for determining the necessary administrative actions and methods or tools for implementation.

## Guidelines

- **MIST** (Minimum Impact Suppression Tactics) guidelines should be applied
- Minimum Requirement Analysis (MRA): per SOP 8213-004, a programmatic MRA is prepared for unplanned ignitions each year. The unplanned ignition MRA addresses emergency activities taking place for management of wildfire fire events including use of aerial resources, development of helispots, and ground mechanized equipment (vehicles, chain saws, mechanized equipment, etc.).

## Fire camps

- Primary North Rim camp is at Lindbergh Hill
- Spike Camps – consult with resource advisor prior to creating new spike camps and always apply Leave No Trace methods while using spike camps

# **Minimum Impact Suppression Tactics “MIST”**

## **Introduction**

Enclosed is a working copy of Minimum Impact Suppression Tactics (MIST) that are to be implemented within the Southwestern Region. These MIST guidelines were developed in part from MIST standards and guidelines formally adopted in the Northern Region and the Pacific Northwest Region. These guidelines reflect input from District Fire Management Officers and wilderness managers. Additional review was conducted at the Hotshot Superintendent’s Meeting for the Southwest Region and adjacent regions. . See the Incident Response Pocket Guide (IRPG), page 91.

## **MIST Concept**

Minimum Impact Suppression Tactics (MIST) is not intended to represent a separate or distinct classification of firefighting tactics but rather a mindset of how to suppress a wildfire while minimizing the long-term effects of the suppression action. When the term MIST is used in this document, it reflects the above principle.

The concept of MIST is to use the minimum amount of forces necessary to effectively achieve the fire management protection objectives consistent with ecosystem management objectives. It implies a greater sensitivity to the impacts of suppression tactics and their long-term effects when determining how to implement an appropriate suppression response. In some cases, MIST may indicate cold trailing or wet line may be more appropriate than constructed hand line.

## Goal of MIST

The goal of MIST is to halt or delay fire spread in order to maintain the fire within predetermined parameters while producing the least possible impact on the resource being protected. These parameters are represented by the initial attack incident commander's size-up of the situation in the case of a new start, or by the escaped fire situation analysis (EFSA) in the case of an escaped fire.

## Appropriate Suppression Response using MIST

When selecting an appropriate suppression response, **firefighter safety remains the highest priority**. In addition, fire managers must be assured the planned actions will be effective and will remain effective over the expected duration of the fire.

Actions will be anchored to the standard fire orders and watch out situations.

The key challenge to the line officer, fire manager and firefighter is to be able to select the wildfire suppression tactics that are appropriate given the fire's probable or potential behavior. The guiding principle is always least cost plus loss while meeting ecosystem management objectives. It is the second part of this statement which must be recognized more than it has in the past. IT is important to consider probable rehabilitation needs as a part of selecting the appropriate suppression response. Tactics that reduce the need for rehab are preferred whenever feasible.

These actions, or MIST, may result in an increase in the amount of time spent watching, rather than disturbing, a dying fire to insure it does not rise again.



## **Suppression Responsibility using MIST**

As stated previously, **safety is the highest priority**. All action will be anchored to the standard fire orders and watch out situations. Safety will remain the responsibility of each person involved with the incident. MIST guidelines are not intended to replace the firefighter judgment. Determination of suppression needs well in advance of the fire is a major asset in effectively applying MIST.

## **Resource Advisor and MIST**

- Participate at fire team planning sessions, review incident action plans and attend daily briefings to emphasize resource concerns and management's expectations.
- To insure the interpretation and implementation of EFSA and other oral or written line officer direction is adequately carried out.
- Provide specific direction, guidelines, and monitoring actions to insure successful MIST activities as needed.
- Provide assistance in updating WFDSS when necessary.
- Participate in incident management team debriefing and assist in evaluation of team performance related to MIST.
- If wilderness, assure compliance with wilderness management objectives.

# MIST List of Considerations

## Fire Line Construction

- Use cold-trail wet line or combination when appropriate.
- If constructed fireline is necessary, use only width and depth necessary to check fire spread.
- Consider use of fireline explosives for line construction and felling when possible to meet the need for more natural appearing stumps.
- Minimize bucking and cutting of trees to establish fireline; build line around logs and standing trees whenever possible.
- Where appropriate for low intensity fire, trails can be utilized as fireline in lieu of constructing new line.
- Constantly re-check cold trailed fireline.
- Limb vegetation adjacent to fireline only as needed to prevent additional fire spread.
- During fireline construction, cut shrubs or small trees only when necessary. Make all cuts flush with the ground.
- Minimize felling of trees and snags unless they threaten the fireline or endanger workers.
- Line around tree bases near fireline if it is likely they will ignite.
- Fireline location is the key element in helping maximize application of MIST.

## **Burn Out**

- Allow fire to burn to natural barriers.
- Burn out and use a low impact tool like a swatter.
- Areas that can be called black line should be used as such, and patrolled often.
- During burn out and firing operations, use low intensity backfires and short duration strip fires. Avoid high intensity head fires or other heavy handed firing operations.

## **Mop Up**

- Do minimal spading; restrict spading to hot areas near fireline.
- Cold-trail charred logs near fireline; do minimal tool scarring.
- Minimize bucking of logs to extinguish fire or to check for hotspots; roil the logs instead if possible.
- Refrain from making bone yards.
- Consider allowing large logs to burnout. Use a lever rather than bucking to manager large logs which must be extinguished.
- Use gravity socks in stream sources and/or a combination of water blivits and fold-a-tanks to minimize impacts to streams.
- Consider using infrared detection devices along perimeter to reduce risk.

- Personnel should avoid using rehabilitated firelines as travel corridors whenever possible because of potential soil compaction and possible detrimental impacts to rehab work, i.e. water bars.
- Remove or limb only those fuels which if ignited have potential to spread fire outside the fireline.
- If burning trees/snags pose a serious threat of spreading fire brands, extinguish fire with water or dirt whenever possible. Consider felling by blasting when feasible.
- Consider felling single snag fires by crosscut or explosives.
- Align saw cuts to minimize visual impacts from more heavily traveled corridors. Slope cut away from line of sight when possible.
- Discourage use of newly established trails created during the suppression effort.
- Use caution when operating pumps or engines with foaming agents to avoid contamination of water sources.

### **Campsite Considerations / Personal Camp Conduct / Personnel Movement**

- Locate facilities (fire camp & helispots) outside of wilderness whenever possible.
- Minimize the overall degradation of the wilderness resource.
- Facilities shall be temporary.
- Utilize natural openings for camps, helispots, or staging areas whenever possible.

- Minimize the number of locations used for spike camps, helispots, etc.
- Coordinate with the Resource Advisor in choosing a site with the most reasonable qualities of resource protection and safety concerns.
- Evaluate short-term low impact camps such as coyote or spike versus use of longer-term, higher impact camps.
- Use existing campsites.
- New site locations should be on impact resistant and naturally draining areas such as rocky or sandy soils, or openings with heavy timber.
- Avoid camps in meadows, along streams or on lake shores. Locate at least 200 feet from lakes, streams, trails, or other sensitive areas.
- Consider impacts on both present and future users. An agency commitment to wilderness values will promote those values to the public.
- Lay out the camp components carefully from the start. Define cooking, sleeping, latrine, and water supply.
- Minimize the number of trails and ensure adequate marking.
- Consider fabric ground cloth for protection in high use areas such as around cooking facilities.
- Use commercial portable toilet facilities where available. If these cannot be used, a latrine hole should be utilized.
- Where there are no facilities, dig a cat-hole 6-8 inches deep and at least 200 feet from sensitive areas. Completely bury waste and paper.

- Select latrine sites a minimum of 200 feet from water sources with natural screening.
- Do not use nails in trees.
- Constantly evaluate the impacts which will occur, both short and long term.
- Use “leave no trace” camping techniques.
- Pack out all garbage, including left over food.
- Minimize disturbance to land when preparing bedding site. Do not clear vegetation or trench to create bedding sites.
- Use stoves for cooking, when possible. If a campfire is used, limit to one site and keep it as small as reasonable. Build either a “pit” or “mound” type fire. Avoid use of rocks or fire rings.
- Use down and dead firewood. Use small diameter wood, which burns down more cleanly.
- Don’t burn plastics or aluminum – “pack it out” with other garbage.
- Keep a clean camp and store food and garbage so it is unavailable to bears. Ensure items such as empty food containers are clean and odor free, never bury them.
- Select travel routes between camp and fire and define clearly.
- Carry water and bathe away from lakes and streams. Personnel must not introduce soaps, shampoo, or other personal grooming chemicals into waterways.
- Pick up and remove all flagging, garbage, litter, and equipment. Dispose of trash appropriately.

- Clean fire pit of unburned materials and fill back in.
- Naturalize campfire area by scattering “dead” ashes in nearby brush and returning site to a natural appearance.
- In non-wilderness camps, minimize vehicle use in the camp area. Off-road vehicle use should be avoided when possible.

## **Aviation Use Guidelines**

- The use of aircraft in wilderness areas must be authorized at the Superintendent level.
- Maximize back haul flights as much as possible.
- Use long-line remote hook in lieu of constructed helispots for delivery or retrieval of supplies and gear.
- Use natural openings for helispots and paracargo landing zones as far as practical. If construction is necessary, avoid high visitor use areas.
- Consider maintenance of existing helispots over creating new sites.
- Buck and limb only what is necessary to achieve safe/practical operating space in and around the landing pad area.
- Coordinate activities with the resource advisor to help address resource protection and safety concerns.

## **Retardant Use / Foaming Agents**

- During initial attack, fire managers must weigh the non-use of retardant with the probability of initial attack crews being able to successfully control or contain a wildfire. If it is determined that use of retardant may prevent a larger, more damaging wildfire, then the manager might consider
- retardant use even in sensitive areas. This decision must take into account all values at risk and the consequence of larger firefighting forces' impact on the land.
- Consider impacts of water drops versus use of foam/retardant. If foam/retardant is deemed necessary, consider use of foam before retardant use.
- Do not drop retardant or other suppressants near surface waters.
- Use caution when operating pumps or engines with foaming agents to avoid contamination of water sources.

## **Minimum Impact Considerations (After Suppression Disturbance)**

- Fire rehabilitation needs are normally identified by the fire rehabilitation team.
- During implementation, the resource advisor should be available for expert advice and support of personnel doing this work as well as quality control.
- Fire minimum impact objectives should be completed as part of ongoing MIST activities, mop-up, camp demobe and fireline close out.



- Replace dug out soil and/or duff and obliterate any berms created during the suppression effort unless needed to reduce concentrated flows of water.
- Where trees were cut or limbed, cut stumps flush with the ground, scatter limbs and boles out of sight in unburned area.
- Camouflage stumps and tree boles using rocks, dead woody material, fragments of stumps, bolewood, limbs, soil and fallen or broken green branches. Scattered sawdust and shavings will assist in decomposition and be less noticeable.
- Remove newly cut tree boles that are visible from trails or meadows.
- Drag other highly visible woody debris created during the suppression effort into timbered areas and disperse.
- Tree boles that are too large to move should be slant cut so a minimal amount of the cut surface is exposed to view. Chopping up the surface with an ax or Pulaski, to make it jagged and rough, will speed natural decomposition.
- Burned and partially burned fuels that were moved should be returned to a natural arrangement rather than a “bone yard” appearance.
- Newly established trails created by suppression efforts should be covered with brush, limbs, small diameter poles, and rotten logs in a naturally appearing arrangement.
- Tear out stumps or dams, where they have been used, and return site to a natural condition.
- Replace any displaced rocks or streambed material that has been removed.
- Reclaim streambed to its pre-disturbed state, when appropriate.

- Where soil has been exposed and compacted, such as in camps, on user trails, at helispots and pump sites, scarify the top 2-4 inches and scatter with needles, twigs, rocks, and dead branches.
- Blend campsites with natural surroundings by filling in and covering latrine with soil, rocks, and other natural material.
- If seeding is called for, utilize species compatible with long term ecosystem management of the area.

## **Cultural Resources**

Cultural resources are frequently found within wilderness areas. Archaeological and historical sites are not renewable and cannot be replaced. Look, photograph, enjoy – but do not disturb. Climbing in, on, or around ruins will speed up destruction of the site. Practice minimum impact techniques and view from a distance. Avoid touching plaster walls as touching leaves oils from your skin on the rock. These oils hasten the deterioration of the artwork, as well as the cultural / spiritual importance. Do not remove artifact! Respect the time and energy these ancient inhabitants put into their work. It has survived for hundreds of years. Help preserve it for future generations.

## **Demobilization**

Because demob is often a time when people are tired or when weather conditions are less than ideal, enough time must be allowed to do a good job. When moving people and equipment, choose the most efficient and least impactful method to both the landscape and the overall fire organization.

## **Exit Review – MIST Evaluation**

An exit review of MIST practices is important for any fire occurrence so management can find out how things went. Activities involving data collection, documentation and recommendations will help identify areas needing improvement, and to formulate strategies and to produce quality work in the future. This activity is especially important in wilderness and like sensitive areas due to their fragility and inclination to long-term damage by human impacts.

Resource advisors with a good background in both wilderness and fire should take part in exit reviews for overhead teams as part of the MIST evaluation. They are the people who have the experience and knowledge to provide information required to make the evaluation meaningful and productive. This process and report will, in most cases, be fairly simple and to the point. The evaluation emphasis should be on the MIST actions and not on the effects of the fire or rehabilitation plans.

Observations will be documented in a brief report to the line officer with a copy to the appropriate incident commander. In the report, the evaluator will include recommendations for ensuring fire suppression activities on similar lands. It is important that the evaluator recognize and commend the initial attack forces or overhead team for positive activities. Make special note of the extra efforts and sensitivity to suppression impacts.

## NOTES

## NOTES

## NOTES

## **SECTION 7: PHYSICAL SCIENCE**

### **Fire Concerns for Natural Features**

#### **Chemical Spills in Sinkholes:**

If spills occur in sinkholes, this could mean that the park water supply could be contaminated. Ideally, any potential hazardous chemical would not be stored in or near, or used heavily within sinkholes. If large spills do occur, steps should be taken (use techniques similar to those used to prevent dispersal of liquid and dry hazard materials) to minimize the spread of retardant into the groundwater.

#### **Retardant Drops in Sinkholes:**

From research outside of Grand Canyon National Park, retardant degrade into nutrients (nitrogen and phosphorous) which may upset the nutrient balance in the spring-fed ecosystems below the rim. This is a temporary concern (the effects seem to last one or two years) but is a larger concern in areas with the fastest rate of flow from sinkhole to spring (all of North Rim).



## Soil Compaction in Wetlands and Stream Channels

Soil compaction can occur anywhere heavy machinery (engines, UTVs, etc.) are used off of established roads. Avoid driving through areas with sensitive soils that may take years or decades to naturally “heal”. This includes moist, organic soils found in wetlands, springs, seeps, and some stream/wash bottoms. Plan ingress/egress routes to avoid these features.

## NOTES

## SECTION 8: GENERAL INFORMATION

### Required Documentation when Returning from an Incident

- ◆ Keep your Resource Order!
- ◆ Resource Order with S# (approval for repairs/equipment replacement).

#### Time

- ◆ CTRs or Red Dogs (OF-288s), signed by Incident Supervisor.
- ◆ Make sure you have verified your time at the incident.
- ◆ Time cannot be changed at the home unit (travel time is estimated).

#### Travel

- ◆ Original travel receipts (for government charge card statement).
- ◆ Exceeding Lodging Letter from Incident Finance/Logistics, if applicable.

#### Vehicles

- ◆ Documentation of everything charged to incident (miles/GSA rent).
- ◆ If you charge GSA rent or miles, track miles on vehicle log (can be informal, but include date/s, beginning and end mileage, and retain receipts).

#### **- Keep all documentation for three years -**

The National Incident Business Lead (NIBL) turns to the Park to collect documentation for cost recovery when NPS assists state fires, and we must provide CTRs, receipts, and other pertinent information.

#### Reference Material:

Interagency Incident Business Management Handbook – PMS-902

Can be found online at:

[http://www.nwcg.gov/pms/pubs/iibmh2/pms902\\_201208.pdf](http://www.nwcg.gov/pms/pubs/iibmh2/pms902_201208.pdf)

# National Interagency Incident Communications Division

## DPH King Radio Quick Program Guide

### 1. Select a group and channel needed to program.

Select a group by pressing the "#" key followed by a 2-digit group number and press the "ENT" key.

### 2. Program Access

- ◇ Insert programming plug into radio side connector.
- ◇ Press and hold the master switch on plug.
- ◇ While pressing the master switch [RED button], press and hold the "FCN" key for about 3 secs.
- ◇ LCD should display "-- -- --ID". ( *Note: NIFC radio password is "000000"* )
- ◇ Enter the **SIX-DIGIT** password and press the "ENT" key to enter program mode.
- ◇ If the correct password was entered, the LCD will display " PRG CH 00".

### 3. Programming a Channel (ANALOG ONLY)

Once in the Program Mode, press a 2-digit channel number to program with the keypad.

- "PRG CH 01" .....Channel 01 Settings is currently selected.
- "PRG CH 01N" .....Press # to toggle between Narrow/Wide Band and press the "FCN" key.
- "PRG RX 170.47500" .....Press "CLR" and enter new **RX Frequency** and press the "ENT" key.
- "PRG RX MODE-A" .....Change **RX Mode** with "PRI" key to "A" for Analog and press the "ENT" key.
- "PRG RX CG 000.0" .....Press "CLR" and enter new **RX Code Guard** and press "ENT" key.
- "PRG RX IDCG NAC0659" .....**RX NAC, DIGITAL ONLY**, press the "ENT" key to skip to next field.
- "PRG TX ID SQL-NRM" .....Change "**Squelch**" with "PRI" key to "NRM" and press the "ENT" key.
- "PRG TX 170.47500" .....Press "CLR" and enter new **TX Frequency** and press the "ENT" key
- "PRG TX MODE-A" .....Change **TX Mode** with "PRI" key to "A" for Analog and press the "ENT" key
- "PRG TX CG 103.5" .....Press "CLR" and enter new **TX Code Guard** and press the "ENT" key.
- "PRG TX IDCG NAC0659" .....**TX NAC, DIGITAL ONLY**, press the "ENT" key to skip to next field.
- "PRG ID TG00001" .....**Talk Group ID, DIGITAL ONLY**, press the "ENT" key to skip to next field.
- "PRG CHAN 1" .....Channel Label, press "ENT" to bring up the first programming field (**PRG CH 01N**).

**4. Channel Programming is complete.** At this point the user may select another channel to program or exit the program mode by cycling power to the radio.

## DPH SETTINGS & OPTIONS

### ADD Channel to Scan List

Select CH with CH knob and press the "ENT" key.  
"SCN" will appear in upper display.

### DELETE Channel from Scan List

Select CH with CH knob and press the "CLR" key.  
"SCN" will be removed from the upper display.  
*Note: Scan must be disabled to add/delete  
CH's from scan list.*

### ADD PRI Scan Channel

Select CH, Press "PRI" key, PRI will appear in display.

*Priority Mode B, C or D must be enabled to change PRI Channel via the keypad.*

*Note: See DPH Help Files for more information.*

### Changing Groups

See Step 1 on front page.

#### **HI/LOW Power Selection**

Select **LO Power** by toggling the LO/HI Switch to the up position. (*Toward the back of the radio*)

Select **HI Power** by toggling the LO/HI Switch to the down position. (*Toward the front of the radio*)

#### TX User Selectable Tones

To **Enable Tone**, press number on keypad so select.

To **Disable Tone**, press the number "0" on keypad.

#### Disable/Enable Keypad

To **Disable**, press and hold "FCN" key.

To **Enable**, press and hold "FCN" key.

### DPH CH 00 Program Guide

"P000000".....Group Password Assignment

"0000000".....Group ANI/DTMF ID

"120 SEC".....Transmit Time-Out Timer

"2.0SEC".....Scan Delay Time

"PR1 OFF".....Priority 1 Channel Assignment

"PR2 OFF".....Priority 2 Channel Assignment

#### **Group 1: (NIFC Default is 1-12345)**

Battery Saver Disabled.....1-12345

Group Scan.....1-12345

TX ON PRI 1.....1-12345

Priority Key Lockout.....1-12345

Scan List Lockout.....1-12345

#### **Group 2: (NIFC Default is 2-12345)**

User Code Guard Enabled.....2-12345

Busy Channel Indicator Enabled.....2-12345

Busy Channel Lockout Enabled.....2-12345

Busy Channel Lockout/Override.....2-12345

ANI Enabled.....	2-12345
Manual DTMF Encoder.....	2-12345
Manual DTMF/ANI Encoder.....	2-12345
<b>Group 3: (NIFC Default is 3-12345)</b>	
Reserved.....	3-12345
Reserved.....	3-12345
LCD Backlight ON Display Change.....	3-12345
LCD Backlight ON Key Press.....	3-12345
Alphanumeric Mode Enabled.....	3-12345
"LITE OFF" .....	Back Light Duration
"GROUP XX" .....	Group Label

**Bold=** Flashing

DPH Version 3.0/October, 2007

## RESOURCE ADVISOR'S KIT CONTENTS

- ◆ Resource Advisor's Guide for Grand Canyon National Park
- ◆ Resource Advisor's Guide for Wildland Fire (PMS 313)
- ◆ Red Book
- ◆ Fireline Handbook
- ◆ Incident Response Pocket Guide
- ◆ ICS Forms
- ◆ Office/Field Supplies
- ◆ Flagging
- ◆ Compass
- ◆ GPS
- ◆ Maps
- ◆ CTR Book
- ◆ Field Identification Guides

## Wildland Fire Equipment List

### Line Gear - 20 Lbs maximum

- Fire Shelter\*
- Water Bottle\*
- Headlamp (and replacement batteries)\*
- MRE/Lunch!
- Energy Bar\*
- Personal First Aid kit\*
- Brush Coat
- Ear Plugs\*
- Note Pad w/Writing Implement
- Fusees (at least 2)\*
- File\*
- Flagging Tape (Arch/Killer Tree etc.)
- Sunglasses (or any protective eyewear)\*
- Large Plastic Bag
- Compass\*
- Red Card\*
- Drivers License
- Cash
- Gov. Credit Card\*
- Hat (ball cap)
- Helmet and Shroud\*
- Nomex Shirt & Pants\*
- Belt
- Moleskin, Lip Balm
- Knife/Leatherman\*
- Insect Repellent
- Sun Screen
- Bandanna
- Leather Gloves (2 pair)
- Lighter/Matches\*
- Extra Socks
- Camera
- Rain Coat
- Space Blanket
- Parachute Cord (50ft)
- Light Sticks
- Radio and Harness\*

\*Denotes required PPE.



## **Wildland Fire Equipment List**

### **Red Bag - 45 Lbs maximum**

- Sleeping Bag\*
  - Sleeping Pad\*
  - Tent\*
  - Extra Nomex Shirt\*
  
  - Extra Nomex Pants\*
  - Socks (3 or more pairs)
  - Underwear ( Extra)
  
  - T shirts (Extra)
  - Bandanna
  - Wash Cloth
  - Towel
  - Toiletries
  - Vitamins
  - Book
  - Wool Hat and Gloves
  - Wool Sweater
  - Long Underwear
  - ◇ Shorts
  - ◇ Regular Pants
- Boot Laces
  - Flip Flops
  - Film
  - Writing Materials
  - Sewing Kit
  - Eye Drops
  - Extra Water Bottles
  - Plugs and cables for electronics

## ACRONYMS FOR WILDLAND FIRE

<b>TERM</b>	<b>ACRONYM</b>
After Action Review	AAR
Agency Representative	AREP
Air Operations Branch Director	AOBD
Burned Area Emergency Response	BAER
Burned Area Reflectance Classification Map	BARC Map
Burned Area Rehabilitation	BAR
Communications Unit Leader	COML
Crew Time Report	CTR
Demobilization	De-Mob
Division Supervisor	DIVS
Fire Management Officer	FMO
Fire Management Plan	FMP
Fire Management Unit	FMU
Firefighter Type 1	FFT1
Firefighter Type 2	FFT2
Fire Return Interval Departure	FRID
Food Unit Leader	FDUL
General Message Form	ICS-213

Geographic Area Coordination Center	GACC
Hazard Pay	H-Pay
Incident Action Plan	IAP
Incident Command Post	ICP
Incident Command System	ICS
Incident Management Team	IMT
Incident Commander	IC
Initial Attack	IA
Minimum Impact Suppression Tactics	MIST
National Historic Preservation Act	NHPA
National Interagency Fire Center	NIFC
National Wildfire Coordinating Group	NWCG
Operational Planning Worksheet	ICS-215
Operations Section Chief	OSC
Plans Section Chief	PSC
Public Information Officer	PIO
Resource Advisor	READ
Resource Unit Leader	RESL
Resource Ordering and Status System	ROSS
Situation Unit Leader	SITL
State Historic Preservation Office(r)	SHPO
Technical Specialist	THSP

Threatened and Endangered (species)	T&E
Tribal Historic Preservation Office(r)	THPO
Unit Log	ICS-214
Wildland Fire Decision Support System	WFDSS
Wildland-Urban Interface	WUI

\*note: three-letter ICS positions are usually followed by a “type” number. For example, a Type 1 Operations Section Chief would be “OPS1”

\*\*for a complete listing of NWCG defined ICS positions, please see:

<http://www.nwcg.gov/pms/forms/compan/pds.pdf>

## COMMONLY USED READ AND BAER WEB LINKS

- DOI BAER website:  
<http://www.fws.gov/fire/ifcc/esr/home.htm>
- NPS BAER Website: <http://www.nps.gov/fire/wildland-fire/what-we-do/rehabilitation-and-recovery.cfm>
- NPS BAER Interactive Presentation (turn your speakers on):  
<http://www.nps.gov/fire/wildland-fire/learning-center/fireside-chats/BAER-case-study.cfm>
- NPS Fire and Aviation Website:  
<http://www.nps.gov/fire/index.cfm>
- NPS Fire and Aviation Sharepoint site (must be on the NPS network to view): <http://npsfamshare/default.aspx>
- Current fire activity from the National Incident Situation Report: <http://www.nifc.gov/nicc/sitreprt.pdf>
- For other fire information, visit Inciweb and the NPS Fire website: <http://www.inciweb.org/> and:  
<http://www.nps.gov/fire/>
- National Park Service Morning Report:  
<http://www.nps.gov/morningreport/>
- National Interagency Fire Center: <http://www.nifc.gov/>
- The Interagency Standards for Fire and Fire Aviation provides supplemental policy:  
[http://www.nifc.gov/policies/pol\\_ref\\_redbook\\_2012.html](http://www.nifc.gov/policies/pol_ref_redbook_2012.html)
- For NPS specific fire policy:  
<http://www.nps.gov/policy/DOrders/DO-18.html> and:  
[http://www.nps.gov/fire/download/fir\\_wil\\_rm18.pdf](http://www.nps.gov/fire/download/fir_wil_rm18.pdf)
- Interagency Incident Business Management Handbook (IIBMH):  
[http://www.nwccg.gov/pms/pubs/iibmh2/pms902\\_iibmh.pdf](http://www.nwccg.gov/pms/pubs/iibmh2/pms902_iibmh.pdf)

- US Forest Service Remote Sensing Applications Center links for Burned Area Emergency Response (BAER) Satellite Imagery Support: <http://www.fs.fed.us/eng/rsac/baer/>
- Incident Response Pocket Guide: <http://www.nwcg.gov/pms/pubs/nfes1077/nfes1077.pdf>
- National Wildfire Coordinating Group: <http://www.nwcg.gov/>
- National Wildfire Coordinating Group READ Guide: [http://www.nwcg.gov/pms/pubs/RAGuide\\_2004.pdf](http://www.nwcg.gov/pms/pubs/RAGuide_2004.pdf)
- National Wildfire Coordinating Group Glossary of Wildland Fire Terminology: <http://www.nwcg.gov/pms/pubs/glossary/n.htm>
- Association for Fire Ecology: <http://www.fireecology.net>
- Fire Archaeology Website (Linn Gassaway): [http://web.mac.com/linnog/Fire\\_Arch/Home.html](http://web.mac.com/linnog/Fire_Arch/Home.html)
- Arthur Carhartt National Wilderness Training Center Wilderness.net Toolbox: <http://www.wilderness.net/index.cfm?fuse=toolboxes&sec=fire3>
- Joint Fire Science Program: <http://www.firescience.gov/>
- Fire Effects Information System: <http://www.fs.fed.us/database/feis/>
- National Center for Landscape Fire Analysis: <http://firecenter.umt.edu/>
- Tall Timbers: <http://www.talltimbers.org/>
- The DOI BAER website has a description of BAER position codes (also known as mnemonics). They can be found in the National BAER Team Standard Operating Guide: [http://www.fws.gov/fire/ifcc/esr/BAER/Mobilization\\_and\\_Directories/TechSpec.htm](http://www.fws.gov/fire/ifcc/esr/BAER/Mobilization_and_Directories/TechSpec.htm)
- Wildland Firefighter Foundation: <http://www.wffoundation.org/>

- Wildland Fire Lessons Learned Center products on BAER:  
[http://wildfirelessons.net/documents/Scratchline\\_Issue15\\_1.pdf](http://wildfirelessons.net/documents/Scratchline_Issue15_1.pdf) and:  
<http://wildfirelessons.net/Additional.aspx?page=135> (There is an audio link if you enable ActiveX controls in the bar near the top of the page):  
<http://wildfirelessons.net/Additional.aspx?page=138> and:  
[http://wildfirelessons.net/uploads/zion\\_xml.swf](http://wildfirelessons.net/uploads/zion_xml.swf) (Turn on your speakers to hear the presentation, also the narrative is available):  
<http://www.wildfirelessons.net/Additional.aspx?Page=134>

## NOTES



## **SECTION 9: FORMS**

The following forms are for reference when the actual forms are not available. These can be used to take notes that include all of the pertinent information; however, the actual forms should be filled out as soon as possible. Full sized forms are included with the READ Binder.

## READ Check-list of Activities For Managed Wildland Fires

<b>General Tasks during incident</b>	√
Provide Fire Use Management Team with the Biological Opinion and other applicable briefing documents	
Complete Daily Logs of activities	
Ensure MIST tactics are used	
Ensure wilderness values are considered	
Contact Peregrine Fund regarding condors, as necessary	
Inform firefighters of sensitive species, cultural, wilderness, air quality and general and park concerns	
Get updated maps of new firelines and support sites (save maps in READ files)	
Ensure species specific conservation measures are followed as found in the BO	
Ensure fire is adhering to the air quality standards set by ADEQ	
Ensure cultural resource concerns are addressed/protected	
Any new fire-related activity centers (dip sites, drop points, helispots, etc.) should be cleared by archaeology, wildlife, and wilderness before creation	
Update Bill Austin at (928) 226-0614 ext 102 as necessary (Wildlife READ)	
<b>Cultural Resource Concerns</b>	
Ensure any unsurveyed areas are surveyed before fire enters the area or fire activities occur in the area (digging line, creating diptanks/helispots, etc.)	
Line around dendroglyphs	
Wrap combustible sites, as necessary	
Create fireline around sites, as necessary	
Ensure turn-arounds are flagged	
Ensure any new fire sites (diptank sites, helispots, staging areas, camps, etc) that are created are OK'd first	
Ensure all sensitive sites are flagged and instruct fire personnel not to disturb these sites	
<b>Natural Resource Concerns</b>	
<b>Conservation Measures – Sentry Milk-vetch (per Biological Opinion)</b>	
No wildland fire use or firefighting related activities will be allowed to encroach upon any known sentry milk-vetch populations	
Survey any unsurveyed areas of potential sentry milk-vetch habitat that are included in the MMA as the fire reaches the MAP for the potential habitat.	
<b>Conservation Measures – Mexican spotted owls (per Biological Opinion)</b>	
Ensure IDT involvement at critical points	
Ensure fire remains primarily low intensity; call IDT meeting and consider suppression activities with increased fire behavior	

Ensure crews record cutting of trees or snags $\geq 18''$ dbh for fireline and minimize cutting of trees and snags $\geq 18''$ dbh unless it poses a safety hazard	
Ensure any fireline is rehabilitated after use per the rehabilitation guidelines	
Ensure any new fire-related activity centers (dip sites, drop points, etc.) are located at least 400 meters from the boundary of any designated Protected Activity Center	
Ensure all sensitive sites are flagged and instruct fire personnel not to disturb these sites	
To the maximum extent possible, ensure aircraft remain at least 400 meters from the boundary of any designated Protected Activity Center	
Survey any known PACs or predicted habitat, as safety permits.	
As fire approaches the rim adjacent to a PAC, consider limiting the spread over the rim through consultation between READ's, fire manager's, and FWS and on a case-by-case basis	
<b>Conservation Measures – California Condors (per Biological Opinion)</b>	
Ensure all helicopter dip sites are covered when not in use (never leave uncovered for more than 10 minutes unless someone is watching the tank and no condors are in the area)	
Brief all fire personnel on condor concerns (reporting any condor sightings, no non-authorized people hazing, covering dip sites...)	
Record the presence of any condors and haze (or get certified hazer) as necessary	
Ensure: helicopters do not fly when condors are at the helipad, aircraft use along the rim is minimized to the greatest extent possible, aviation personnel contact the Peregrine Fund when condors are around	
If fire retardant is used, survey the area as soon as safety permits to find and remove any carcasses	
If fire suppression activities are necessary, ensure the use of Minimum Suppression Tactics (MIST) to minimize negative effects	
Ensure air quality standards are adhered to	
<b>Other Sensitive Wildlife Concerns</b>	
Survey for and rake 5' from goshawk nests in known territories in areas susceptible to fire	
Limit helicopter flights along rims near peregrine falcon eeries to reduce disturbance	
Ask fire personnel to report any wildlife sightings (other than turkeys, deer, etc.), especially bison	
Instruct fire personnel on mountain lion safety and ask that they report any sightings	

This checklist is intended to serve as a quick reference for Resource Advisors (READ) during Wildland Fire Use events.  
*(Revised by Carmen Sipe 7-23-04)*

## **FIRE ACTIVITIES DAILY REPORTING REQUIREMENTS**

As a requirement of the Biological Opinion dated June 11, 2003 from the US Fish and Wildlife Service, GRCA and the Fire Program are required to report the following information on a daily basis for all Wildland Fire Use Fires (WFU), including WFU that transition to suppression fires. Daily reporting forms will be completed or data will be generated (e.g. GIS layers of line, helispots, staging areas, etc.) throughout management of fire use fires and provided to the resource advisor at the end of the fire. The attached reporting forms will be provided to each fire use team.

### **FIRE ACTIVITIES TO BE REPORTED:**

#### **GROUND CREWS**

- Containment line dug
  - Length
  - Location(s)
  - Created/Rehabilitated
  
- Trees and snags >18" dbh cut
  - Number
  - Location(s)
  - Reason(s) (containment line, helipads/dip tank locations created, safety, etc)
  
- Helispots/dip tank sites created
  - Number
  - Location(s)
  - Purpose (helispot, drop point, dip tank site)
  - Created/improved
  - Actions taken (brushed, #trees cut, etc)
  
- Condor sightings
  - Number of sightings
  - Condor tag number(s)
  - Location(s)

#### **AVIATION: (to be coordinated through and collected from the helibase)**

- Helicopter flights
  - Number
  - Location(s)
  - Reason(s) (GIS mapping, recon, water drops, etc.)
  
- Water/Fire retardant drops:
  - Number (of each)
  - Volume(s)
  - Location(s) of drop/draft

### Daily Monitoring – Fire Size and Severity

Fire Name: \_\_\_\_\_

Date	Total Acres Burned to Date	# of high severity acres burned today	Total acres of high severity – Pipo	Total acres high severity – MC	# high severity patches mapped today

Daily Tracking Form –  
Prep Work

Date	Location	Work Completed (snagging, piling, handline, etc.)	Length	Personnel	Vehicles

## **Information Needs – Bucket Dips in the Colorado River**

Fire Name:

Start Date:

Contained Date:

Controlled Date:

Out Date:

Reported By:

Cause:

UTMs or LAT/LONG:

Ownership:

Fire Size:

Fuel:

Management Response:

Resources:

Bucket Drops (and gallons):

Rationale:

River Mile:

Ship ID:

Water or Retardant:

Precautions taken to prevent spread of aquatic invasive organisms?

**USFWS Reporting Requirements  
Aerial Fire Retardant or Water Drops**

Form Compiled by: \_\_\_\_\_

Location of drop													
Gallons per drops													
Water or retardant													
# of drops													
Fire Name													
Ship ID													
Date													



**USFWS Reporting Requirements**

**Trees and Snags Cut  $\geq$  18" dbh & Fire Activity Sites / Fireline Created**

Fire Name: \_\_\_\_\_

Form completed by: \_\_\_\_\_

(Divison Supervisors, please return forms to Operations)

**Trees and Snags Cut  $\geq$  18" dbh**

Date	# trees 18-24 dbh	# snags 18-24 dbh	# trees $>$ 24"	# snags $>$ 24"	Location / Reason

**Fire Activity Sites / Fireline Created**

Date	Type of Site	New or Rehab	Size or length	Location

## Cultural Resources GPS Data Collection Log

**Unit Type**  
(check appropriate)

**Geo II**

**Geo III**

**Garmin** (specify model)

**Geo XM**

**Other** (list)

FILE NAME: \_\_\_\_\_

Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Collector: \_\_\_\_\_

Site Number/ Feature Name	Feature Type: Point, Line, Area	Number of points collected	Notes/Comments

GPS files downloaded?

Yes No

File Path\Name:

Files exported to shapefile?

Yes No

File Path\Name

Files differentially corrected?

Yes No

File Path\Name

Notes:

# Goshawk Survey Form

Date \_\_\_\_\_ Survey Area<sup>1</sup> \_\_\_\_\_ Observer \_\_\_\_\_  
 Wind \_\_\_\_\_ Temp \_\_\_\_\_ Cloud Cover \_\_\_\_\_  
 Survey Type<sup>2</sup> \_\_\_\_\_ Survey Set \_\_\_\_\_ of \_\_\_\_\_  
 General description: \_\_\_\_\_

**Survey Transect Description**

Direction <sup>5</sup>															
GPS Location <sup>4</sup>															
Habitat Description <sup>3</sup>															
Time															
Stn #															

1. Survey Area: name of survey unit if compliance, name of area or territory if monitoring  
 2. Survey Type: compliance, monitoring, or general survey; include fire name if for wildfires  
 3. Habitat description: brief description of area such as "open Pipo" or "dense MC"  
 4. GPS Location: UTM's in NAD 27 Conus  
 5. Detection: blank if no, Yes if detection – provide info on back of data form

## Goshawk Survey Form

Page 2 of 2

### Raptor Detection Description

Time: \_\_\_\_\_ EUTM: \_\_\_\_\_ NUTM: \_\_\_\_\_

Species: \_\_\_\_\_ Type<sup>1</sup>: \_\_\_\_\_ Call<sup>2</sup>: \_\_\_\_\_

Bearing In: \_\_\_\_\_ Bearing Out: \_\_\_\_\_ Distance: \_\_\_\_\_

Age/Sex/Count: \_\_\_\_\_

Activity/Notes: \_\_\_\_\_

Nest (Y/N): \_\_\_\_\_ EUTM: \_\_\_\_\_ NUTM: \_\_\_\_\_

Nest Description: \_\_\_\_\_

# MSO Inventory and Monitoring Survey Form

Page    of     
Survey visit    of   

Date \_\_\_\_\_ Site Location \_\_\_\_\_ Observer \_\_\_\_\_  
Call Point \_\_\_\_\_ Wind \_\_\_\_\_ Temp \_\_\_\_\_ Wind \_\_\_\_\_  
UTM easting\* \_\_\_\_\_ UTM northing\* \_\_\_\_\_  
Habitat/Location Description \_\_\_\_\_  
\_\_\_\_\_  
Moon Visibility Y/N Aspect    deg Slope    deg Position<sup>1</sup> \_\_\_\_\_ Elevation \_\_\_\_\_ ft  
Habitation Type<sup>2</sup> \_\_\_\_\_ Topo<sup>3</sup> \_\_\_\_\_ Work Type<sup>4</sup> \_\_\_\_\_  
Start Time \_\_\_\_\_ End Time \_\_\_\_\_ Detections Y/N If yes, record information on back

1. Position = Mouth, Lower, Middle, Upper, Head, Top.
  2. Habitat Type = Desert Scrub, Pinyon-Juniper, Ponderosa, Mixed-Con.
  3. Topo = Ridge, Rim, Canyon, Plateau.
  4. Work Type = Inventory or Monitoring.
- \* Ensure GPS unit is set to Zone 12, NAD 27, CONUS.

Notes:

## UNIT LOG ICS 214-CG-1A

<b>1. Incident Name</b>		<b>2. Operational Period (Date/Time)</b> <small>From: _____ To: _____</small>		<b>UNIT LOG ICS 214- CG-1A</b>
<b>3. Unit/Name/Designators</b>			<b>4. Unit Leader (Name &amp; ICS Position)</b>	
<b>5. Personnel Assigned</b>				
NAME		ICS POSITION		HOME BASE
<b>6. Activity log (Continue on Reverse)</b>				
TIME		MAJOR EVENT		
Prepared by _____				Date/Time _____

## UNIT LOG (ICS FORM 214-CG)

**Purpose.** The Unit Log records details of unit activity, including strike team activity or individual activity. These logs provide the basic reference from which to extract information for inclusion in any after-action report.

**Preparation.** A Unit Log is initiated and maintained by Command Staff members, Division/Group Supervisors, Air Operations Groups, Strike Team/Task Force Leaders, and Unit Leaders. Completed logs are submitted to supervisors who forward them to the Documentation Unit.

**Distribution.** The Documentation Unit maintains a file of all Unit Logs. All completed original forms **MUST** be given to the Documentation Unit.

<u>Item #</u>	<u>Item Title</u>	<u>Instructions</u>
1.	Incident Name	Enter the name assigned to the incident.
2.	Check-In Location	Enter the time interval for which the form applies. Record the start and end date and time.
3.	Unit Name/Designators	Enter the title of the organizational unit or resource designator (e.g., Facilities Unit, Safety Officer, Strike Team).
4.	Unit Leader	Enter the name and ICS Position of the individual in charge of the Unit.
5.	Personnel Assigned	List the name, position, and home base of each member assigned to the unit during the operational period.
6.	Activity Log	Enter the time and briefly describe each significant occurrence or event (e.g., task assignments, task completions, injuries, difficulties encountered, etc.)
7.	Prepared By	Enter name and title of the person completing the log. Provide log to immediate supervisor, at the end of each operational period.
	Date/Time	Enter date (month, day, year) and time prepared (24-hour clock).

# READ Summary Reporting Form

Fire Name		Date	READ Name	Trees and Snags			
				# Trees 18-24"	# Snags 18-24"	# Trees >24"	# Snags >24"
Fireline Construction		Fire Activity Sites		Fire Retardant Drops			
Length	Handline or Mechanical	Type: Helispot, drop point, portable tank, fire camp	New site or Previous/ye habbed or disturbed area	# of Drops	Volume of Drops	Location	



# READ Summary Reporting Form

Cultural Resources				Wildlife			Notes
# of Sites Prepped	New Survey Amount	New Sites ID'd	# of Sites Lost or Damaged	# of NOGO Nests Found	New NOGO Survey Amount	New MSO Survey Amount	
Wildlife continued							
# of Nests Destroyed	# of Condor Sightings	Condor Tag #	Location of Condor				

## NOTES

## WILDLIFE

- **California Condors** are incredibly curious and it is likely that they will investigate activities associated with the Fire. Condors are especially attracted to uncovered pumpkins and port-a-tanks, causing a high risk of drowning. If you see a water source uncovered, please cover it immediately or report it to your supervisor and the resource advisor. If you observe condors while on line or in camp please note the time and number of condors and report the information as soon as possible to the Resource Advisor at the ICP (or leave a message at 928-638-7904).
- Please report any large stick nests with branches larger than your thumb to the Resource Advisor. These are probably **Goshawk** or other hawk nests. If possible, please GPS the location and flag the tree.
- The Park has a resident population of **mountain lions**. It is unlikely that you will encounter this primarily nocturnal creature, but please report any lion sightings to the Resource Advisor.
- Over 300 **bison** are known to use areas within the park on the North Rim. Bison concentrate near water sources such as springs and lakes, in meadows, and in sensitive areas along the rim, causing habitat destruction and out-competing native wildlife. Despite the large population that once existed in the US, bison are not believed to have ever occurred in this area, and the Park is currently looking at ways of moving these animals out of the park and returning them to House Rock Valley. In the meantime, if you see bison- do not approach these animals! The male bison reaches 2,000 lbs and has a horn span of 3 feet. Both female and male bison have horns and may gore or stomp individuals who approach them or their young. If you should encounter bison please keep your distance, mark their location, and contact the Resource Advisor as soon as possible. If the bison are blocking the road or your path you will need to wait until they move out of your path.

# BRIEFING POINTS

**Remember - briefings should be brief**

## ARCHAEOLOGY

- Pink and black flagging denotes sensitive archaeological sites. Please do not disturb, use as staging areas or remove flagging. If you come across a site that has not been flagged for protection, report it to the Resource Advisor. Please do not move artifacts - Valuable data may be lost forever when they are moved!

## LEAVE NO TRACE

- Please use Leave No Trace Techniques - Pack it in, pack it out! Remember, you are on national park land. It is illegal to collect artifacts, fossils, flowers, rocks, plants, bugs, snakes, animals, trees, or anything else!! *THANKS!*

## VEGETATION

- The park currently has over 200 non-native or exotic plant species, many of which were inadvertently brought in by humans. Please try to minimize their spread by cleaning seeds off clothing while in camp, disposing them in the garbage. Make sure all vehicles called in for fire operations are cleaned and free of dirt and plant material BEFORE they enter the park.

## WILDLIFE

- ***Mexican Spotted Owls*** (MSO) generally occur within the side canyons of the Grand Canyon. However, there is a designated forested habitat within the North Rim. If you are working on a fire on the North Rim and come across an owl please mark its location and report to the READ ASAP. Biologists will then follow up to determine if it was an MSO or other species.

**Briefing points continued on reverse side of back cover**