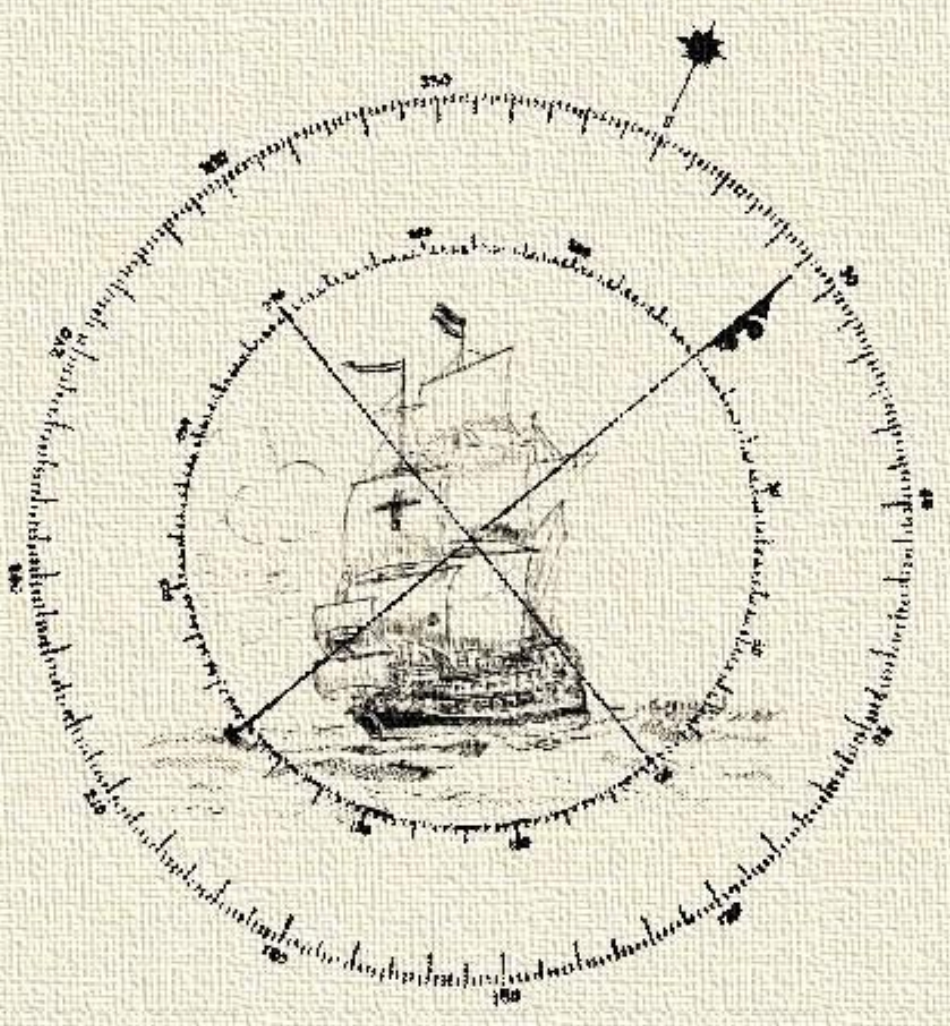

**Shipwrite Productions**

# Cold Water and Personal Flotation

*Kevin Monahan*

*www.shipwrite.bc.ca*

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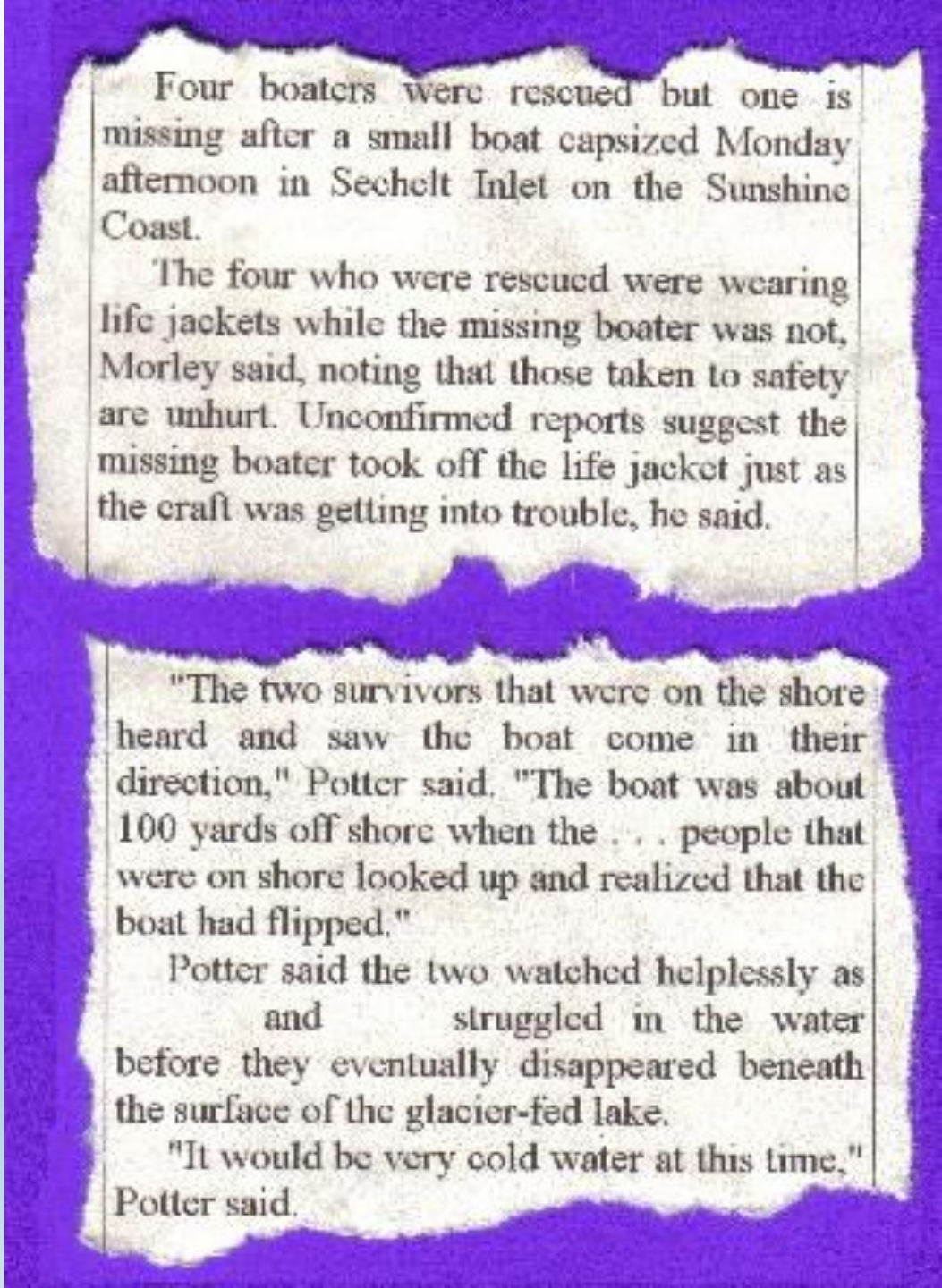
# How often have you read something like this?

**“I don’t understand how it happened. He was a good swimmer, he must have been hit on the head.”**



Four boaters were rescued but one is missing after a small boat capsized Monday afternoon in Sechelt Inlet on the Sunshine Coast.

The four who were rescued were wearing life jackets while the missing boater was not, Morley said, noting that those taken to safety are unhurt. Unconfirmed reports suggest the missing boater took off the life jacket just as the craft was getting into trouble, he said.

"The two survivors that were on the shore heard and saw the boat come in their direction," Potter said. "The boat was about 100 yards off shore when the . . . people that were on shore looked up and realized that the boat had flipped."

Potter said the two watched helplessly as and struggled in the water before they eventually disappeared beneath the surface of the glacier-fed lake.

"It would be very cold water at this time," Potter said.

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- **UK Home Office 1977**
  - 55% of open water drowning deaths occurred within 3 meters of safety.
  - 42% occurred within 2 meters of safety.
  - 2/3 were regarded as good swimmers
- **Canada (SmartRisk Research)**
  - 41% of those who were boating and drowned were within 10 meters of shore.
  - An additional 22% were within 10 to 15 meters of shore

From Transport Canada's *Safe Boating Guide*

From Lewis Carrol's *Alice in Wonderland*

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- Clearly, something is preventing drowning people from saving themselves.
- Many victims are unable to swim even 2 meters to save themselves.
- Scientific evidence shows sudden immersion in cold water can result in death due to drowning long before hypothermia sets in
- **40% to 60% of people who die as a result of being suddenly immersed in cold water die in the first 5 to 15 minutes.**
- (In Alaska, this figure is estimated to be as high as 75%)

**Sherlocke Holmes**

**"When you have eliminated the impossible, my dear Watson, whatever remains, *however improbable*, must be the truth."**

# Effects of Sudden Cold Water Immersion

- Stage 1: Initial immersion or cold shock
  Surface effects (skin, nervous system)

- Stage 2: Short-term immersion or swimming failure
  Intermediate depth (muscles of arms and legs)

- Stage 3: Long-term immersion (hypothermia)
  .
  Cooling of body core

- Stage 4: Post-rescue collapse
  (heart &/or brain failure)

Courtesy United States Coast Guard


# Stage 1: Initial Immersion or Cold Shock

- Drowning occurs rapidly (within 3 to 5 minutes)
  - Cold receptors in the skin cause immediate physiological responses. Peak response within 30 seconds
  - Large inspiratory gasp upon immersion – may cause drowning
  - Uncontrollable hyperventilation and reduced breath hold ability
  - May be unable to get air into lungs--leads to panic
  - Massive increase in heart rate and blood pressure may trigger cardiac arrest
  - Unable to self-rescue
  - **Unable to keep airway clear of water without help**
- Effects last for just a few minutes, but at the critical stage of ship abandonment or falling overboard.

# Stage 2: Short-term immersion or swimming failure

- Death by drowning occurs within 5 – 30 minutes
  - Rapid cooling of the musculature of the arms and legs
  - Almost complete loss of co-ordination, manual dexterity and muscle strength
  - Inability to self-rescue using flares or other survival equipment
  - Degradation of swimming ability -- even short swims may be impossible – many who drown are reported to have been “good swimmers”
  - Inability to co-ordinate swimming stroke and breathing
  - Unable to self-rescue
  - **Unable to keep airway clear of water without help**

# Airway Protection


This is an airway protection device

And so are these

# What is “Cold Water”?

- Any water less than 15$^{o}$ C (59$^{o}$ F) will trigger these physical reactions, though the colder the water, the more severe the response.
- Some studies suggest that these reactions can occur in water as warm as 20$^{o}$ C (68$^{o}$ F)
- If the water is warm enough that you aren’t concerned with cold water responses, you should keep a sharp eye out for

Not really a shark. Actually a photo of a dolphin.

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# Lessons

- On sudden immersion in cold water
  - Long before you run the risk of death by hypothermia you can easily die from drowning if you don't have a flotation aid to keep your airway above water.
  - Evidence shows that you will very likely not be able to don a flotation aid once you have entered cold water--**you must be wearing a PFD for it to save your life.**
  - Your goal must be to survive the first two stages of Cold Water Immersion--long enough to actually run the risk of hypothermia (20 to 30 minutes)--almost impossible without a flotation aid.

# Current Attitudes

- ***Pre-occupation with hypothermia as a cause of death may have had a detrimental effect on public perception.***
- Most boaters still believe they can don a PFD ***after they enter the water*****.**
- Many boaters believe the only reason to wear a PFD is in case of unconsciousness. This message is reinforced by government and non-government communications.
- Currently most boaters have heard the message that they should wear their PFDs, but they do not understand WHY they should wear them.

Still photo from James Cameron's *Titanic*

**Leonardo diCaprio and Kate Winslett would not have survived their experience below decks on the sinking Titanic.**

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# What does this mean?

- Drivers understand HOW seat belts save lives.
- Cyclists understand HOW helmets prevent brain damage.
- Cold water kills by cold shock or by swimming failure far more often than by hypothermia.
- This occurs most often when people fall overboard or when small boats capsize.
- If your small boat capsizes and you are ejected into the water, physiological reactions may prevent you from keeping your airway above water and you can easily drown.

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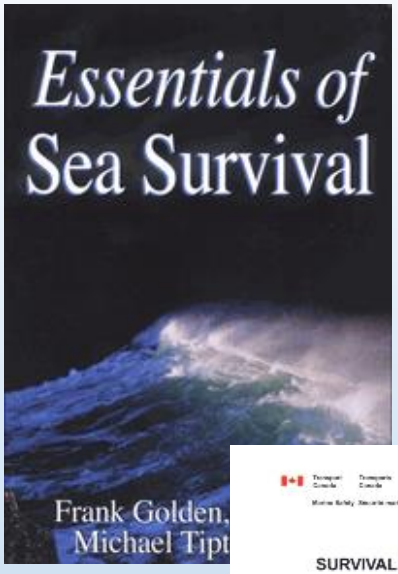
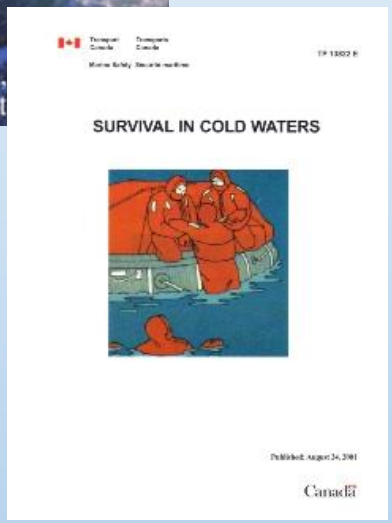
- Henry Freeman was the only survivor of the Whitby lifeboat disaster of 1861--because he was the only crewman wearing the new patent lifejacket.
- His lifejacket was a simple low-tech device--but it saved his life.
- You don’t have to be a rocket scientist to figure it out….
- Wear your PFD and live.

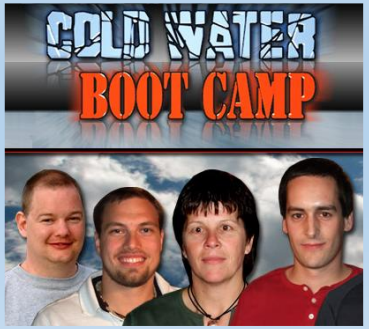
Original photo of Henry Freeman by Frank M Sutcliffe, Copyright the Sutcliffe Gallery, Whitby, UK

# Resources




- *The Essentials of Sea Survival*
  - by Frank Golden and Michael Tipton
- *Survival in Cold Waters*
  - by Dr Chris Brooks for
    Transport Canada (TP 13822)
- "*The Cold Facts – Surviving Sudden Cold Water Immersion*".
  - Intercom Films, Toronto, (416) 483-3862




- "Cold Water Boot Camp"
  - www.coldwaterbootcamp.com/pages/home.html

# The End

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