# Survival in the Wild

You find yourself alone in the wilderness. The temperature is below freezing, it's raining, turning to snow, and getting dark. What do you do? Can you survive the night? What are the most important factors for survival--food, escape, sleep, water, shelter, warmth?

These were questions asked by the survival expert hired by the Bureau of Reclamation to train the team of thirty researchers working on the Sierra Cooperative Pilot Project in the Sierra Nevada of central California in the late 1970s. We were conducting cloud-seeding research to determine if winter storms over the mountains between Sacramento and Reno could be induced to precipitate more snow and provide more runoff in the summer. Pilot

As Site Director I was afraid road crews, helicopter crews, seeding and research aircraft crews operating in the remote mountainous terrain might need survival skills if they were ever stranded in the wilderness. The Bureau also asked the Placer County Sheriff and his nationally recognized search and rescue team to brief us on their procedures for locating downed aircraft in the High Sierra.

During the first week of operations before any storms began, our survivalist taught us some important tips on how to survive for several days in the cold, wet conditions of the Sierras. He was an intriguing choice for the job. Five feet tall and about two hundred fifty pounds, he seemed unlikely to ever survive himself if stranded in the mountains. However, I joked with our team that if he didn't have to walk out, he could probably live on his accumulated fat for several weeks until he was rescued.

"Not walking out," turned out to be one of his primary pieces of advice. Since any of our team stranded in the wilderness would quickly be missed and since we would know approximately where they went down or got lost, they would likely be rescued within a week, at the outside. So, he recommended that each plane and vehicle on the project be equipped with a survival pack and all personnel instructed to stay with their vehicle or plane until they were found.

The survival expert then spent two days teaching us how to keep warm and dry. He taught us that fire was the priority of survival. He gave us several methods for how to start one. My favorite method that he shared was to carry a small canister of carbide in a water-tight container, like a 35-mm film canister or a plastic pill bottle. He also suggested several simple methods for producing a spark. When water is poured into a small amount of carbide it produces acetylene that's highly flammable and can be used to easily and rapidly start fires even in wet conditions. In fact, the more it rains the more flame. He suggested a spark could be produced with matches, a spark stick, or a small piece of steel wool shorted across a small battery.

Once you have a fire, it's easy to keep warm, dry clothing, warm food and drinks, use as a signal, and, generally, raise your spirits. I still remember a picture the survivalist showed our team--a group of beautiful women to whom he was teaching outdoor survival skills, gathered around him, seated on rugs, inside an Indian teepee, warmed by a fire. He even wore a bearskin coat and a belt with a belt buckle on it in the shape of a wolf's head. He told us this was how we should wait to be rescued--stay warm and dry. I didn't ask the obvious question--where do we find beautiful women to wait with us?

I had duffel bags provided for each vehicle and plane filled with survival gear including sleeping bags, food, a first-aid kit, signaling mirrors, fire-starting equipment, and even some fishing equipment. The kit was a strategic resource that gave everyone on the project confidence that if they got stranded we had procedures in place to quickly find them.

And, we used the survival pack and rescue procedures once during the project. A helicopter that serviced snow gages crashed and the crew went missing for three days during the project. We notified the sheriff's department and airplanes searched for two days before they located the crew and their burned-out helicopter on the bank of the Rubicon River. The crew had stayed with their aircraft, as instructed, and were busy fishing when they were found.

The alternator on their helicopter had overcharged the battery and caught fire. After auto rotating to the river bank, the crew had retrieved the survival kit before the plane burned to the ground. They used most of the supplies and equipment

while waiting to be rescued. We were greatly relieved that the crew survived unhurt and gratified that our search and rescue procedures were found to be effective and successful.