



Drone Exploring: Career Spotlights

Firefighting — Club

Overview: Firefighters use drones to see a wildfire's full size from above, spot hidden hotspots with thermal cameras, and keep firefighters out of danger while still gathering the information they need. In this session, youth learn how drones support firefighting crews and practice a hands-on hotspot-hunting activity that mirrors how a thermal camera helps spot fire danger.

OBJECTIVES

- Introduce youth to the career of using drones to support firefighting.
- Explain how thermal cameras help firefighters spot hidden hotspots.
- Practice a grid-based hotspot search through a hands-on activity.
- Build awareness of why keeping people safe is the top priority during any fire response.

SUPPLIES

- Flip chart or whiteboard and markers
- Rope, cones, or chalk to mark a grid representing a fire area
- Red or orange cards (hotspots) and blue or green cards (safe areas) to scatter across the grid
- Printed handouts: How Drones Help Firefighters and Hotspot Hunt Log

ADVISOR NOTES

- Emphasize that only trained, authorized crews fly drones near a real wildfire. Unauthorized drones are extremely dangerous because they can force firefighting aircraft to stop flying.
- Explain thermal cameras simply: they detect heat, so a hidden hotspot under ash or brush shows up clearly even if it looks safe on the surface.
- If outdoor space is limited, shrink the grid or do this activity on a tabletop with a printed grid.
- Consider inviting a guest speaker (a local firefighter, fire department UAS team member, or wildland fire agency representative) to share how their team uses drones. See Optional Extensions.
- If no guest speaker is available, Advisors can run the entire session using this outline and the resource links below.

SESSION OUTLINE

- **Welcome and Icebreaker** (10 min)
 - “Fire Lookout:” Ask youth how they think firefighters used to check on a wildfire’s size before drones (fire towers, aircraft, ground crews).
- **Safety Moment (Why Unauthorized Drones Near Fires Are Dangerous)** (10 min)
 - Wildfires often have temporary flight restrictions (TFRs) that ban all uninvolved drones from the area.
 - An unauthorized drone can force firefighting helicopters and planes to stop flying, which can put lives and homes at greater risk.
 - Ask: “Why do you think even a well-meaning drone flight could cause real problems near a fire?”
- **Mini-Lesson: How Drones Help Firefighters** (15 min)
 - Explain how drones map a fire’s edge (perimeter), spot hidden hotspots with thermal cameras, and can deliver supplies or communications support to crews.
 - Discuss how this lets fire commanders make faster, safer decisions about where to send crews.
- **Activity: Hotspot Hunt Challenge** (20–25 min)
 - Mark off a grid representing a fire area and scatter red or orange “hotspot” cards and blue or green “safe” cards across it.

- Teams search the grid row by row, recording hotspots on the Hotspot Hunt Log without disturbing other cards.
- Compare which team found and mapped the most complete picture of the fire's hotspots.
- **Discussion: What Happens Next?** (10 min)
 - Discuss what a fire crew might do with a map of hotspots: decide where to focus water or flame retardant, or where it's safe to send ground crews.
- **Wrap-Up Share-Out** (10 min)
 - Groups share their hotspot maps and discuss how a drone made the search faster than walking the whole area.

REFLECTION SECTION

Advisor Note: Some sample questions are below. They are designed to help the participants apply what they have learned to their own interests. You are welcome to use these questions or develop your own.

Focusing Questions

- What was challenging about searching the grid carefully for hotspots?
- What surprised you about why drones near a real wildfire need special authorization?

Analysis Questions

- Why is mapping a fire's hotspots useful before sending firefighters into an area?
- How could an unauthorized drone make a wildfire response more dangerous?

Generalization Questions

- Where else in life do rules exist to keep helpers safe while they do dangerous work?
- What's one thing you learned today about how firefighting has changed with new technology?

Challenge: This week, research your local fire department or state wildfire agency and find out if they use drones, and how.

OPTIONAL EXTENSIONS

Guest Speaker: Invite a local firefighter, fire department UAS team member, or wildland fire agency representative to share how their team uses drones, in person or by video call.

Advisor-Led Option: If a guest speaker isn't available, Advisors can run this session using the outline above and the resource links below. No outside expert is required.

Resource Links: Search "drones fighting wildfires" on a video platform for kid-friendly explainer videos; the FAA's "If You Fly, We Can't" wildfire drone safety campaign.

Group Extension: Design a poster explaining why flying a personal drone near a wildfire is dangerous, to share with family or friends.

Handout: How Drones Help Firefighters

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Read through the key ideas below before starting the Hotspot Hunt Challenge.

Mapping the Fire Perimeter

Drones fly along the edges of a fire to help commanders understand exactly how big and where it is.

Finding Hidden Hotspots

Thermal cameras detect heat that isn't visible to the eye, revealing hotspots hiding under ash or brush.

Supporting Crews Safely

Drones can deliver small supplies or relay communications, helping crews stay coordinated without added risk.

Why Restrictions Matter

Temporary flight restrictions (TFRs) keep unauthorized drones out of the area so firefighting aircraft can fly safely.

Handout: Hotspot Hunt Log

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As your team searches each row of the grid, record where you find hotspots.

Row #	Hotspot Found?	Location Notes
1		
2		
3		
4		