

Sleeping Warm

Sleeping Systems and more!



Course Overview

- **Types of Heat Loss**
 - (Radiation, Conduction, Evaporation, Convection, Respiration)
- **Parts of an Adequate Sleeping System**
- **Different Methods of Sleeping Warm**
- **Important Parts of Sleeping Bags**
- **Sleeping Warm Tips**



But First, What is **Dead Air Space**?

Dead Air Space is Still Air within a container (tent).

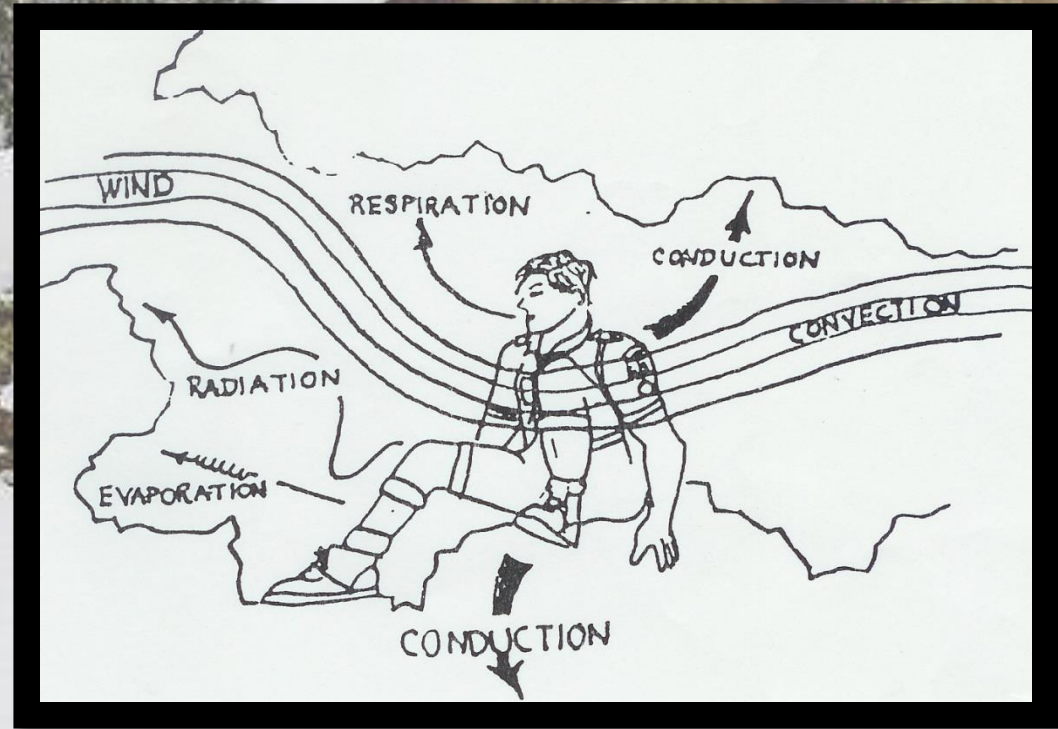
Why is Dead Air Space Important?

When heated, dead airspace stays in its location, providing a warmth cloud that is essential to warm sleeping.



The Types of Heat Loss

- Heat Radiation
- Conduction
- Evaporation
- Convection
- Respiration



Heat (Thermal) Radiation

- **Definition:** The emission of energy as heat.
- **Relationship to us:**
 - Humans lose heat from their body all the time.
 - The most heat leaves from our feet, hands, or head.
- **Solution:** Cover feet, hands, and head while sleeping



Conduction and Convection

- **Conduction:** The loss of heat to a cooler surface
- **Cause:** Contact with cold objects (The Ground)
- **Solution:** Use a ground pad and insulate yourself from cold objects
- **Convection:** The loss of heat to moving air
- **Cause:** Air Movement Around Body
- **Solution:** Create **Dead Air Space**



Evaporative Cooling

- **Evaporative Cooling:** The loss of heat due to the evaporation of liquid.
 - Sweat picks up body heat and evaporates, taking heat with it.
- **Solution:** Restrain from heavy exercise before bed.



Respiration (Breathing)

- **Respiration (Breathing)**
 - Causes us to lose heat from breathing out warm air and inhaling cool air
- **Solution: Avoid heavy exercise before bed to slow breathing rate**



Parts of a Good Sleeping System

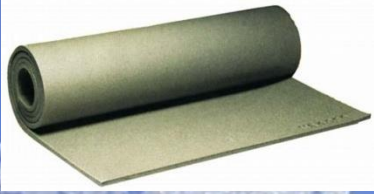
- The Sleeping Pad
- The Sleeping Bag/Scout Burrito
- Important Parts of a Sleeping Bag
- Loft
- Workmanship
- Sleeping Bag Care
- Winterizing your Summer Bag



The Sleeping Pad

- **What is it?**
 - A Layer of Insulation Between you and your tent
- **How does it work?**
 - Prevents the Conduction of heat between you and the ground
 - Provides a heatable surface





Sleeping Pads



- **Closed Foam Pads**
 - PRO: Does not Absorb Water
 - PRO: Doesn't allow for underside convection, conduction, or radiation
 - PRO: Light
 - PRO: Cheap
- **Therm-a-Rest**
 - PRO: Waterproof
 - PRO: Prevents underside conduction, convection and radiation



Bad Pads/Insulation (by Themselves)

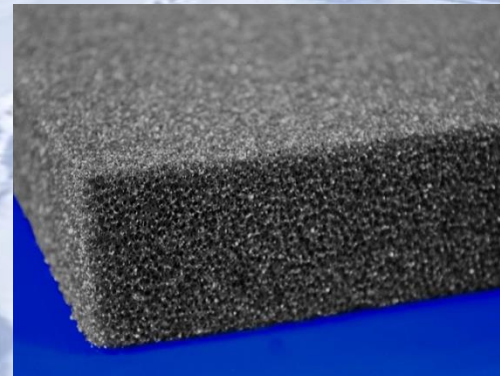
- **Cots**

- **CON: Allows for convection from your underside**
- **CON: Heavy**
- **CON: Expensive**



- **Open Cell Pads**

- **CON: Allows Water In**
- **CON: Allows Air through Holes**



Bad Ground Insulation (ever)

Air Mattresses

(To much air to heat up inside)



The Scout Burrito



Sleeping Bags

- Should be rated at lower temperature than expected
 - For Example: if projected lows are -15, bag should be rated at -30
- Many types of bag fills
 - Down
 - Primalof
 - Microloft
 - Polarguard
 - Qualofill



Qualities	Cotton	Down	Wool	Polar-Guard	Hilofill	Fiberfill	Thin-Sulate
Weight per insulative Value	High	Low	High	Medium	Medium	High	Very Low
Thickness per insulative value	Very Thick	Thick	Thin	Medium	Medium	Medium to Thick	Thin
Wet Warmth	Very Poor	Poor	Good	Good	Good	Good	Good
Length of Dry Time	Long	Very Long	Very Short	Short	Short	Moderate	Very Short
Compress-ability	Low	Great	Low	Medium	Medium	Medium	Low
Breath-Abilitiy	Fair	Fair	Medium	Medium	Medium	Medium	Good
Durability	Poor	Poor	Good	Moderate	Moderate	Moderate	Good
Care Required	Machine Wash	Dry Clean	Machine Wash	Machine Wash	Machine Wash	Machine Wash	Machine Wash
Cost	Low	Very High	High	Medium	Medium	Fairly Low	Medium
Overall Value for Winter Camping	Nearly Worthless	Poor if Wet	Great	Good	Good	Fair	Great

What is Loft?

The Ability of a Sleeping Bag
(and Material) to compress
and bounce back



Sleeping Bag Fit Shapes (3)

Rectangular

- Big
- Bulky

Big Bag
+ Little Scout
Bad Times

Mummy

Recommended

Tapered
No Hood

Shell And Zipper

- Shell: Outside fabric of the Bag
 - Should be Fine Weave or Rip-Stop Nylon
 - Should be cut different for both sleeping bag pieces
 - Different Materials fit different needs (ask your local store)
- Zipper: Self Explanatory
- Material of Preference: Plastic
 - Conducts heat slower
- Should run top to bottom
- Should have two sliders
 - Top and Bottom Ventilation



Draft Tubes and Hoods

- **Draft Tubes:** Flaps that block air from entering through the zipper
 - Should extend beyond the Zipper
- **Hoods**
 - Should be fully insulated
 - Should be closable around face



General Workmanship

- Look for 8-10 Stitches per inch
- Look for Double Stitching at Seams (Hood, Zipper, etc.)



Proper Sleeping Bag Care

- Unpack 1 hour before using
- Keep Dry (especially down)
- Air out at home
- DO NOT store compressed at home; use large stuff sack (compressing causing loss of loft)



What do I do if I only have a Summer Bag?

1) Rent a Winter Bag

2) Winterize your Summer Bag



Winterizing Your Summer Bag!

- Winterizing your Summer Bag
 - – Materials: sleeping bag & 2 or more blankets
 - – Open your bag up all the way
 - – Lay blanket so it covers ½ of the bag
- (lengthwise)
- – Lay second blanket so it covers entire
- sleeping bag
- – Lay extra blankets in the same manner
- – Lay down where blankets overlap
- – Fold blankets over you one at a time
- alternating sides
- – Zip up your sleeping bag



Sleeping Warm Tips!

1. Don't sleep in the bottom of the bag.
2. Keep some high energy food nearby.
3. Go to the bathroom before bed.
4. Don't dry wet clothes in your bag.
5. Put tomorrow's clothes in or under your bag.
6. Fluff up your bag to increase loft.
7. Keep all of your sleeping gear dry.
8. Do not bring your shoes into your bag (duh)



ANY
QUESTIONS
?

