



Drone Exploring: Career Spotlights

Search and Rescue — Club

Overview: Fire departments, sheriff's offices, and volunteer teams use drones to help find missing people and pets faster and more safely than searching on foot alone. In this session, youth learn how search and rescue drones work, including how thermal cameras detect body heat, and practice a hands-on grid search activity to find hidden objects, building an appreciation for teamwork, patience, and careful searching.

OBJECTIVES

- Introduce youth to the career of using drones for search and rescue.
- Teach the basic idea of how thermal imaging cameras help spot people or animals that are hard to see.
- Practice a grid search pattern through a hands-on activity.
- Build awareness of teamwork and communication during a search.

SUPPLIES

- Flip chart or whiteboard and markers
- A large outdoor or indoor area to set up a search grid
- Rope, cones, or chalk to mark a grid on the ground
- Small hidden objects (colored beanbags, cards, or toys) to represent a missing person or clues
- Optional: a flashlight or infrared thermometer to demonstrate how heat can be detected
- Printed handouts: How Thermal Cameras Help Find People and Grid Search Log

ADVISOR NOTES

- If a real drone isn't available, youth can search the grid on foot, moving row by row the way a drone-assisted search team would.
- Explain thermal imaging simply: warm bodies (people, pets) show up brighter than cool surroundings on a thermal camera, especially at night or in thick brush.
- Emphasize patience and thoroughness. Real searches are slow and careful, not fast.
- Consider inviting a guest speaker (a local fire department, sheriff's office, or volunteer search and rescue team member who uses drones) to share their experience. 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)
 - "Lost and Found:" Ask youth to share a time they lost something (or someone) and how they searched for it.
- **Safety Moment (Searching Safely and Calmly)** (10 min)
 - Real search and rescue teams stay calm, communicate clearly, and never search alone.
 - Searchers watch for hazards like uneven ground, water, or bad weather while searching.
 - Ask: "Why do you think staying calm and working as a team matters during a real search?"
- **Mini-Lesson: How Drones Help Find People** (15 min)
 - Explain how drones can cover large areas of forest, water, or rubble faster than searchers on foot.
 - Introduce thermal imaging: cameras that detect heat, so a person or pet shows up bright even in the dark or hidden in brush.
 - Discuss which agencies use search and rescue drones (fire departments, sheriff's offices, volunteer teams).
- **Activity: Grid Search Challenge** (20–25 min)

- Mark off a grid in the search area using rope, cones, or chalk.
- Hide several clue objects around the grid ahead of time.
- Teams search row by row, marking found items on their Grid Search Log, and compare how many clues each team found.

– **Activity: Heat Signature Demo** (10 min)

- If available, use a flashlight or simple thermometer to show how a warm hand or object stands out compared to a cool surface, connecting it back to how thermal cameras work.

– **Wrap-Up Share-Out** (10 min)

- Discuss what made the grid search easy or hard, and how a drone with a thermal camera might have made it faster.

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?
- What surprised you about how thermal cameras work?

Analysis Questions

- Why is a grid pattern a good way to search an area without missing spots?
- How could a drone help a search team cover more ground, faster?

Generalization Questions

- Where else in life do you need to be thorough and patient, like during a search?
- What's one thing you learned today that surprised you about how search and rescue teams work?

Challenge: This week, research one local fire department, sheriff's office, or volunteer team that uses drones for search and rescue and share what you learn next time.

OPTIONAL EXTENSIONS

Guest Speaker: Invite a local fire department, sheriff's office, or volunteer search and rescue team member who uses drones to share their experience and answer questions, 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 "drone search and rescue thermal camera" on a video platform for kid-friendly explainer clips of real search and rescue missions.

Group Extension: Design a poster explaining how a search and rescue drone helps find a missing hiker, labeling the camera, search grid, and team roles.

Handout: How Thermal Cameras Help Find People

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Read through the steps below to understand how a thermal camera helps a search team.

What Is a Thermal Camera?

A special camera that detects heat instead of light, showing warm objects as bright and cool objects as dark.

Why It Helps in a Search

People and animals give off body heat, so they stand out on a thermal camera even in the dark, in thick brush, or under light snow.

Example

A search and rescue drone flies over a forest at night; the pilot spots a bright shape on the thermal screen and radios the ground team its exact location.

Tip

Thermal cameras work best when there's a big difference between body heat and the surrounding temperature, like on a cool night.

Handout: Grid Search Log

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

Row #	Item Found	Location Notes
1		
2		
3		
4		