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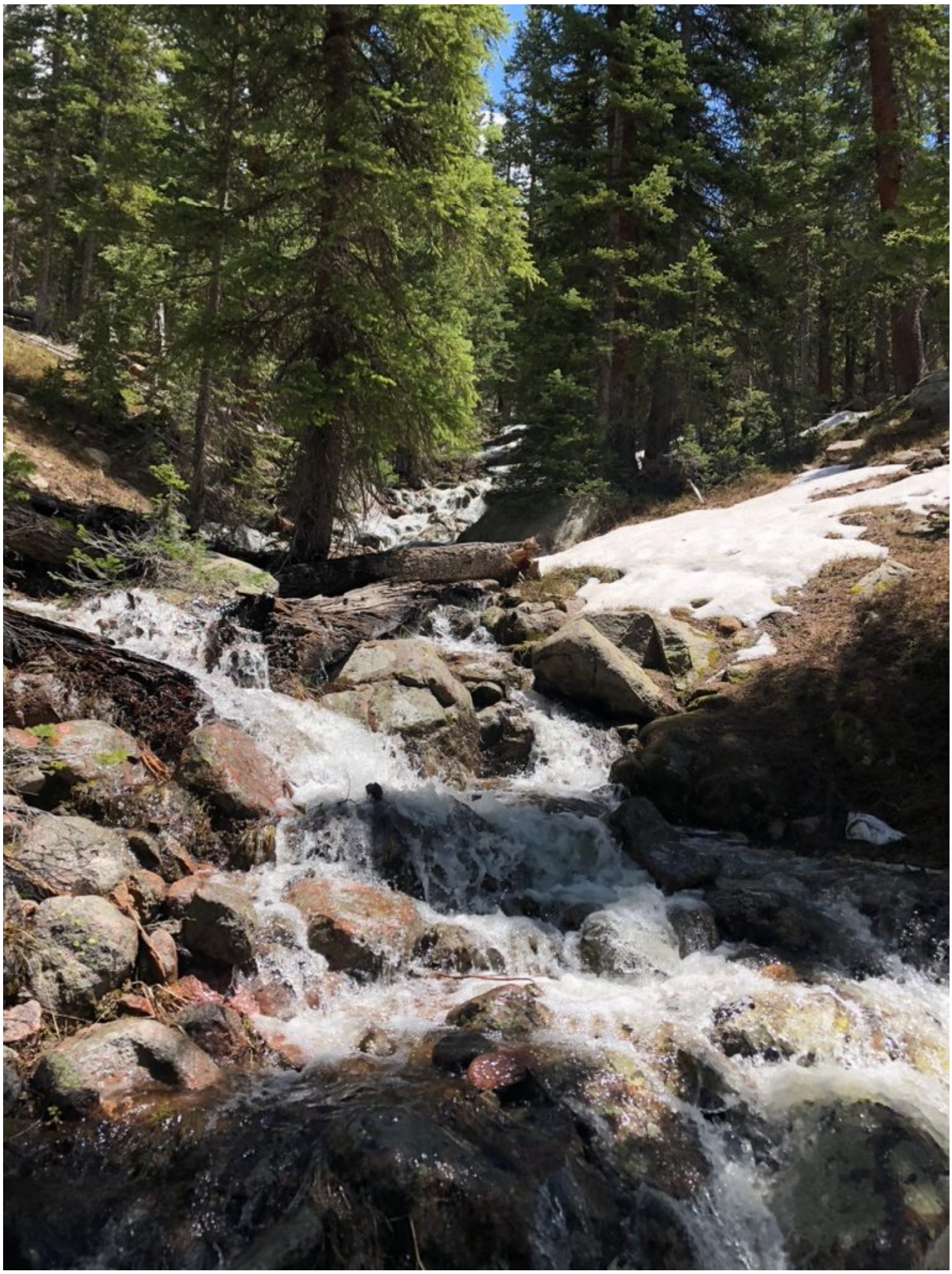
Get Wild: Be aware of giardia

Sports FOLLOW SPORTS | August 11, 2022

Joan Betz
Get Wild



Giardia lamblia is a protozoan parasite that can be contracted from drinking contaminated water from streams or lakes, or from practicing poor backcountry personal hygiene.
Frances Hartogh/Get Wild

Few things ruin memories of a good camping or backpacking trip than developing abdominal pain, diarrhea, fatigue, or fever upon returning home. Perhaps resulting from drinking contaminated water from streams or lakes, or from practicing poor backcountry personal hygiene, one organism commonly associated with these outbreaks is Giardia lamblia (also known as Giardia intestinalis or

Giardia duodenalis). Giardiasis is caused by ingestion of cysts (thick-walled dormant forms) of this protozoan parasite, from water, food, or surfaces contaminated by human or animal feces (poop). Dogs can acquire giardiasis.

First described in 1681 by Antonie Van Leeuwenhoek, inventor of the microscope, who described "animacules" in a feces sample, the name Giardia lamblia honors the detailed descriptions of the parasite by Czech physician Vilem Dusan Lambl and by French Professor Alfred Giard in the mid-to-late 1800s.

After ingestion, each cyst develops into two motile trophozoite forms that attach to walls (villi) of the small intestine by means of specialized discs. Each trophozoite is pear-shaped (10-20 micrometers long) with 2 large nuclei and 4 pairs of whip-like flagella for propulsion. Trophozoites multiply, attach to, and damage intestinal villi, which impedes absorption of nutrients and water, causing symptoms. Trophozoites also form nonreplicating cysts, which lack flagella and are covered by thick cell walls. Both cysts and trophozoites are excreted from the host, and transmittable to other organisms, but trophozoites do not survive long out of the body. However, the tough walls of cysts can survive chlorination and months in the environment.

Giardia is commonly found in stagnant water such as ponds, rivers or streams with little flow, and also in improperly treated swimming pools or areas where sewage contaminates drinking water. It can be found on surfaces, soil, water or food contaminated with feces from infected humans, which can make children in day care settings more vulnerable. An infectious dose can be just 10 cysts. According to the Centers for Disease Control and Prevention, giardiasis is the most common intestinal parasitic disease in the U.S., and more common in countries with poor sanitation. In 2018, the CDC noted nearly 16,000 cases occurred in the U.S. (Colorado reported 530), with most cases occurring during summer, and many in children under age 10.

Diagnosis traditionally looked for cysts or trophozoites in a fecal sample, but there are also rapid immunological tests. Many patients may be asymptomatic, but could pass the disease to others. For symptomatic people, treatment is often not required as symptoms typically resolve within 2 to 6 weeks. For severe or prolonged cases, various antiparasitic drugs are available.

Should you drink the water from that beautiful stream or lake while hiking in the wilderness? Some backpackers say that they've been drinking out of streams for years and never gotten sick, especially if they choose fast-moving streams. But, consider what animals or people may have been upstream from your chosen drinking spot, and also consider your personal hygiene while outdoors. Furthermore, giardiasis is not the only intestinal disease that you may get from water: There are bacteria like E. coli and salmonella, another parasite cryptosporidium that also forms cysts, and various viruses.

To minimize your risk in the wilderness, treat all drinking water to kill any microorganisms. A CDC chart compares treatments at CDC.gov/healthywater/drinking/travel/index.html. Various treatment devices are available at camping stores. Boiling water for 1 minute is effective at low elevations (but at least 3 minutes above 6500 feet); ultraviolet light in clear water is also effective. Filter cartridges are effective for bacteria and giardia, but not for viruses. While chlorine and iodine are effective for bacteria and viruses, they are less so for giardia or cryptosporidium.

Enjoy your time in the wilderness.

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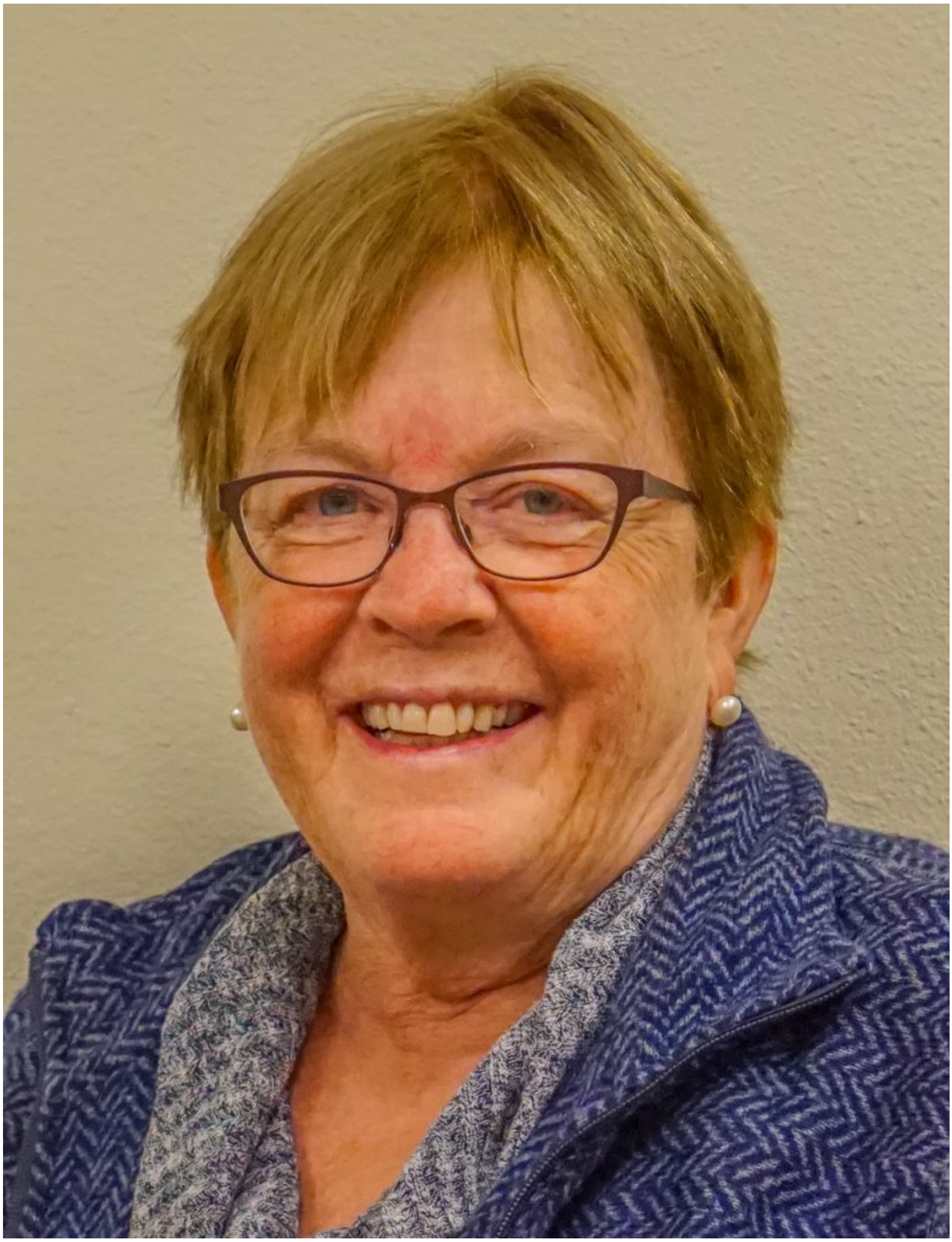

Joan Betz

Joan Betz is a retired Biology professor from Regis University, and a board member of Eagle Summit Wilderness Alliance, an all-volunteer nonprofit that helps the U.S. Forest Service protect and preserve the wilderness areas in Eagle and Summit counties. For more information, visit EagleSummitWilderness.org.

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