

# Fisheries Management Techniques FT 211

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**Fisheries Technology**

# Chapter 3

Safety in Fisheries Work

# Outline

- Review from last Class
- Hazards in Fisheries
- Safety overview
  - Boating
  - Flying
  - Driving
  - Swiftwater
  - Bears
  - Firearms
  - Office & Lab

# This Module will Contain

This Module will Contain 8 Main areas

- Safety overview
- Survival & First aid
- Boating
- Flying
- Driving
- Swiftwater
- Bears
- Firearms
- Office & Lab

# Student Learning Outcomes

Students will be able to:

- Summarize safety concepts and how they relate to Fisheries
- Demonstrate an understanding of survival and first aid skills
- Identify hazards and avoidance measures as they pertain to boating
- Demonstrate an understanding of aviation safety and risks associated with flying
- Summarize vehicle safety and risk avoidance measures
- Identify hazards and outline safety measures associated with working in swiftwater
- Demonstrate an understanding of bear behavior and identify risk avoidance techniques
- Identify good handling precautions and firearm practices .
- Show an understanding of lab safety measures

# Fisheries is Hazardous!



All aspects of fisheries job can be hazardous

**Flying in Alaska**

**Boating in Alaska**

**Environment**

**Animals**

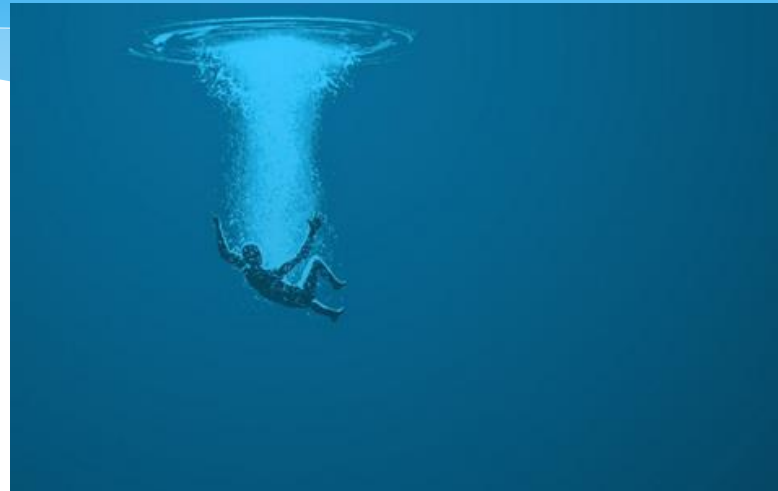
**Lab work**

**Office Work**

**All Hazardous!**

# Fisheries Professionals are killed each year

**Plane Accidents  
Drowning**



**Almost all could be avoided**

Typically caused by a chain of errors that can be broken





# Safety is a HUGE Topic

- We can not cover all
- Introduce you to some principals to stay safe
- Introduce you to some risks associated with Fisheries
- Give you resources to get additional information



# Fisheries Safety Handbook

Professional Safety Committee  
of the  
American Fisheries Society



[http://fisheries.org/docs/policy\\_safety.pdf](http://fisheries.org/docs/policy_safety.pdf)

December 2008

# Safety Attitude

- This is simply a way of thinking
- Responsibility of **Everyone**
  - Employee
  - Supervisor
  - Organization



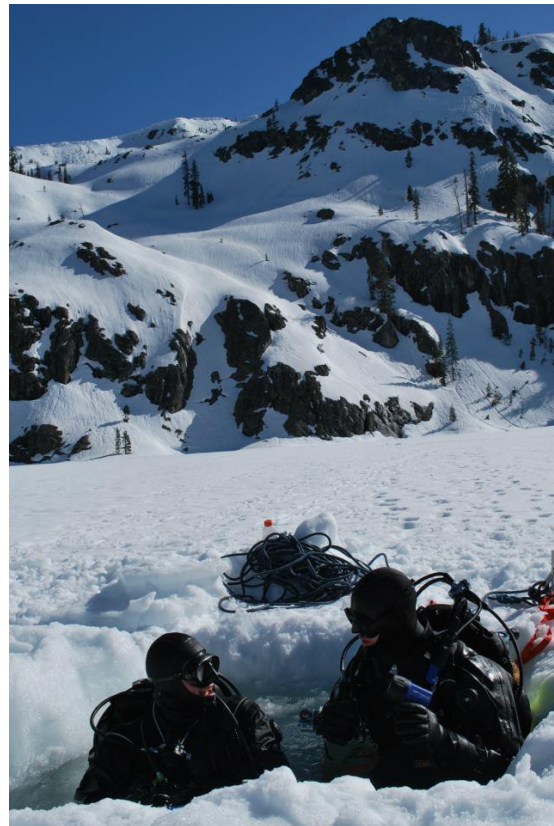
# Accidents

- Are breakdowns in safety
- Typically caused by a **chain of events**
- When accidents happen
  1. Task: the actual work procedure being used at the time of the accident;
  2. Materials: the equipment and materials used at the time of the accident;
  3. Environment: the physical environment or sudden changes to it;
  4. Personnel: the physical and mental condition of involved individuals; and
  5. Management: the role of supervisors and presence of management systems



# Fisheries work done on:

- Land
- Water
- Ice
- Air



# Safe stands for...

- Skills
- Attitude
- Facts
- Equipment

SAFE

# SAFE stands for...

- Skills – come from Training
  - Boating, first aid, electrofishing, Firearm, Bear
- Attitude – Most important
  - Carelessness, forgetfulness, disobedience, lack of judgment
- Facts – information needed to make safe decisions
  - Weather, equipment use, conditions,
- Equipment – Equipment necessary to do the job
  - Gloves & goggles – boats, first aid, fire extinguisher

# Safety Orientation

- Review of safe philosophy
- Job hazard analysis
- Physical limitations
- Training
- Safety contracts

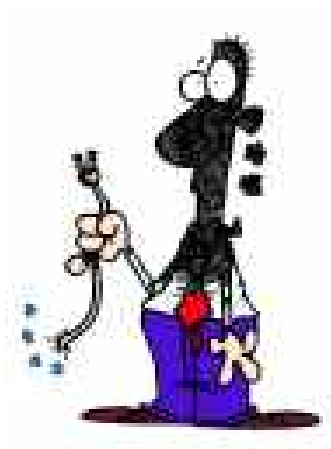
**SAFE**





# Health Risks in Fisheries

- Exposure
  - Heat, Cold
- Disease & Sickness
  - Fish poisoning, giardia, Blood Borne
- Trauma
  - Serious injury (physics)
- Wildlife
- Drowning
- Electric Shock
- Chemicals
- Alcoholism



# Self Check 1

- Of the following which is most hazardous for fisheries professionals in Alaska?
  - Flying in Alaska
  - Boating in Alaska
  - Environment
  - Animals
  - Lab work
  - Office Work
- Safety is more of an attitude or a way of thinking
  - True
  - False

# Training

- First aid / CPR
- Survival
- Bear
- Firearm
- Driving
- Aviation
- Boating
- Swiftwater
- Fish Handling
- Electrofishing
- Diving/Scuba



# First Aid / CPR

Medical issues will arise

- Critical to safety
- Various levels of training
  - Basic, wilderness, EMT, Paramedic
- When medical help not readily available?



American Heart  
Association® 

*Learn and Live* SM

# First Aid / CPR Training



# Legal issues

- Negligence
- Consent
- Good Samaritan Law



# First Aid Dogs



# Universal precautions

Wear gloves

Wash Hands

Clean with disinfectant

Hazardous disposal





# Survival Training



Tools = what you're wearing

# Self Check 2

- Training is available in which of the following?
  - Survival
  - Bear
  - Firearm
  - Driving
  - Aviation
  - Boating
  - Swiftwater
  - **Training is available in all of the above**
- In a survival situation often times you are only equipped with what you are wearing
  - **True**
  - False

# Boating Safety

- Lots of water in Alaska
- Fish live in water – We don't
- Boats are how we get around on water

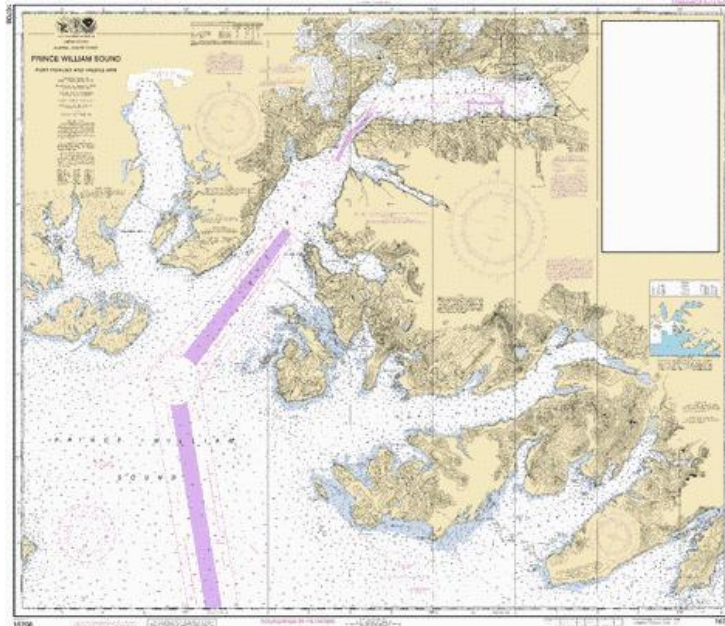


# Things to consider before leaving the dock

- Float Planning
  - ALWAYS File a Float Plan
  - Communication (VHF Radio)
  - Nautical Charts
- Weather
  - Sea State
  - Marine Forecast
- Vessel
  - Is the boat adequate for the job?
  - Maintenance and condition?
- Cargo
  - Is the boat overloaded?
  - Is the boat balanced / secure
- Safety Equipment
  - PFD's
  - Throwable life ring
  - Emersion Suits (Gumby Suits) Practice with these
  - Flares (Aerial, handheld, smoke)
  - Fire Extinguisher
  - EPIRB
  - Navigation lights

# Float Planning

- ALWAYS File a Float Plan
- Communication (VHF Radio)
  - USCG Channel 16, 21, 22
- Nautical Charts
  - Where are the rocks?



 **FLOAT PLAN** 

INSTRUCTIONS: Complete this plan before you go boating and leave it with a reliable person who can be depended upon to notify the Coast Guard, or other rescue organization, should you not return or check-in as planned. If you have a change of plans after leaving, be sure to notify the person holding your Float Plan. For additional copies of this plan, go to: [www.floatplancentral.org](http://www.floatplancentral.org)

**Do NOT file this plan with the U.S. Coast Guard** [www.uscgboating.org](http://www.uscgboating.org)

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**VESSEL**

<b>IDENTIFICATION:</b> Name & Home Port _____ Doc/Registration No. _____ Year & Make _____ Length _____ (ft) Type <b>PWR</b> Draft _____ (ft) Hull Mat <b>Fiberglass</b> Hull Color(s) _____ Prominent Features _____	<b>TELECOMMUNICATIONS:</b> Radio Call Sign _____ DSC MMSI No. _____ Radio-1: Type <b>ICOM</b> Ch./Freq. Monitored _____ Radio-2: Type <b>ICOM</b> Ch./Freq. Monitored _____ Cell Phone No. _____ Pager No. _____
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**PROPULSION:**  
Primary - Type **Outboard** No. Eng. \_\_\_\_\_ Fuel Capacity \_\_\_\_\_ (gals)  
Auxiliary - Type **None** No. Eng. \_\_\_\_\_ Fuel Capacity \_\_\_\_\_ (gals)

**NAVIGATION: (check all on board)**  
 Maps  Charts  Compass  GPS / DGPS  
 Radar  Loran C  Sounder  \_\_\_\_\_

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**SAFETY & SURVIVAL**

<b>VISUAL DISTRESS SIGNALS:</b> <input type="checkbox"/> Day Only type <input type="checkbox"/> Night Only type <input type="checkbox"/> Day & Night type PFDs: (do not count Type II devices) Quantity On Board _____	<b>AUDIBLE DISTRESS SIGNALS:</b> <input type="checkbox"/> Horn / Whistle <input type="checkbox"/> Bell <b>GROUND TACKLE:</b> <input type="checkbox"/> Anchor Line Length _____ (ft)	<b>OTHER GEAR:</b> <input type="checkbox"/> Life boat / Life raft <input type="checkbox"/> Flashlight / Searchlight <input type="checkbox"/> Dinghy / Skiff <input type="checkbox"/> Signal Mirror <input type="checkbox"/> Food & Water <input type="checkbox"/> Drogue / Sea Anchor <input type="checkbox"/> EPIRB <b>None</b> <input type="checkbox"/> Foul Weather Gear <input type="checkbox"/>
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**PERSONS ON BOARD**

<b>OPERATOR:</b> Name _____ Address _____ City _____ State _____ Zip Code _____ Vehicle (year, make & model): _____ Trailer will be parked at: _____	Age _____ MF _____ Notes (Special medical condition, Can't swim, etc.) _____ Has experience: w/Boat <input type="checkbox"/> w/Area <input type="checkbox"/> Home phone: _____ Vehicle License No.: _____ Trailer License No.: _____
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**PASSENGERS/CREW:**

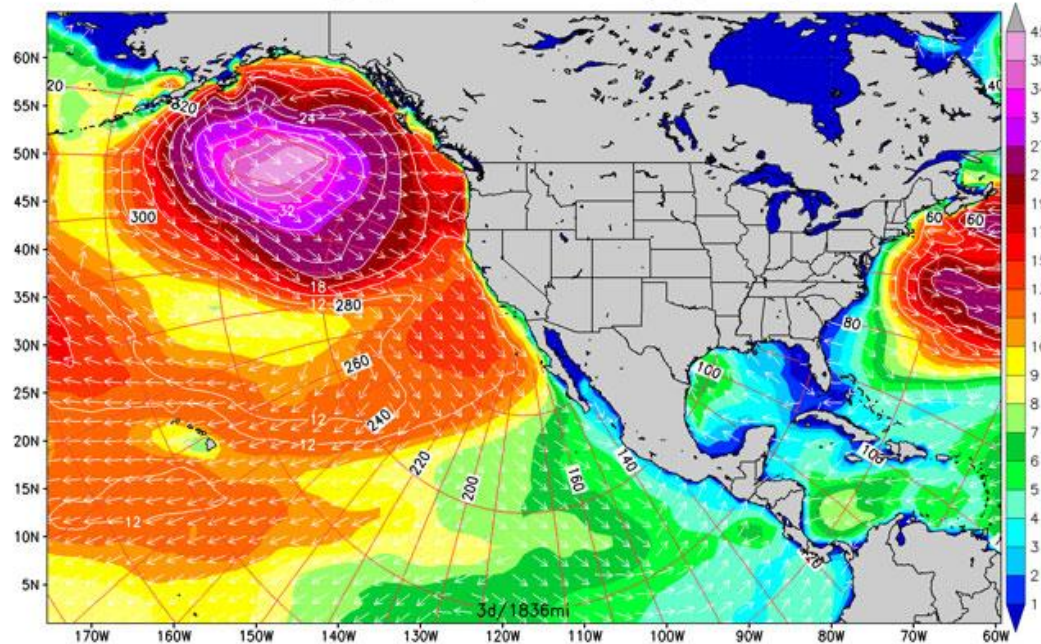
Name & Address _____	Age _____ MF _____	Notes (Special medical condition, Can't swim, etc.) _____
1. _____	_____	_____
2. _____	_____	_____

# Weather

- Sea State
- Marine Forecast
  - VHF Channel WX-?



SURFLINE.COM Historical Archive  
Significant Wave Height(ft), Primary Direction, Range(nm), Bearing 00Z20DEC2012



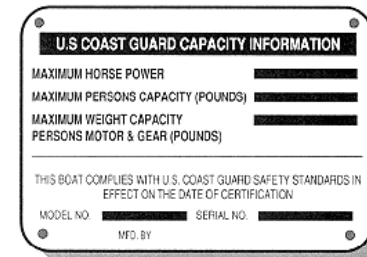
# Boating safety - Power & Capacity Ratings



**Vs.**

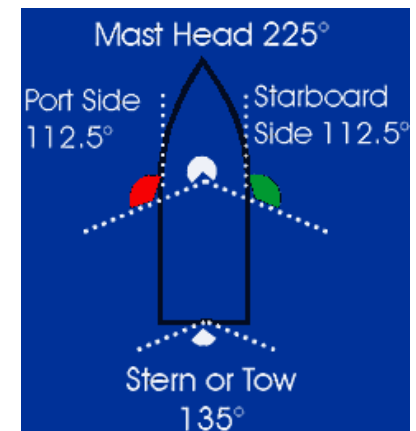


- Vessel
  - Is the boat adequate for the job?
  - Maintenance and condition?
- Cargo
  - Is the boat overloaded?
  - Is the boat balanced / secure?
- Carry recommended capacity
- Rough water decreases safe carrying capacity
- Distribute load evenly
- Keep load low in boat



# Safety Equipment

- PFD's
- Throwable life ring
- Emersion Suits (Gumby Suits) Practice with these
- Flares (Aerial, handheld, smoke)
- Noise making device
- Fire Extinguisher
- EPIRB
- Navigation lights





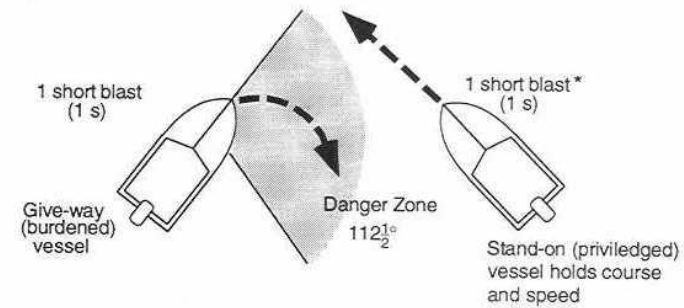
# Safe Boating Based On

- Good sense
  - Are the boating conditions safe?
  - Do not be afraid to speak up or stand your ground
- Courtesy
- Respect for life and property
- **Knowledge of equipment and the water**
- **Experience**
- Drive defensively – like a car!

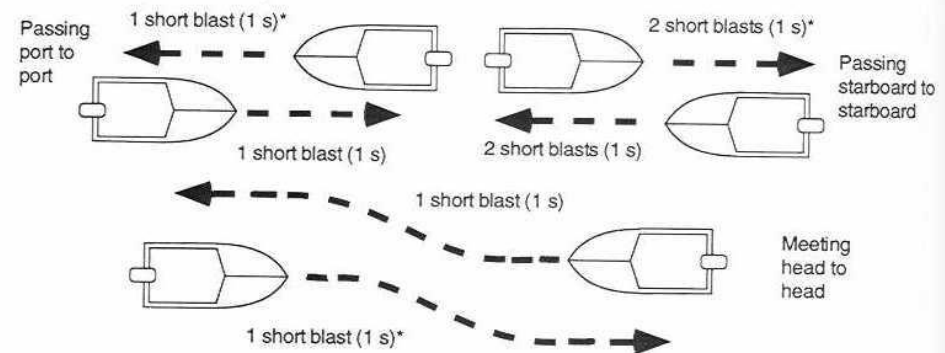


- Some basic rules of the road
  - (Bigger Boat always Wins)

### Crossing situation



### Meeting (head-on) situation



### Overtaking

#### Inland rules

"I want to pass you on your port side."

2 short blasts (1 s)

"Proceed."

2 short blasts (1 s)

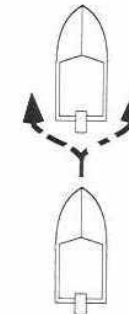
#### International rules

"I am altering my course to port."

2 short blasts (1 s)

\*Not sounded on International waters

Stand-on (privileged)  
vessel being overtaken



Give-way  
(burdened)  
vessel overtaking

#### Inland rules

"I want to pass you on your starboard side."

1 short blast (1 s)

"Proceed."

1 short blast (1 s)

#### International rules

"I am altering my course to starboard."

1 short blast (1 s)

# Things to consider before leaving the dock

- Water conditions and forecast
- Vessel maintenance/condition
- Proper charts
- Pfd's for everyone
- Safety equipment onboard?
- Does someone onshore know your float plan?
- Communication
- Have you got all of your sampling gear?



# Self Check 3

- Filing a float plan is only needed when venturing offshore
  - True
  - **False**
- Experience is a valuable asset when it comes to boating and being on the water
  - **True**
  - False

# Swiftwater



# Swiftwater



# Swiftwater / Safe wading requires

- Equipment
  - Waders
  - Footwear
  - PFD
  - Throw Rope
- Technique
- Knowledge
  - Think one foot at a time
  - Take short steps
  - Walk into current
  - Cross fast water at slow pace



# Wading Technique





# Waders



- Protect from cuts / parasites
- Should be comfortable
  - Wading belt
- Wading Shoes
  - Non-felt in Alaska
  - Spikes or studs



# Whitewater Fisheries



- USCG Rescue swimmer quote

# Trainings available



WWW.RESCUE3.COM

## Operations: Swiftwater First Responder

**This two-day course** is designed to provide students with both a theoretical and practical knowledge of the basics of swiftwater rescue. The class includes one day of classroom instruction and one day of practical field exercise. Students are trained in hazard recognition, equipment use, and basic shore and boat-based rescue techniques, as well as a wide variety of other skills, including:

- accepted criteria for determining risk/benefit decisions
- effecting a shore-based aquatic rescue using generally accepted reach and throw techniques
- in-water self-rescue and safety techniques
- how to deal with basic water-related medical emergencies
- understanding the application of water rescue techniques using commonly available fire service equipment
- basic boat-based rescue concerns and techniques
- basic moving water self-rescue techniques

After completing the course, certified personnel may participate in higher risk, technical water rescues under the supervision of technician level rescuers.

## Site Navigation

Choose from drop-down menu ▼

# Self Check 4

- Stance and technique make a big difference when wading in swift water
  - **True**
  - False
- If working in and around swift moving water training should be optional
  - True
  - **False**

# Vehicle Safety



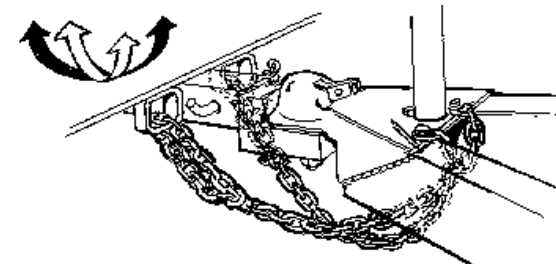
# Vehicle Safety

- Road Conditions
  - Ice, Rain/water, off road
- Vehicle
  - Is the vehicle adequate for the job?
  - Maintenance and condition?
  - Tires
- Cargo
  - Is the vehicle overloaded?
  - Is the vehicle balanced / load secure



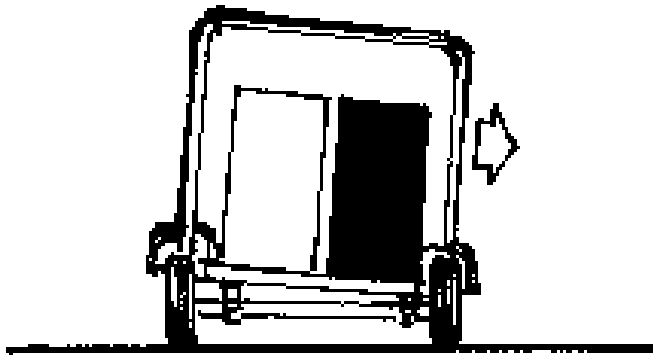
# Vehicle Safety - Towing

- Proper trailer and load
- Proper hitching equipment
  - Right size ball / hitch (latch it)
  - Chains – crisscross
- Brakes - electronic
- Lights
- Vehicle with adequate weight / power
- Driver familiar with towing



# Overloaded vehicles

- Unstable
- Steering and braking difficulties
- Overheats tires-catch fire or blow out





# Safety on the road - Accident prevention entails

- Anticipate hazard by thinking ahead
- Understand the defense for specific hazard and apply
- Act defensively when hazard is recognized
- What kind of hazards are we talking about?

# Self Check 5

- An overloaded vehicle will be impacted in which areas
  - Steering
  - Braking
  - Stability
  - Acceleration
  - **All of the above**
- An overloaded vehicle can cause the brakes to heat up and tires to catch fire
  - **True**
  - False

# Aviation Safety



# Aviation Safety

## Wolf Biologist Killed In Plane Crash in Denali National Park, Pilot Survived

Submitted by [Kurt Repanshek](#) on October 16, 2009 - 6:14am



A noted Alaskan wolf biologist has been killed in a plane crash in a remote area of [Denali National Park and Preserve](#). The pilot, though he suffered burns, was able to walk out and alert authorities.

Dr. Gordon Haber and pilot Dan McGregor had left Wednesday for a flight over the northern end of the park to monitor wolf packs. When the Cessna 185 didn't return on schedule that evening, authorities were



# Aircraft are important!



# Common Aircraft

**PA-18 Super Cub**



**Cessna 206**



**de Havilland Otter**



**de Havilland Beaver**



# Common Aircraft



Hughes MD 500



Robinson 44



Bell 206 Long Ranger



Airbus AStar

# Aviation Considerations

- Flight Planning
  - Always file a Flight Plan!
  - Communication
- Weather
  - Is it safe to fly?
- Weight and Balance
  - Is the plane overloaded?
    - Beaver, Otter, 206 – hard to overload
  - Is the plane balanced?
    - Weight low, forward, SECURE
  - Type of cargo – fuel, firearms, pepper spray
- Safety Equipment
  - Fire Extinguisher
  - ELT
  - Survival Equipment
  - Raft?
  - Electrical Shutoff Switch – AV Gas
- Personal Safety Equipment
  - Flight Helmet
  - Floatation
  - Survival Equipment



# Telemetry / Survey

Low flying (<150m)

Low air speeds

Modified aircraft

Radio telemetry entails tracking radio tagged fish



# Aviation Safety

## Assess the Situation:

- is the weather flyable?
- Is the plane loaded properly?
- Are you comfortable with the conditions?
- If not, say so!



# Aviation Training



USFS, NPS, USFWS, BLM undergo extensive training for what to do if a plane goes down in the water



# Self Check 6

- It is the pilots responsibility alone to make decisions about the weather
  - True
  - **False**
- Click on the Super Cub



# Bears



# Bear Safety

- Avoidance is key
  - They want less to do with us than we do with them
  - Make Noise!
    - Don't see or hear well
- Keep attractants away
  - Food, fuel, petroleum products
  - Anything that smells
- Groups of 3 or more
- Understand Bear Behavior
  - Black vs. Brown
  - Interior v. coastal
  - Body Language, body language, body language
  - Cubs and Prey items
- Precautions
  - Pepper Spray
  - Firearm

# Bears and Firearms

- Choose the right firearm
  - Large caliber
  - Typically 12 Ga shotgun (slugs) or .375 Rifle
  - Typically not handguns .375 mag .45 mag **.44 mag**
- Be proficient at using
- Keep it handy
- Having a gun doesn't make you more safe
  - Makes more complacent

# Bears and Pepper Spray

- Very Effective!
  - More than firearms
- Practice with it
- Keep it handy





# Bear Spray vs. Bullets

*Living with Grizzlies*

*Fact Sheet No. 8*



U.S. Fish and Wildlife Service  
Mountain-Prairie Region, P.O. Box 25486  
Lakewood, Colorado 80225  
phone 303/236-7905, fax 303/236-3815  
website: [www.r6.fws.gov](http://www.r6.fws.gov)



## *Bear Spray vs. Bullets*

### **Which offers better protection?**

At first glance, this question may seem like a no-brainer. After all, aren't guns made to kill, while pepper spray (so-called "bear spray," when it comes in big cans) does not? Unlike an attack by a human assailant, who may be able to use your own weapon against you, that safety/survival argument for using pepper spray doesn't apply to a human-bear encounter... or does it?

- Bullets = Injuries 50% of the time
- Bear Spray = almost all walk away

# Bear Safety



# Bears and Boats



# Bear Safety

- Avoidance – noise, be observant
- Take care of bear attractants such as food or other scents
- Know how to react – never run, protect your head and neck
- Pepper spray – know how to use it and have it accessible
- Firearms?
- Knowledge is power – learn about bear behavior



# Self Check 7

- Understanding bear behavior is important in avoiding incidents
  - True
  - False
- Firearms prove to be 50% more effective in warding off bear attacks than pepper spray
  - True
  - False

# Firearm Safety



**FIREARM SAFETY**

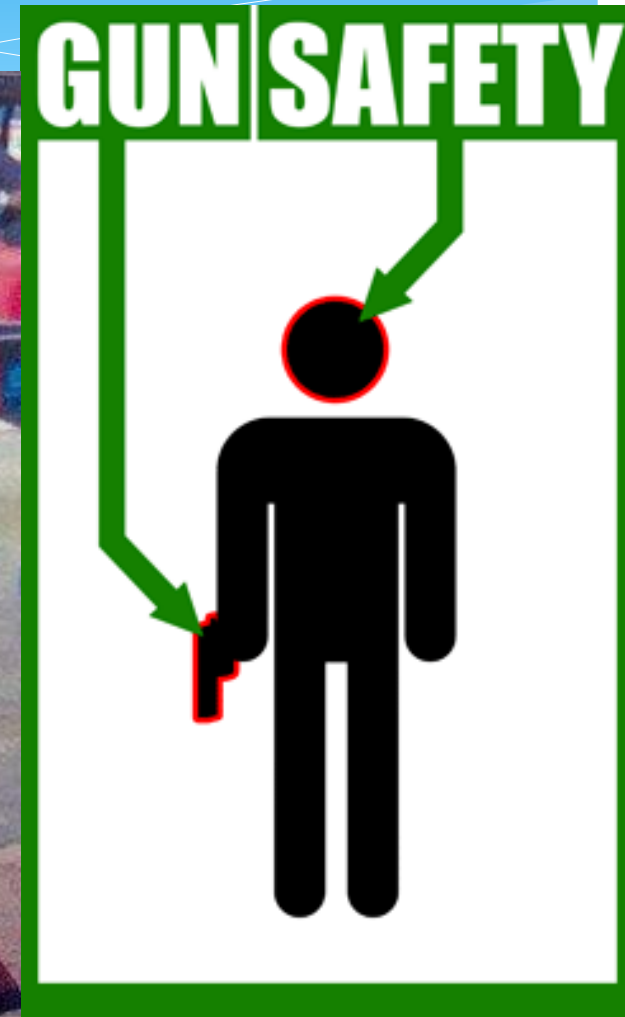
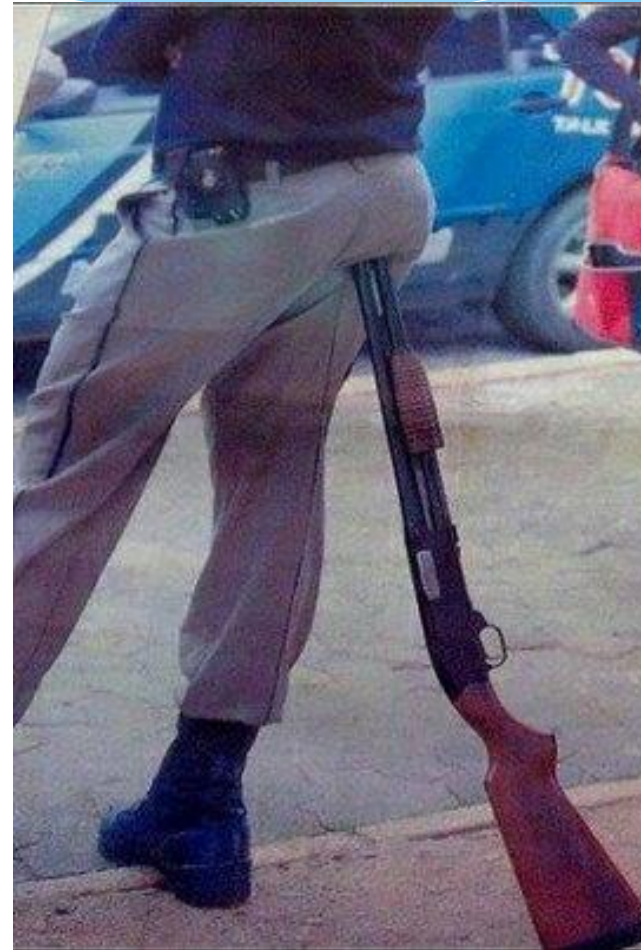
Yes, that is a  
gun in his ear.

# Firearm Safety

- Firearm safety is paramount!
  - Can't do it safely, not worthwhile
- Comfortable and familiar handling and operating firearm
  - Specific to each type of weapon
- Keep clean!
  - Helps familiarization
  - Keep debris (and water) out of barrel
    - Condom / electrical tape

# Firearm Safety

1. Barrel pointed in a safe direction
2. Unloaded when not in use
3. Always use safety
4. Don't rely on safety
5. Familiarization





# Firearm Safety

USFS, NPS, USF&WS, USGS, ADF&G etc have all field employees undergo firearms safety training

Must get re-certified each year

Qualification

- Standing
- Walking / reloading
- Bear sled



# Other safety training:

- Dive certification
- Snorkeling training
- Survival training
- Govt agencies spend up to 2 weeks training new field employees
  - Many require recertification each year



# Self Check 8

- IF you can't handle and operate a firearm safely it is not worth carrying one
  - True
  - False
- When in use you should rely on the safety to prevent firearm accidents
  - True
  - False

# Office & Lab Safety

- Communication
- Understanding the job
- Knowing safety measures
- Wearing protective equipment



# Lab Hazards

- **Chemicals**
- Flammables
- Fumes



# ***SAFETY INFORMATION***

*Emergency Shower Location:*



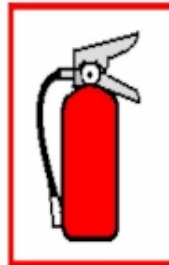
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*Emergency Eye Wash Location:*



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*Fire Extinguisher Location:*



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*First Aid Kit Location:*



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*Chemical Spill Kit Location:*



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*MSDS and Training info Location:*

*[i.e. Chemical Specific Right to Know and Hazardous Waste]*



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# Polite Laboratory Protocol

- Clear labeling of rooms, work areas and containers
- Cleaning up thoroughly after oneself
- Communicating need for space and equipment in shared labs



# Chemical safety

- Purchase from legitimate sources
- Use only for the registered purpose
- Transport in plastic containers
- Use MSDS for guidelines
  - Work sites required to have MSDS for every chemical onsite
- Have a spill plan & equipment in place before using
- Employees know how to use safety equipment
- **As an employee, you have rights to know!**





# Sprains, Strains, Injuries

- Back injuries
  - Often come on slowly
  - any signs of a strain or sprain injury, Report it!
- Get medical help!
- Fix the unsafe job!
- You don't report the first signs of injury. You don't want to dump extra work on your co-workers and friends. Maybe you're afraid of losing your job. Then you get put onto light duty. But there is always so much heavy work to do. You feel pressured to do your regular job. You're back to lifting and transferring residents. You get hurt again, this time worse. You're out again, and money is tight. Now you're really afraid you'll lose your job.

# Self Check 9

- Sprains strains and minor injuries are uncommon in fisheries
  - True
  - False
- MSDS stands for
  - Multidimensional scaling
  - Master standard for data systems
  - Material Safety Data Sheet
  - Messy Space Dangerous Space

# Conclusions

- Safety is a conscience effort
- Everyone must take part
- Education and training are your friend



**Safety is  
Everyone's  
Business**



**Take safety to  
heart**  
*We need you.*

**Never be hasty  
when it comes to**



**SAFETY**

**ANGER**  
is one letter away from

**DANGER**

**Make Time for  
SAFETY**



**A clean area  
is a safe area**

**SAFETY**  
is our **#1** goal!

**Think safe, work safe**  
*Your family, your friends  
and your company depend  
on you.*

**DANGER**

**HARD HAT  
AREA**

**WARNING**

**HIGH VOLTAGE  
KEEP AWAY**