**Recommended Removal Methods for Baby’s Breath (*Gypsophila paniculata*)**

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**Spade/Shovel Method**

A flat-nosed spade is placed close to the base of each baby’s breath plant and pushed into the sand at a sharp downward angle so that the tap root is severed as far below ground as possible. The goal is to sever the tap root below the caudex, the point where the root becomes the stem. If severed below the caudex the plant cannot resprout; if severed above the caudex, the plant has the chance to resprout.

**Clean-up of baby’s breath piles:** At the end of a growing season, there are usually many large piles of baby’s breath. Piles are removed by placing them in 55-gallon metal drums and burning them. Ashes are spread and mixed with sand when cooled.

**Spot-burning Procedure and Equipment**

The propane torch that is most effective is made by Flame Engineering, Inc., and is the “VT 3-30C Red Dragon Vapor Torch Kit.” This torch has a maximum output of 500,000 BTU/hr, with maximum flame temperature of between 2,050°F and 2075°F. Under normal operating pressure of 30 PSI it will consume about 10 lbs. propane/hr, with maximum consumption at maximum operation of about 23 lbs./hr. Burn time when using a full 20 lb. propane tank has usually been about 2 to 2.5 hours.

**Before burn day:** A burn permit is requested from the fire department. Other law enforcement and neighbor notifications occur as necessary.

**During burn day:** Weather is taken on-site before and during operation. Area to be cleared is defined and checked for fire hazards (wildfire potential, poison ivy). The main suppression tools are rakes to remove scattered dead plant material and expose a sand firebreak outlining the burn unit.
Crew is outfitted in personal protective equipment (nomex, hard hat with face shield and nomex ear/neck protector, leather gloves, and leather boots). Torch set-up includes: PVC torch safety carrying case containing torch, flint lighter, leak detector solution (in a squeeze bottle; to test for gas leaks at connections and supply hose), extra O-rings. Propane tanks are strapped and carried on exterior-frame aluminum backpacks. The torch is connected to a propane tank and ignited with a flint lighter (according to the directions in the Red Dragon Torch Operating Instructions and Parts Manual). The approximate backpack weight of the torch set-up and propane tank (using a full 20 lb. tank) is 48 lbs.

A work crew consists of some individuals operating torches (igniters) while others (spotters) locate and protect Pitcher’s thistle with heat shields (61 cm length by 30.5 cm diameter sections of galvanized steel duct work), and monitor progress, wildfire potential, and safety hazards. The crew periodically rotates duties. In large, dense baby’s breath patches, igniters position themselves in a parallel line and walk slowly while burning in an overlapping pattern. Usually only one spotter is needed with this procedure if thistle have already been located, marked, and shielded. It is also easier to be non-selective and burn everything, including natives, except rarities. Most native plants will resprout if not targeted specifically.

In areas with scattered baby’s breath plants, the crew works in teams of an igniter and spotter. The spotter sweeps ahead of the igniter to locate and shield thistle as needed.

The maximum flame temperature of 2,050°F+ occurs 15 to 31 cm (6 to 12 in) from the torch bell tip. It will take some practice to learn the most efficient distance to hold torch tip from target. It is also more efficient to use the torch pointing with the wind direction to reduce torch blow-out or the flame blowing back toward the igniter. Torching seedlings until wilting occurs is usually sufficient to kill; it is not usually necessary to torch seedlings to ash (although this is more satisfying). It takes between 3 and 10 seconds to sufficiently wilt individual plants at about half of torch maximum output. If possible it is more efficient to torch seedlings and saplings at stem base rather than the entire plant.

Mop-up area completely after torching. Allow torches to cool down before disconnecting from propane tanks and putting them back into PVC safety cases. Follow disconnecting, storage, and maintenance suggestions in Red Dragon Torch Operating Instructions and Parts Manual.

An initial treatment per area is sufficient to remove most seedlings and young baby’s breath. Repeat treatment(s) in the same growing season or the next growing season will be necessary to stress resprouts and make each plant use up available root reserves.

Equipment List:

**Baby’s Breath Removal**
- Shovels
- Work gloves
- Backpack with first aid kit and extra water
- Stick pin flags in PVC carrier
Spot-burning
- Copy of burn prescription
- Checklists, emergency numbers
- Cellular phone
- Radios with chest holders, and 2 ear phones
- Weather kit(s) (to take readings of temperature, relative humidity, and wind speed in the field)
- Weather radio
- Propane tanks, 10 and 20 gallon
- Modified exterior-frame aluminum backpacks, straps and/or bungee cords
- Propane torches in PVC carrying cases, each with leak detector solution, flint lighter, extra o-rings
- Grass/thatch rakes

Equipment List for Baby’s Breath Removal at Point Betsie (continued):
- Nomex fire suits
- Leather gloves
- Leather boots, 8 inches high, Vibram sole, leather laces
- Respirators/dust/mist masks
- Hard hats with nomex ear/neck protectors, face shields, chin straps
- First aid kit
- Water cooler with 1 liter water bottles, minimum 2 per crew member
- Belt and pouches to carry water bottles
- Moleskin
- Soap/Technu
- Rounded pieces of sheet metal to protect Pitcher’s thistle

Burning Baby’s Breath piles
- Burn barrels
- Matches
- Pitchforks
- Council rakes
- Nomex fire suits
- Leather gloves
- Leather boots, 8 inches high, Vibram sole, leather laces
- Respirators/dust/mist masks
- Hard hats with nomex ear/neck protectors, face shields, chin straps
- First aid kit
- Water cooler with 1 liter water bottles, minimum 2 per crew member
- Belt and pouches to carry water bottles
- Moleskin
- Safety pins
- Soap/Technu
- Camera