Greetings,

In the last issue I presented you with a conglomerate of articles that focused on skeletal remains discovered in vehicles underwater. Those articles, in part, described the resolution of cold case reports and missing person’s files.

There was some variety in circumstances, discovery and recovery of the vehicles in the articles. Most of the teams who read the articles should have been able to relate to at least one if not all.

In the issue I asked some basic questions that included: How do you search for a vehicle? What equipment do you use? Do you feel like you have the proper equipment to protect you from rising gas columns, oil etc?

A few things I did not ask were:
- How do you determine the risk(s) associated with recovering a vehicle?
- What is it you are mentally measuring?
- What process or system of recovery and preservation techniques or methods do you use?
- What preventative and protective measures does your team have in place to keep your divers healthy and safe?

In this issue we are going to offer another conglomerate of information that includes news reports, a look at our inefficient use of “Risk/Benefit” to ascertain risk, the gruesome aspect of Public Safety Diving that involves human body parts, an introduction to skeletal remains recovery and medical information that will give you some serious thoughts about diving in contaminated water.

So, how do we ascertain risk an ANY dive? For years we have been told to use a “Risk vs. Benefit” approach to measure risk.

How do you apply it to Public Safety Diving? What exactly is the process used to measure associated risks to judge the value of potential risk against potential benefit? Is it a ratio or a number between 1 and 10?

The way we have been using the “Risk vs. Benefit” concept no longer works. Maybe in the beginning it did but over time is has become a useless concept.

Somebody’s jaw just dropped. I know, I have used this same measure for years but never really understood what it meant and probably, and like most of you, just said the words without giving much thought to what they meant.

Please remember, my editorial commentary and opinions are just that, MY opinions.

Here is the problem with using the basic “Risk vs. Benefit” measure: When there is no reasonable chance of saving a life, given the potential for severe injury and / or death, the risk to a public safety diver working at depth in zero visibility does not outweigh the benefit of searching for and possibly recovering a dead body or any other inanimate object.

That is the only way we can truthfully apply a “Risk vs. Benefit” measure. I am not saying we will not dive, just that the way we have traditionally determined risk is ineffective and has become as meaningful and irrelevant as a glance over the shoulder followed with an, “OK. Good to go”.
We have learned through experience what the typical water conditions are in our own locality. Through training, missions and overall experience we have increased our knowledge, our skill sets and hopefully the equipment and tools we use. Each one of those things has changed our perception of risk and how we make a determination of what our perceived risk is at any given time.

When we arrive on a dive site we use that experience to identify not risk, but rather, hazards. It is the hazards that pose potential risk. When we identify hazards we base our operational decisions and our acceptance to act not on casual acceptance of perceived or actual risk but on our known abilities to overcome those known hazards. We also depend those same factors to provide us with the ability to overcome unknown hazards when we are alone in the dark 40’ below the surface.

“Purists would talk about hazards rather than risks, and this allows you to identify the specific issues at hand rather than an ‘arbitrary’ or ethereal risk which is out there because we are rubbish at determining the likelihood of such risks.”

~ Gareth Lock

Gareth Lock, you will “meet him” in this issue, shared some slides that highlights this to some extent. One slide offers a quote from Todd Conklin I liked a great deal.

Conklin said “Safety is not the absences of accidents, but rather the presence of barriers and defenses, and the ability of the system to fail safely”.

It is rare to find two divers on the same team who share identical comfort levels especially when there are obvious hazards in the way. So on a team level, the hazards may be identified by more experienced divers but the perceived and actual risk are measured at the lowest level of experienced team member participating in the activity and his or her ability to overcome the known hazards. Our measure of risk becomes our confidence that this diver has the necessary skills, experience, equipment etc., to fail safely.

In this issue, we offer an article from Gareth Lock on Public Safety Diving and Dynamic Risk Assessment. I urge you to redefine the way you assess risk and use some of the material presented to help you make better informed decisions. We are always looking to improve our safety and that of our team.

Dynamic Risk Management is something we have been doing all along, we just did not know it or apply it in a way we could recognize or develop as a system to be used within our team.

Risk management is not a simple phrase, a look and shoulder shrug or an on the fly decision that somehow forms a ratio. It is a system than is integral to your operational integrity.

Also in this issue I present to you a series of news articles that highlight the recovery of human body parts. There are no grotesque or “shocker” photographs. The stories alone become gruesome. I want you to stop here and decide if you really want to read them before continuing.

I know a lot of my subscribers will skip ahead and read them all. A very few may wish they had heeded the warning, others will not even understand what I was talking about.
We perform a variety of services as Public Safety Divers and other than location, they are very similar. Where is it? Go get it. Here it is. Clean and decon and get ready for the next.

Over the years we have become more aware of HOW we recover things. We know fingerprints will survive submersion; that DNA can be collected from a fire arm, and trace evidence under a fingernail can be preserved.

But body parts, that becomes a variation most of us have never encountered before. What do you do with just a human torso? What do you do with two left feet in a garbage bag? What do you do when you open the suitcase and discover the disarticulated body of a toddler?

If you’ve been on a team long enough, you know what decomposition smells like, are you prepared for a potential week long search where each item you find is part of a person?

Skeletal remains usually do not have the same smell and visually are not quite as dramatic as pieces of once living flesh and bone. There is nothing that is going to be easy or routine when recovering skeletal remains or body parts in various stages of decomposition. There is nothing in this issue that will make it easier. I wish there were.

Hopefully, what you will find is the information you will need to begin preparation for the potential recovery of skeletal remains or intact parts or pieces. The better prepared you are, the better you will be able to do the job. There are a great many things involved that you may not know you do not know. This is just a start.

Contact the office that will ultimately be the recipient of what you collect. This may be a coroner, a Medical Examiner or a Forensic Pathologist. Ask them for guidance; how they would like those remains to be collected, sorted and preserved prior to their delivery? They may even be able to offer you the containers you may need.

In May of 1996, a commercial plane carrying 110 people including passengers and crew crashed in the Florida Everglades. When the recovery effort was finally stopped, 4,282 individual fragments had been retrieved. Those pieces represented less than 25% of the combined mass of the 110 who lost their life that day. They needed a lot of containers and cold storage and tags....

In the previous issue the focus was on skeletal remains found in vehicles, missing persons and cold case closure. This issue is combining the search and recovery of skeletal remains and body parts with Risk Assessment.

There is a reason.

To locate a vehicle in zero vis with or without the use of a sonar system, most teams use a snag or long sweep pattern. Leaving aside discussion of risk for now, this is one of the most forgiving search patterns that can be performed by divers with poor skills. The problem is once successful, the success hides the lack of skills and that same lack of skills begins to become accepted. Success is success, right?

The same poor skills will likely allow the diver to find an adult drowning victim. Perhaps a child. Once found, those
same poor skills can become even further ingrained into the successful outcome reasoning.

Will those same skills allow that diver to find a toddler who has been drowned? Are you sure? A Rifle? A Hand gun? A Single shoe, a watch, a set of keys or the single human tooth that could lead to DNA identification of a victim? A lot of you will not like hearing this and will want to argue but the answer for most TEAMS on ALL counts is “No”.

Get mad at me if you like, it’s ok. But I challenge you to prove me wrong. All you have to do is train in your local swimming pool and WATCH the skills of your divers as the dive their patterns.

Are they properly weighted? Is their body skimming the ground or slightly elevated? If it is elevated, then their search arm cannot be making consistent contact with the ground they are tasked with searching. If they are too heavy they are swim hopping their forward progress. Neither will provide an accurate or consistent search pattern.

Is the search line / tether line so taut that their arm is forced to point at the tender? If it is, the tender and diver

FAIL -This diver is being pulled slightly upward by constant pressure applied by the tender. Right hand is not quite pointing at the tender but the diver is unable to stay on the bottom and has ZERO pattern.

BAD - The diver is fingertip searching the “debris strewn bottom” of a 12’ deep swimming pool. He is tethered and his mask is blacked out. Look at the angle of his arm. He did NOT find the 12” bowie knife.
have the ability to communicate easily but the body position of the diver is skewed to an angle and the search lane he just ran was not thoroughly searched.

Will he find a vehicle with those skills? Sure. Will he find a revolver? A small set of keys? A knife used in a homicide? Does your team, as a whole have the training to search for an item as small as a bullet casing or a tooth? If finding a pocket knife or a set of keys is defeating you, consider what and how your skills have become acceptable.

Because we usually have limited time and resources for training, we have learned to accept things as they are and eventually teach those coming behind us what has become successful outcome reasoning. At some point in time, they too will degrade and a new lower level of acceptance may become the mark of success.

If your team was looking for an object the size of a Size 10 tennis shoe – go to Goodwill, a garage sale or your closet, fill it with cement and let it dry. (New training prop) – will all of your divers be able to find it?

Use this as your first experiment. Observe their body position. Watch the sweep of their arm. Are they truly covering all the ground? Knowing they are being tested,
your divers will be much more intent on their technique and methodology and will probably be successful. But before you get excited about proving me wrong, do this first: With your divers in blacked out masks, throw a variety of objects in the water and let them search again. Use no more than 4 items and let the sizes range from a US dime to the shoe. Don’t tell them how many items or what they are.

The expectation is that almost any team will miss one or more of the items. If your divers are not able to train regularly, you will likely see varying differences in skills between your divers. Take the time and opportunity, when possible, to do an honest evaluation of individual and team skills.

When the dive is done, can you say, with extreme confidence, the object you were searching for is not there?

Prove it. Conduct the same drills in an open water area you know is safe to train in. Will every diver find every item?

I am not beating you up over skills. I know it is frustrating and difficult to get the necessary time you desire for training, that funding can be nonexistent and administrative support more detrimental than supportive. I know that searching for small objects requires comprehensive training that most teams do not have available to them.

What I am hoping to convey is that a lot of what we do has the potential to be flawed because we have learned to accept successful outcomes that are not always the result of proper planning, good skills or adequate safety systems. We often fail to put into place proper and complete systems; particularly a system of risk assessment and mitigation, or management.

Self-evaluation and team evaluation are intended to be a critique, not a critical or demeaning experience. We should be able to recognize and acknowledge where we are weak and plan our training to strengthen those weaknesses.

A diver in zero visibility will discover a variety of conditions that are not apparent from the surface. The

Excellent – Look at the arm position of each of these divers. They are maintaining constant contact with the bottom, using the full length of their arm from fingertip to elbow.
Each diver photo used a single example of what we take to be a simple skill. Each new or veteran diver was experienced and comfortable being blacked out in the water. You cannot determine level of experience by comparing the photos!

Experience, honest evaluation and the desire to constantly improve knowledge, skills and abilities will become the heart of your dynamic risk assessment system. That system will not make the potentially high stress and emotionally charged recovery of skeletal remains or human body parts any easier but the attitude that brings you there is a great first step.

The photos I have shared highlight that skills can become degraded by lack of practice. Muscle memory fades and a new level of success becomes the goal to achieve. Or, you can take these examples as a warning. If we were working on basic scuba skills, how do you think that would have gone? What about tomorrow? Will you get a call and have to wonder if the diver you just asked to get in the water has the ability to overcome an unseen, unknown hazard? What about the Backup diver? Take nothing for granted.

Make sure any system you put into place afford your team and individual team members the ability to fail safely.

At the end of this issue I have made our Continuing Education into a challenge. Will you accept?

Let me know your thoughts on this issue of PSDiver Magazine.

Email me or find our PSDiver group on Facebook at: **Public Safety Divers - PSDiver Group**

Follow PSDiver on our **PSDiver Monthly Facebook Page**

Dive Safe,
Mark Phillips
Editor / Publisher
PSDiver Magazine
Public Safety Diving - Dynamic Risk Assessment
By Gareth Lock

Every diving incident which a Public Safety Dive team responds to will be different. Training and risk assessments can give you a broad outline of what might happen; what to do in the event of ‘x’ or the procedure when ‘y’ occurs, but dive team leaders and members must be cognizant of both change from the baseline SOPs or risk management plan to the reality, and also the change that will occur during the operation.

This continual adaptation to a dynamically changing situation is known as ‘dynamic risk assessment’ (DRA) and has been developed as a recognized process in the UK firefighting services following a number of deaths in the early 1990s.

DRA is defined by the HM Fire Service Inspectorate as “The continuous assessment of risk in the rapidly changing circumstances of an operational incident, in order to implement the control measures necessary to ensure an acceptable level of safety.” Note that it is the environment or the situation which is dynamically changing and not the risk itself.

Background to Dynamic Risk Assessment
In 1991, two firefighters ran out of air whilst using their breathing apparatus in a building that was on fire in Gillender Street, London. The fatalities occurred because of multiple factors including a lack of effective communication between different teams, duplicate guidelines with no clear way of marking the safe way out, and a disagreement between the leaders of the separate teams.

Following the deaths, the UK Health and Safety Executive (the UK equivalent to OHSA) served notices on the Fire Brigade to improve training, procedures and processes, including risk management - a first for the UK.

Another notable case, and one applicable to the Public Safety Diving world, was that of PC Metcalfe who died whilst trying to recover a boy from a lake when the safety rope he was using snagged underwater and he drowned - he was not using any SCUBA equipment having just arrived on the scene.

The investigation which followed highlighted that for five and half years internal memos had raised concerns about the need for water rescues to be made safer. Since the death, more equipment and training has been provided to allow teams to effective surface water rescues more effectively. Underwater recovery in the UK is undertaken by established police or Royal Navy dive teams and PSD teams do not exist.

Following these events, research and practice with London-based firefighting teams lead to the UK Home Office model for Dynamic Risk Assessment which can be summarized by the Diagram 1.
Diagram 1
Dynamic Management of Risk,

PSDiver Magazine Issue 116
In essence high level guidance, priorities and direction are provided, which is then put into local risk management plans and standard operating procedures (SOPs).

They are then managed in real time in the ambiguous and dynamic real world by the operators at the front line. There is recognition within this model that the real world is not the same as the ‘plan’, and frontline operators may be required to make decisions not necessarily covered by an SOP. One way the system can be improved to deal with these variances is by undertaking an effective debrief at the end of the task. In a debrief we can identify where modifications of the SOPs may be necessary to accommodate dynamic risk management during operations.

**Risk Management**

Risk management is undertaken every day, no matter what domain we are in. Whilst driving down the freeway, whilst picking a yogurt from the fridge, whilst walking down a busy street, we just don’t think of it that way, and in most cases we don’t actively think about the decisions we take. In most cases, these decisions are part of our normal routine. We get used to making rapid risk-based decisions without realizing it. Routine decisions can sometimes be wrong and end up with a bad outcome. Minor mistakes we can shake off and we rarely give them a second thought.

However, when risk has to be managed where the consequences can be fatal, what the UK Home Office research showed was that by giving defined boundaries for risk management, the onsite supervisors and operators could make better decisions because they had a way of balancing the priorities between preservation of their lives compared to the preservation of life and/or property.

The following three-tiered premise comes from the UK Home Office and provides the overall structure for the management of risk. The key point within Dynamic Risk Management is that if you don’t have a high level structure to follow, local risk management is flawed.

The high level risk management process at the Strategic Level in Diagram 1 follows:

- Risk a lot to save personal lives
- Risk a little to save property that can be recovered
- Risk nothing to save property that has already been lost

This should be no different to PSD teams and individuals.

This is easy to write down or deliver in a training program. However, to be able to define the level of acceptable risk in a quantifiable manner in a real world, dynamic scenario is not always clear when there are competing goals or objectives.

Risk is hard to define in an operational sense and many organizations have their own definitions. However, the common theme is that an action or event will take place and will have either a positive or negative outcome.

The problem is, as humans, we are not very good at judging absolutes. Nor are we good at dealing with small
probability events. Rather we use mental shortcuts based on previous experiences to make judgements, making relative judgements compared to previous experiences or emotional context. A simple example of this would be the tossing of a coin which has 50:50 odds of landing heads or tails. If I tossed the coin 10 times and each time it came up heads, what do you think the next toss would be?

The normal response is tails because it is ‘time’ that tails would be shown. However, with each toss the coin has the same odds of landing on heads or tails. Nothing has changed, the risk is still the same.

Research has also shown that people are more likely to take greater risks when they are in a losing situation - gamblers make bets against greater odds at the end of a day at the races when they are down because they believe they can win it back.

**How do we make decisions which involve risk?**

Most often we balance the benefits of our actions against the risk of success or of simply not failing. The difficulty is knowing the probabilities of an adverse outcome or how the situation could develop.

This is especially the case if we haven’t encountered that situation before, or if we don’t have robust SOPs or a Risk Management plan to follow. The diving community, and especially the PSD community, doesn’t like to talk about failure, especially when it involves colleagues making seemingly inconsistent mistakes which leads to death or injury, and yet this is how we learn - failure is normal. Fundamentally, operators and supervisors do not make decisions which they know will end up in injury or death, because if they did know the outcome, they wouldn’t do it!

Notwithstanding the need for SOPs, risk management plans and / or guidelines to provide an oversight, they can only go so far to provide a base of risk assessment and management. As Dwight Eisenhower said “Plans are useless. Planning is essential.”

In the real world, and as shown in Diagram 1, the operator & supervisor on the front-line pick up the decision making in real-time once on the scene.

**Recognition Primed Decision Making**

In the past it was thought that decisions were made by logically going through a sequence of likely or credible options discounting each based on some form of metric. However, Gary Klein and colleagues identified that this wasn’t the case by working with fire crews, paramedics, military commanders and healthcare professionals to determine how they made decisions in time-critical and ambiguous scenarios.

This research took place over many years and was based on their real-world behaviors rather lab-based assessments. The research showed that lab-based decision making wasn’t directly applicable to the real world given the multiple variables and priorities which have to be managed outside the lab.
Diagram 2 is a much simplified model of the work Klein and his team have done in this area and the resources at the end of this article provide additional reading for those who want to dig deeper.

The basic premise is that we have encountered situations in the past which have had measurable outcomes, positive or negative. These inform and develop our mental models of such circumstances and allow us to run mental simulations from the time of the call, to arrival and beyond. These mental simulations help us form decisions based on our prior experience and knowledge. It should be noted that most of these sorts of decisions are made sub-consciously and assumptions are often made that team members share conclusions – sometimes with disastrous consequences. A quick briefing of the situation and action plan should be held prior to committing anyone to action, and such a briefing should include the question “Has anyone encountered a similar situation before?” If so, they should be questioned to determine what worked, what didn’t and what clues to look for to show it is going wrong.

This cyclic model starts in the top left by encountering or being in a situation. The situation then generates cues that allow us to look for patterns which we match against our long-term memories of such situations (‘that looks like X’ or ‘that looks familiar, what is the closest idea that matches that pattern’). This matching allows the mental simulation to run using the models which we have previously developed (‘if I encounter Y during this, I also need to do A, B & C to remain safe’).

\textbf{Diagram 2}
\textit{Recognition Primed Decision-making Model. Streetlights & Shadows. Klein, 2009}
Lacking a Model
The problem arises when we haven’t encountered the same situation before. What happens now is that we try to make a best fit against anything similar we have encountered or we don’t make a decision until we have enough cues to make a decision.

Time pressures may force us to make the wrong decision because we are now trading off one risk (not completing in time) for another (correctness of the decision). For example, a team may choose to send in a less experienced diver to search for a victim who has submerged within their Golden Hour, and attempt a rescue before the full team or extra equipment is on scene.

Once we have made a decision and committed physical resources, it is much harder to turn back on that decision due to a number of psychological biases we have i.e. time, committed agency resources and supervisory bias. This lack of an effective model and simulation means operators and supervisors are in an ‘educated’ guess situation or using knowledge-based decision making.

Research from James Reason showed that when undertaking knowledge-based decision making, the error rate is between 1:2 and 1:10! Not great odds when life is at risk.

Better Decisions
The reason why experts make better decisions is because they have more models with which to run the subconscious simulations against. Klein’s research showed that experts also make those decisions more quickly as they are able to isolate the important and relevant elements of information from the stream of information coming in, often making decisions before all the information is in, but key relevant pieces had been processed.

This compared to novices who would wait until more information was available which might be too late to resolve the situation successfully. The definition of relevance was based on experience and by learning from others in the team during debriefs or informal ‘war stories’ where the decision making within the context of the operation was explored.

Debriefs
As has been shown above, decisions are informed by previous experiences. However, training systems, SOPs, guidelines, only provide you part of a toolbox to solve the problems you will encounter in the real world. In reality, there is no time to undertake all the training scenarios you might face, and if you wrote a SOP that covered everything, no-one would read it! Or, there would always be that ‘odd ball’ that didn’t fit the picture which would mean the process would stall as the ‘book doesn’t say I can do this’.

So how do you get better? Debrief after every dive or PSD operation. Contrary to what many think a debrief is about, it isn’t just what went wrong and how do we fix it. We need to look deeper. That includes looking at what went well to and why it went well.
Positive and negative outcomes are based on interactions between different parts of the system (people, equipment, environment, media and social pressures...) and we need to understand those interactions if we are to get better. That means the debrief needs to look at why things happened the way they did, why it made sense to do what the operators or supervisor did, and then what needs to be put in place to improve upon it. Every team can be improved. Experience, training, continuing education all become elements of dynamic risk assessment.

A future article will look at how to run an effective debrief such that everyone learns and that learning is applied to future activities.

**Conclusion**

Dynamic Risk Assessment is not a substitute for pre-planning, safe systems of work or where a pre-work risk assessment can be made. It is a means of keeping people safe when exposed to unknown and changing, dynamic situations.

DRA should not be a stand-alone risk methodology, it needs to be part of a wider integrated risk management system which should be in place prior to attending ANY call out.

If the limitations of human decision making are not understood, and learning has not taken place, then fatalities and injuries within the PSD community will continue. The best way to learn is recognize that humans are fallible, they will make mistakes, and that learning from failure is as essential as learning from success.

That learning process is best achieved through a feedback or debriefing system.

**Resources:**

- Operational Guidance for Fire and Rescue Services - UK Government
- Streetlights and Shadows, Gary Klein
- Dynamic Risk Assessment: The Practical Guide to Making Risk-Based Decisions with the 3-Level Risk Management Model
- Dynamic Management of Risk

**About the Author**

Gareth Lock is an advanced trimix and rebreather diver who runs a niche training consultancy focusing on human performance and human error, taking the lessons learned from his 25-year career in the Royal Air Force and developing this further with current and established research in human factors.

He has recognized that there is a knowledge and practice gap in the diving community, and as such he has developed a globally-unique class which teaches divers of all levels, from beginner to advanced technical diver to instructor and instructor trainer, that human error is normal and that we need to change our attitudes towards it and failure if we are to move forward. He actively promotes the fact human error is a post-event classification, and that if we are to improve diving safety, we need to understand why it made sense to those involved and to be less judgmental when it comes to incidents and accidents. His courses can be found at [http://www.humanfactors.academy](http://www.humanfactors.academy), all of which have applicability to the PSD community.
The Search and Recovery of Human Body Parts

Body Parts Found In New Jersey
July 12, 1992 The New York Times

The New Jersey State Police are investigating a gruesome discovery of seven plastic garbage bags believed to contain human body parts, including a severed head, found in separate locations in Burlington and Ocean counties.

John Hagerty, a state police spokesman, said yesterday that maintenance workers for the State Department of Transportation discovered six bags of human remains on Friday morning after picking up trash from rest stops along Route 72 in Woodland Township in Burlington County.

About 2:30 P.M. on Friday, maintenance workers found a seventh bag at the Stafford Forge picnic area on the Garden State Parkway in Stafford Township in Ocean County, he said.

"The workers found one bag which appeared to contain the legs of a human being," said Mr. Hagerty.

Sgt. John Legg of the state police said that a severed human head was among the body parts found in the six plastic bags Friday morning.

"It appeared to be a recent event as there was not a large degree of deterioration," said Mr. Hagerty.

Another human foot found in waters of Puget Sound
August 23, 1999

Northwest Briefing TACOMA

A human foot was found yesterday in the water near Tacoma's Point Defiance, perhaps a mile across Puget Sound from where another foot washed up on a Vashon Island beach last Tuesday.

The Pierce and King county medical examiners are working together to determine whether the two feet came from the same person.

"We've got some similarities," said Pierce County medical investigator Bob Bishop.

Meanwhile, two recreational divers spotted a body yesterday on the bottom of Puget Sound between Steilacoom and Fox Island.
The Pierce County Sheriff's Department's divers, who could not find the body yesterday, will continue the search today.

"It's possible it's related, but it's really hard to say," said Deputy Roger Ward, sheriff's spokesman.

Two fishermen found the second foot while out on a boat yesterday morning. The foot was in a shoe, but investigators would not say what kind of shoe or whether it matched the shoe found with the first foot.

The first foot was decomposed, and it's possible that it simply fell off of a decomposed body. There were no signs of trauma suggesting it had been severed, according to the King County medical examiner's office.

Mystery of 2 feet still unsolved
August 25, 1999 By TRACY JOHNSON  SEATTLE POST-INTELLIGENCER REPORTER

When divers finally pulled the body to the surface, they knew right away it would not solve the mystery of the feet.

The limbs of the Tacoma teenager, who police believe made a suicidal leap from the Tacoma Narrows Bridge last week, were intact.

Now medical investigators working to identify two human feet found in Puget Sound are left with obscure leads and long shots.

"With what we've got, I can't imagine how we'll ever identify him," said Ed Duke, chief investigator of the Pierce County Medical Examiner's Office, which is examining the left foot.

"There's just not a test you can run to find out who a body part belongs to."

Water and sea life, after all, can strip away clues.

In the meantime, investigators are poring over missing person’s files, hoping they can unlock the mystery.

So far, they are left wondering.

Was the person the victim of a boating accident? Did the person commit suicide? Or is the person the victim of a crime?

Forensic investigators won't make any assumptions or rule anything out, said Jerry Webster, chief investigator of the King County Medical Examiner's Office, which is examining the right foot.

But Webster said the shoes -- black, size 9 1/2 Comfort Plus athletic shoes -- could help.
Investigators are checking to see whether they're a particularly new model, or whether they're sold only in a small area of the country.

The decomposed right foot was discovered Aug. 17 on Maury Island, where Puget Sound waves had washed it ashore.

King County authorities say the foot was clad in a maroon Tommy Hilfiger sock, and there was a Dr. Scholl's arch support in the shoe.

Two fishermen spotted the left foot Sunday, roughly a mile away, floating near Commencement Bay near Tacoma.

The Pierce County Sheriff's Office said the footwear matched, and that the feet belonged to the same person.

Investigators said it's possible the feet simply fell off a decomposed body.

Through the case seems difficult, clues aren't always as elusive as they might appear.

Dr. Anthony Falsetti, a Florida forensic anthropologist who helped identify victims of the TWA Flight 800 crash and the Oklahoma City bombing, said investigators could learn a lot by studying the feet's bones.

The bones could also provide investigators with an idea of how tall the victim is.

Then, there are the shoes and the arch supports.

"You could get a pretty good idea if it's male or female," said Falsetti, director of the C.A. Pound Human Identification Laboratory at the University of Florida.

The companies that make the products would know whether they were made for a man or a woman, said Falsetti, though he hesitates to guess someone's gender simply by what they are wearing.

And like fingerprints, footprints are unique, he said.

He pointed out the footprints of some military personnel, particularly pilots, are often recorded -- though decomposition could make matching impossible.

Although there are databases filled with fingerprints, no such database exists with footprints.

A DNA sample can be drawn from bones, though it may accomplish little.

"DNA is wonderful; it's like a fingerprint. But it doesn't help unless you have something to compare it to," he said.
Identifying partial remains begins with the assumption it could be anyone. Then, investigators begin narrowing down the possibilities.

Eventually, most remains can be identified, Falsetti said. Some are never solved.

Take, for instance, the man's body that washed ashore in the Florida Keys.

Falsetti was preparing to examine the body, only to discover it had already been autopsied. He concluded the body drifted to shore after an at-sea burial.

But he may never determine the man's identity.

Obviously, he said, no one would report a man missing if he was already laid to rest.

A skull found in thick woods near Auburn last month remains a mystery, too. Investigators believe it belongs to a white man, but it's one tooth has made a dental-record identification tricky.

The body sheriff's divers recovered Monday night was that of Joshua James Longozo, 18, whose identity was confirmed through fingerprints.

Two recreational scuba divers spotted the body Sunday between Steilacoom and Fox Island, but sheriff's divers were unable to find and recover the body until Monday.

Because of the body's proximity to the feet, investigators thought it might help them solve the case.

The teen's father, Jim, said his son liked to ride dirt bikes, camp and fish and "had a heart of gold." But he was "troubled near the end," and his father said he knew it was suicide when his son disappeared last week.

PI reporter Sarah Skidmore contributed to this report.

Feet found in Sound are from same person

August 24, 1999 by The Associated Press and Seattle Times staff

TACOMA - Two human feet found in different locations in Puget Sound in the past week came from the same body and were separated from it because of natural decomposition in the water, authorities say.

One foot washed up on a Maury Island beach in King County on Aug. 17. The second was found Sunday about a mile away by fishermen near Tacoma's Point Defiance in Pierce County.

Each had on a size-9 1/2 black athletic shoe and a maroon Tommy Hilfiger sock, said Ed Troyer, a spokesman with the Pierce County Sheriff's Department.

There was no immediate match to any missing person, a Tacoma police spokesman said.

A King County medical investigator, who declined to give his name, said finding body parts is not unusual, nor is it a sign of violence.

"During the decompositional process, sadly, we fall apart," the investigator said. "It's what you expect. It's
part of the process of what happens to a body, especially when it's been in the water," the investigator said.

Meanwhile, Pierce County sheriff's divers last night recovered a man's body that two recreational divers had spotted in Puget Sound between Steilacoom and Fox Island the day before.

It apparently is the same man who jumped off the Narrows Bridge late last week, police said. The body was not missing any feet.

Authorities are working from a list of missing people to help them identify who the feet belong to.

Among the missing people are Pete Pilkey, a Tacoma fisherman who has been missing since Aug. 2, when his boat was found near Fox Island. But Pilkey's shoes, size 13, were found inside his boat.

On Feb. 18, 1998, deckhand Steven Brown turned up missing from the ferry Tacoma on an early-evening run from Seattle to Bainbridge Island. He has never been found.

Another, unidentified man disappeared in June during the 1:30 a.m. ferry ride between Bremerton and Seattle. He wasn't there when the boat docked in Seattle.

Neither was the suitcase he was seen carrying on board. Investigators said they couldn't tell whether the size-9 1/2 shoe was a man's or a woman's.

The King County medical investigator said his office will not make a definitive statement until the office's forensic anthropologist completes testing.

Seattle Times reporter Dave Birkland contributed to this story.

Four killed in collapse of Padre Island bridge
http://amarillo.com/stories/091601/tex_bridge.shtml#.WT8DU2jyuUk
September 16, 2001  Lynn Brezosky The Associated Press

PORT ISABEL - A group of barges smashed into a pillar of the only bridge leading to popular South Padre Island early Saturday, toppling three 80-foot sections of the bridge and killing at least four people whose vehicles plunged into the water 85 feet below.

Adrian Rivera, spokesman for the Texas Department of Public Safety, said four people were dead and three were hospitalized.

An unknown number of people were missing, while 13 were rescued from the Laguna Madre, part of the Intracoastal Waterway shipping route along the Gulf Coast, officials said.

Rhonda Fife stood near the four-lane bridge Saturday afternoon and said she had not heard from her 18-year-old son who was missing.
old daughter, Tiffany, since she went to the island with friends late Friday.

"Nobody called, and they always call," said Fife, her voice trembling.

Michael Burke, father of two sons who had gone out with Tiffany, anxiously waited with Fife.

"I just want to know where my kids are at. I hope they're all right and just can't call me," Burke said.

Five vehicles were located in the 50-foot-deep water by early afternoon and divers took pictures of their license plates for identification, said Cameron County Sheriff Conrado Cantu. The sheriff said as many as 10 vehicles could be in the water.

Crews had pulled two vehicles out of the water by midafternoon when the piling damaged by the barges toppled into the water. No injuries were reported when the piling fell.

The Coast Guard was notified around 2:30 a.m. that the tug Brown Water V and its four barges, loaded with coiled steel and phosphate, had struck the 2.37-mile-long span, the longest bridge in Texas. None of the cargo spilled. The tug operator was questioned and passed a sobriety test, officials said.

The crash dropped two adjacent 80-foot segments of the Queen Isabella Causeway into the channel near the center of the span.

Rescue efforts were suspended until this morning after a third 80-foot section of the bridge collapsed about 2 p.m. Saturday, Rivera said.

"There's a consensus that we're in the recovery phase, not the rescue phase," Cantu said.

Three people died at the scene and a fourth died at a hospital, authorities said. One victim was identified as Port Isabel Fire Marshal Robert Harris, said Desi Najera, an emergency management coordinator.

**Human remains found in suitcase near Virginia Beach**


On May 5, 2004, a suitcase holding what is later identified as the partial remains of William McGuire, a 39-year-old Navy veteran and computer analyst is pulled from the water near Virginia Beach. A second suitcase of body parts was found nearby on May 11, and a third washed up near the Chesapeake Bay Bridge and Tunnel on May 15.

McGuire was last seen alive on April 28, 2004, shortly after closing on a house in New Jersey’s scenic Warren County with wife Melanie, 34, a nurse. According to Melanie, William had packed his bags and left after the couple had a fight, leaving Melanie with the couple’s two young sons. Soon afterward, she filed for a restraining order and divorce.
In the course of their investigation, though, police discovered that Melanie was having an affair with her physician boss at the Morristown, New Jersey, fertility clinic where she worked. The couple’s computer revealed internet searches for “murder and suicide” and “undetectable poison.” Records also showed that Melanie had purchased a .38-caliber revolver two days before her husband’s murder, the same caliber of bullets with which her husband was shot twice. Melanie was arrested on June 2, 2005 and released on bail five days later.

After a seven-week trial, which began on March 5, 2007 and involved 76 witnesses and 1,200 exhibits, prosecutors laid out a theory of how they believed Melanie plotted and carried out the murder. After placing her husband’s wine with a sedative, prosecutors alleged that Melanie shot her husband, and then dismembered his body with a power saw in a shower stall. She then stuffed the pieces of his corpse into garbage bags and then into the couple’s luggage set, which she threw into the Chesapeake Bay. They believed Melanie wanted to be rid of her husband to pursue her relationship with her boss, without the cost of a divorce or the possibility of losing custody of her children. The defense, meanwhile, argued that William had been shot because of Atlantic City gambling debts.

After 13 hours of deliberation, a jury of nine women and three men found Melanie McGuire guilty of first-degree murder, desecrating human remains, perjury and unlawful possession of a weapon. She faces 30 years to life in prison.

**Dog Finds Human Foot In East Tulsa Retention Pond**


TULSA, Oklahoma -- Police are investigating the discovery of a human foot in a retention pond near 5th and South Mingo.

*Tulsa Police* say a woman was walking her dog just before noon when the dog went into the water and returned with a shoe.

The woman called police when she noticed that the shoe contained a sock with a human foot in it.

"At first I just thought it was a shoe, so I was going to take it away from her and throw it back in the water and let her pull it out again, cause that's what we normally do," said dog owner Heather Yarts.
"We felt something hard it in, and it turned out to be some bones."

Sergeant Dave Walker with the Tulsa Police Department said the shoe is a size 9 Saucony Jazz. The tennis shoe was faded to a pinkish color, but police believe it was originally brown.

The woman who owns the dog told News On 6 she lives in an apartment near the pond and that she walks Retro, her 2-year-old boxer mix, twice a day.

"The Tulsa Police Department Dive Team is on scene and will begin a systematic search of the pond for any evidence this afternoon," Walker said.

The foot may have been in the pond for some time, as late as last winter, according to police. They released a photo of the shoe in hopes of making an identification of the human remains.

"We are actively looking at all missing persons reports at this time," Walker said.

Dive Team Scours Tulsa Pond After Human Foot Found
http://www.newson6.com/story/15875338/tulsa-dive-team-scours-pond-where-human-foot-was-discovered
Oct 25, 2011  Ashli Sims, News On 6

TULSA, Oklahoma -- The Tulsa Police dive team spent Tuesday afternoon scouring an east Tulsa pond after a human foot was discovered in the small body of water.

Tulsa Police say a woman was walking her dog just before noon when the dog went into the water and returned with a shoe that contained the foot.

"In an area that I searched earlier you locate a lot of rocks and a lot of sticks and stuff," said Tommy Barbee, TPD Dive Team member.
Barbee has been using his scuba skills to fight crime for eight years. He says it can be rewarding, daunting, and sometimes dangerous.

"After about three foot it goes pitch black, what we consider dark water. There's no visibility whatsoever," he said.

The dive team went outside of the crime scene search area with a News On 6 camera to show you exactly what they're dealing with in this kind of an investigation.

In a matter of moments, the murky green water is swallowed by blackness. You might think our camera was cut off if it weren't for the sound.

"You gotta sit there, relax, and focus on our job. Number one, make sure when we search an area when we come out we can say whatever we're looking for is not in that area," Barbee said.

Barbee says he meticulously searches hand by hand in a grid pattern to make sure no stone is left unturned. But when you're underwater and blind, danger can lurk anywhere.

Divers say it'll likely take several days to completely search the retention pond.

---

**Tulsa Police Drain Retention Pond In Search For Body Parts**


Oct 26, 2011 NewsOn6.com

TULSA, Oklahoma -- The city of Tulsa is working with Tulsa Police to drain a retention pond near 6th and Mingo following Tuesday’s discovery of a body part in the pond.

A woman walking her dog, found a shoe in the pond with the bones of a foot still inside.

Tulsa public works says it could take up to five days to drain. They brought in the equipment to drain the pond at about 8:30 Wednesday morning.

Four pumps are sucking out hundreds of gallons of water from the 18-foot deep retention pond. Police say emptying the pond would be the most effective way to search the area for a possible body.

"We're looking for any additional remains or any evidence with for a possible homicide," said Tulsa Police Cpl. Joe Campbell.

Tuesday, a dog swimming in the pond retrieved a shoe with a foot inside.
"At first I just thought it was a shoe, so I was going to take it away from her and throw it back into the water and let her pull it out again because that's what we normally do," said the dog's owner Heather.

10/25/2011 Related Story: Dog Finds Human Foot In East Tulsa Retention Pond

Tulsa Police’s dive team searched the murky water beginning Tuesday.

"They did not find anything. They had a couple of false positives. They thought they had found something but it turned up to be a stick of wood," Campbell said.

10/25/2011 Related Story: Dive Team Scours Tulsa Pond After Human Foot Found

Now, they wait.

"Working midnight to noon, noon to midnight, until the police department has the water down to a level that satisfies them," Young said.

Because the pond is stocked with fish, police have contacted the fish and wildlife department to help monitor the water as it is released into Mingo Creek. Guards will be posted at the pond 24 hours a day and they ask everyone to keep out.

Meanwhile, Tulsa Police are still asking if anyone has a possible name to a missing person who was wearing the sneaker; call Tulsa Police’s homicide tipline at 918-798-8477.

Body parts found in Garvin County pond; property owner faces murder charge
Aug 10, 2012 DAVID HARPER World Staff Writer/

An Elmore City man who is charged with first-degree murder was arraigned Friday after the victim’s remains were found in a Garvin County pond.

Justin Lee Hammer, 30, pleaded innocent Friday in Garvin County District Court after being arrested Thursday on an allegation that he killed Brandon Duran, his girlfriend’s ex-boyfriend, and then disposed of the body by dismembering it and discarding the pieces in the pond, the Oklahoma State Bureau of Investigation reported.

Draining a pond on Hammer’s property, the investigators found Duran’s remains in five five-gallon buckets and one dog cage, OSBI spokeswoman Jessica Brown said Friday evening.

OSBI agents were alerted to the slaying Wednesday night after a witness told authorities that Hammer had admitted to shooting a man the night before, cutting the body into pieces with a saw, and placing the body parts, cement and water into numerous five-gallon buckets, the agency reported.

The witness claimed to have seen the buckets, blood smears and items used in the killing, the OSBI said. The same witness also told agents that Hammer had gathered several items — including a mop, clothing, and towels — that he apparently used to clean the blood in his house and then burned them, the OSBI reported.
Authorities find buckets of human remains in Garvin County pond

HTTP://KFOR.COM/2012/08/10/AUTHORITIES-FIND-HUMAN-REMAINS-IN-GARVIN-COUNTY-POND/
AUGUST 10, 2012, BY JOLEEN CHANEY

ELMORE CITY, Okla. -- State investigators are waiting for the medical examiner to positively identify human remains found in an Elmore City pond.

Authorities arrested a man who admitted to killing his girlfriend's ex-boyfriend.

Oklahoma State Bureau of Investigation officials said, "A witness not to the murder itself but to some of the items that were used in the murder and perhaps some of the blood from the murder victim" came forward with details about possible evidence in the crime.

Investigators obtained a search warrant and found blood smears and other evidence at Hammer's property east of Elmore City and arrested him.

What Hammer admitted to is stunning.

"He had cut up the victim's body, put the body parts in five-gallon buckets along with cement and water and put them in a nearby pond," OSBI spokeswoman Jessica Brown said.

Authorities drained the pond and found buckets they believe contain the remains of Hammer's girlfriend's ex-boyfriend. "It's just a weird deal, you know," Neighbor Clyde Balentine said. "One of them weird things that happen and you can't explain it."

"It is certainly a disturbing case. Someone who will not only murder but will also dismember to discard a body," Brown said. "That's certainly a very dangerous situation and I'm glad we have this person off the streets."

Headless body found in Chembur lake: 31-year-old slept with victim, then hacked her into pieces

http://www.mid-day.com/articles/headless-body-found-in-chembur-lake-31-year-old-slept-with-victim-then-hacked-her-into-pieces/239073
06-Nov-2013 By Sagar Rajput

The mystery behind the headless body found in Chembur last week has been solved, with the police finally tracking down the missing head on Tuesday.

In a chilling disclosure, the accused told investigators that the victim had arrived at his place, where they shared intimate moments. He then took the victim to the bathroom, and slit her throat. Later, he chopped her body into parts and disposed them at three different locations in garbage bags.
Based on the confession, a police team searched the entire stretch of a nullah passing by Shell colony in Chembur and found the head. It matched the face of a missing woman identified as Kanta Shetty (36), a resident of Sakinaka, who had been missing since October 30. The breakthrough was possible after a missing complaint lodged with the Sakinaka police station was being probed, and the investigations led the Sakinaka police to the accused Prabhakar Shetty (31), manager of a restaurant in Chembur Gymkhana.

Shetty, who lives in the official Gymkhana quarters, was taken in for questioning. He eventually confessed to the murder. He was later handed over to the Chembur police, and took officials to the spot where he had dumped the head. Preliminary investigations revealed that Shetty was in a relationship with Kanta, a distant relative. Kanta stayed with her family in Sakinaka. Her husband died two years ago and her proximity with Shetty increased gradually.

Police sources further revealed that Shetty’s parents had looked for a bride for him and he was to get married soon. This was unacceptable to Kanta, as Shetty had wooed her with promises of marriage. She kept insisting that he get married to her. This led to a heated argument between them.

In his statement to the police, Prabhakar revealed that on the day of the incident (October 30), he received numerous calls from Kanta. As he was unwell, he preferred to stay at home that day and kept informing her about his ill health. Kanta was skeptical about the reasons and suspected him to be dishonest. To check whether he was actually ill, she went to meet him at his home that evening.

**Disposal of body**

According to the police, around 8 pm, Prabhakar wrapped the body parts in three different garbage bags. To avoid any suspicion, he made three rounds from his house to three various destinations in three different auto rickshaws to dump the bags. The first trip he made was to Chembur Lake, where he dumped the torso. The second trip was to Cheetah Camp, where he dumped the legs and hands. And finally, the last trip was to Shell Colony, where he dumped the head in the nullah.

**Hands still missing**

The police have intensified their search for tracing the missing hands. Shetty had informed the police that he dumped the hands and legs together at Cheetah Camp, Trombay, but the police have only found the legs. The
body parts were sent to Rajawadi post-mortem centre, from where it was sent to the Department of Forensic Medicine at Grant Medical College. The accused has been arrested under sections 302 (murder), 201 (destroying the evidence) of the Indian Penal Code. He was produced before the Metropolitan Magistrate Court, Kurla, who sent him to police custody. Cops are yet to recover the weapon.

**Love and murder**
Prabhakar said that around 7:30 pm, Kanta arrived at his home. They were arguing fiercely and Kanta again insisted that he marry her. A few minutes later, they got intimate.

Prabhakar took Kanta to the bathroom, where he had hidden a kitchen knife. He slit her throat and left her to bleed to death. He then chopped her body into parts.

**Child's dismembered body parts found in Chicago lake**
7 September 2015  Andrew Buncombe

'It is unthinkable that someone would dismember a child'

Police in Chicago are involved in a grisly task after the head and other body parts of a young child were discovered in a lagoon.

A search was launched at Garfield Park after someone reported seeing an object floating in the water at the lake on Saturday afternoon.

Detectives discovered the badly decomposed remains, which also included hands and feet, as investigators searched through the waist-high water over the weekend.

Police said on Sunday that officers had found additional body parts, but did not release any further details.

The *Chicago Sun Times* reported that a child's head had been found.

A 20lb weight was also found nearby, authorities said.

Jason Ervin, alderman for the district, said investigators had told him the victim was likely aged between two and
four and said there was no indication the remains were from more than one child.

He said: "It is unthinkable that someone would dismember a child and throw them into the lagoon."

Anthony Guglielmi, a spokesman for Chicago Police Department, said the child’s identity has not been determined. He said detectives were going through Chicago area missing persons cases in search for clues.

He added: "We’ll go on for as long as it takes until we comb every inch of that lake. "We’ll go as far as draining the entire lagoon if it’s necessary."

Severed feet — still inside shoes — keep mysteriously washing up on Pacific Northwest shores

They appear on the sand like any piece of sea detritus. Sometimes they’re found, amid the candy wrappers and cracked shells, by volunteers cleaning up the area.

Other times a vacationer might glimpse the grisly discard from the corner of her eye, a serene walk along the beach interrupted just like that.

As more people learned about these discoveries, they attracted morbid scavengers to the Pacific Northwest shorelines, where the Salish Sea connects waterways along the west coasts of the United States and Canada.

What these scavengers sought remains a prickling curiosity: severed feet attached to running shoes, washed up from origins unknown.

Sixteen of these detached human feet have been found since 2007 in British Columbia, Canada, and Washington State. Most of these have been right feet. All of them have worn running shoes or hiking boots. Among them: three New Balances, two Nikes and an Ozark Trail.

The most recent one turned up earlier this week.

Sure enough, the B.C. Coroners Service confirmed that the shoe came with a dismembered foot. As with the
others, there’s no telling for exactly how long the foot was in the water, but the regional coroner, Matt Brown, said the exact model of shoe had gone on the market after March 2013, indicating that it once belonged to someone who went missing between then and December.

Brown is working with the police to link the foot to individuals who disappeared from the area around that time.

If history is any indication, however, the identity associated with the foot will stay adrift.

Over the years, armchair sleuths and scientists alike have used a number of terms to describe the feet: severed, dismembered, detached, disarticulated.

**Found, but still lost.**

After the first two feet — both right — were found in British Columbia just six days apart from one another, locals began sounding the alarm, and authorities expressed equal surprise.

“Two being found in such a short period of time is quite suspicious,” Cpl. Garry Cox of the Oceanside Royal Canadian Mounted Police told the *Vancouver Sun* in August 2007.

“Finding one foot is like a million to one odds,” Cox said, “but to find two is crazy. I’ve heard of dancers with two left feet, but come on.”

Five more were found in the next year, including one near Pysht, Wash. Speculation increased, as recounted in a 2008 article in the *Toronto Star*:

“Speculation ranges from natural disasters, such as the tsunami of 2004, to the work of drug dealers, serial killers and human traffickers.

“One theory concerns a plane crash off Quadra Island three years ago with five men aboard. Only one of the bodies has been found.

“Other theorists believe the coastline is being used as a body dump for organized crime activity; a third scenario is a serial killer is at work.”

But to the disappointment of many a conspiracy theorist, science suggests more mundane answers.

Writing for the Pacific Standard, Spenser Davis pointed out last year that a study on the Puget Sound found that when a body floating in water is “subjected to the push and pull of its environment,” the bones of hands and feet are almost always the first to fall off.

In British Columbia, two of the feet have since been identified as having belonged to people with mental illness, while three others were linked to individuals who probably died of natural causes.

Foul play is not suspected in any of the other cases, though it hasn’t been ruled out, either.
“All of the ones who’ve been identified so far, there’s no mystery,” Gail Anderson, a criminologist at British Columbia’s Simon Fraser University, told the Daily Beast in 2011. “These people were very depressed, unhappy about life, and were last seen heading toward the water. People jump off bridges. They deliberately wish to disappear.”

This is a fair conclusion, as the city of Vancouver is full of bridges.

But there are other points of strangeness. For one, why did the feet start turning up only after 2007, and why have they continued to turn up with such a frequency since then?

The Daily Beast considered the power of the “Vicious Cycle” theory, which suggests that once people became aware of the phenomenon, they started subconsciously — or completely deliberately, in some cases — scanning the shorelines for shoes.

Also a likely answer.

And yet — it’s hard not to wonder.

“There are so many coincidences taking place,” forensics consultant Mark Mendelson told the Daily Beast in 2011.

“Everybody who jumps off a bridge is wearing runners? Until you can show me something pathologically concrete that this is a natural separation of that foot from a body, then I’m saying you’ve got to think dirty.”

Fears of coastal serial killer after 14 dismembered human feet wash up on beach
http://www.express.co.uk/news/weird/645666/Fears-of-coastal-serial-killer-after-14-dismembered-human-feet-wash-up-on-beach
Feb 19, 2016 By JON AUSTIN  UPDATED: Feb 19, 2016

THERE are fears a serial killer who dismembers victims and throws them in the sea could be at large after it emerged 14 disembodied human feet have washed up in one coastal area.

Investigators have been trying to work out why so many feet have washed up on the west coast of British Columbia in Canada over the past nine years.

The grisly remains began surfacing in the region, apparently without explanation, in 2007.

The last two feet, belonging to the same person, were found this month on Botanical Beach, near Port Renfrew, Vancouver Island, earlier this month.

Officials have so far identified ten of the 14 feet as coming from seven individuals, but the dead person whose feet washed up this month remains unidentified. This means there are between three and five still unidentified dead people who parts have washed up.

A lot of this is simply the quelling of the public imagination. No this is unfortunate and they’re all very sad cases

Coroner Barb McLintock
Most have been feet still in trainers, from a man's foot in a Reebok shoe on Gabriola Island to a black Adidas trainer on the shore of Campbell River.

The case appears even more grisly than that of the mythical Manchester Pusher - a so far legendary serial killer some believe is behind a huge number of bodies being pulled from canals in Manchester.

There have been more than 80 people found dead in the northern waterways over the last decade, but police insist they are mainly accidents or suicide with no serial killer at large.

Following the latest grisly finds on Botanical Beach, BC Coroners Service has also moved to allay fears of anything sinister such as a serial killer, Satanists or even aliens.

Coroner Barb McLintock said it was not thought, as many member of the public fear, to be as a result of "strange serial killers."

She also quashed a less common myth that "funny little aliens" were depositing body parts.

She said: "Some people do think that. Sad but true.

"A lot of this is simply the quelling of the public imagination.

"No, this is unfortunate and they're all very sad cases."

Experts say none of the cases involve foul play and were either suicide or accidents. Ms McLintock added: "We pretty well think we know what happened in every case."

She said the latest feet had the same owner, an as yet unidentified male, whose shoes were New Balance size 12 blue and black trainers.

The owner is thought to have died between March 2013, when the shoe first went on sale in north America, and December 2015.
The coroner said the feet come off naturally during decomposition, and are returning to shore because of the modern type of trainers, with lighter foam and air pockets, which were worn.

She said: "It really didn't come up until we had running shoes that floated so well.

"Before, they just stayed down there at the bottom of the ocean."

Forensic anthropologists found no signs of trauma.

She added: "There's none that have any suggestion of homicide.

"In every case there is an alternate, very reasonable explanation."

But with just feet to go on, and up to five people yet to be identified the rumour of something more sinister has not gone away.

Since 2008 local and online rumours have included them being victims of organised crime gangs or even the illegal human organ trade.

Criminologist Rob Gordon, with Simon Fraser University, said in 2008 a serial killer was one reasonable explanation for missing men and body parts surfacing.
Speaking of that theory now, he said: "When I was raising that possibility, that's all I was doing."

"There were a number of hypotheses floating around — pardon the pun."

At the time five feet washed up in one year.

He said: "In the case of floating feet, it's an open debate about the why's and wherefores.

"People are titillated. And it became very newsworthy and still is." Speculation continues online on local websites.

Gerry Kipling posted on the website of the province.com:

"Why does this stink of the same lack of professionalism that saw numerous women from the DTES go missing but no foul play was suspected then years later we find out they were being skinned alive at a pig farm.”

"How is the conclusion made that these shoes containing feet aren't from murdered persons or that there were no signs of trauma?

"They don't even have the rest of the body to make that kind of statement."

But John St Pierre said: "One was from someone who drowned falling off their boat in Port Moody.

"Several others are from suicidal people who were known to have jumped in the water.

"If you did even a little bit of research you would know that."

**Austrian police find dismembered head**


2016-01-06

Vienna - Austrian investigators have found the head of a woman after earlier recovering parts of her body from two suitcases, in an apparent case of murder and suicide. Officials said on Tuesday the head was found in a block of concrete in a bag attached to the hand of a male corpse submerged in a lake.

They suspect the man strangled the woman and dismembered her before drowning himself.

The male corpse and the bag were recovered by police divers from the waters of Traunsee on Monday, a day after the suitcases were found floating close to the lake's shore near the town of Gmunden, about 80km east of Salzburg.

Police estimate the ages of the two at around 70, but they have not yet been identified.

**6 human body parts discovered in pond in central Tokyo**


June 24, 2016 THE ASAHI SHIMBUN
A severed head, two legs, two arms and a torso were retrieved from a pond in a central Tokyo neighborhood known for its quiet and relaxing atmosphere.

The body parts, found on June 23 in the Bentenike pond of Himonya Park in Meguro Ward, are believed to be from one person who apparently died two or three weeks ago, police said.

Police suspect the body was cut up somewhere else, and the parts were transported to and dumped into the pond.

An 80-year-old man in charge of cleaning the park saw a human leg floating in the pond around 10:30 a.m. and reported it to a nearby police box through a park official, according to police.

A subsequent search of the pond turned up the five other human body parts.

The pond is 50 to 80 meters wide and 110 to 140 meters long. The right leg spotted by the worker was floating near the northern shore. The five other parts were found in the central and other areas of the pond.

The pond is about 3.5 kilometers west of JR Meguro Station.

“The areas around the park are quiet and residential,” said a 72-year-old woman who lives in the neighborhood.

“I was living in peace (until I heard the news).”

According to police and the Meguro Ward government, areas around the pond are accessible to the public 24 hours a day.

Rowboats can be rented at the pond on weekends and national holidays.

Park officials make the rounds of the park once or twice a week.
A man has been arrested over the murder of a two-year-old boy whose body parts were found in a Chicago lake more than a year ago.

Kamel Harris, who was caring for toddler Kyrian Knox and reported him missing from Rockford in September 2015, was charged with his murder on Monday night.

Police say the boy’s blood was found in the carpeting of the 41-year-old’s vehicle.

Chicago Police Commander Kevin Duffin said investigators believe Harris ‘snapped’ and killed the child. They say the child, who was lactose-intolerant, had ingested milk and had been crying most of the day before he was killed.

The FBI positively matched the boy’s DNA with that of a dismembered body found in the lagoon two weeks before he was reported missing.

Kyrian’s remains were found in the Garfield Park lagoon on Chicago’s West Side last year.

The toddler’s mother told police last year the child was staying with Harris and his girlfriend while she moved from Rockford to Iowa.

In November 2015, police said Harris and his girlfriend had been uncooperative with the investigation. Harris was being held on an unrelated charge at the Winnebago County Jail in northern Illinois when he was arrested on Monday night in the boy’s death. Authorities didn’t say what he’s charged with in the other case.

Duffin said Kyrian is believed to have been killed in Rockford, but that Harris is charged in Cook County because the child’s body was found in Chicago and police in that city did extensive work on the case.
Leg found in N.J. likely belongs to Philly suicide victim, cops say

http://www.nj.com/gloucester-county/index.ssf/2017/03/leg_found_in_nj_likely_belongs_to_philly_suicide_v.html
March 03, 2017  By Matt Gray | For NJ.com

NATIONAL PARK -- A leg found washed up on the Delaware River shoreline last weekend likely belongs to a man who jumped from a bridge in Pennsylvania, according to officials in that state.

The case began with a missing persons report late last year, explained Trooper Chris Holdeman, with the Pennsylvania State Police.

Authorities believe the man, who is not being identified, committed suicide by jumping from a bridge over the Schuylkill River.

His body was found on a bulkhead near the mouth of the Schuylkill and Delaware rivers on Feb. 16 and was positively identified days later. Police believe the injuries to his body, including the loss of both legs, were caused by a boat propeller, Holdeman said.

Given the circumstances of the discovery, officials initially believed they had found a homicide victim, but then learned that the state police were looking for a possible suicide victim in that area.

A woman walking her dog along the river in National Park on Sunday found the lower portion of a leg and foot. National Park is located directly across the river from where the man's body was found.

A DNA analysis is being conducted to confirm that it belongs to the Pennsylvania man. That process could take several weeks, officials previously said.

Extra Reading:

The Kingsbury Run Murders aka "The Torso Murders"
by Dr. James J. Badal

Between 1935 and 1938, a serial killer murdered and dismembered at least 12 victims - only 2 of which were ever positively identified. This killer is officially unidentified, yet researchers of today are quite certain who committed these horrible crimes.

Cleveland Torso Murderer
https://en.wikipedia.org/wiki/Cleveland_Torso_Murderer

The official number of murders attributed to the Cleveland Torso Murderer is twelve, although recent research has shown there are as many as twenty. The twelve victims were killed between 1935 and 1938. But some, including lead Cleveland Detective Peter Merylo, believe that there may have been 13 or more victims in the Cleveland, Pittsburgh, and Youngstown, Ohio, areas between the 1920s and 1950s. Two strong candidates for addition to the initial list of those killed are the unknown victim nicknamed the "Lady of the Lake", found on September 5, 1934, and Robert Robertson, found on July 22, 1950.
Skeletal Remains Recovery
By Mark Phillips

Clear Water makes it MUCH easier
Zero visibility makes it extremely difficult.

As unpleasant as it is, one of the job functions of a Public Safety Diver is to locate, document, preserve and collect skeletal remains. For brevity, this text will only discuss skeletal remains and not decomposition or partial decomposition body recovery.

Bodies in water decompose. Decomposition is at a slower rate but still occurs. The rate of decomposition will fluctuate depending on the characteristics of the body of water. If the water is stagnant and warm, bacteria is likely to be present in abundance. Bacteria and heat will greatly speed up body decomposition. Moving water can have an effect on a body as it goes through the stages of decomposition and when the skin, connective tissues or clothing are no longer able to hold the bones together, moving water can cause the bones to scatter.

In the water, aquatic life can also affect a body and the resulting skeletal remains. In fresh or salt water, a human body is just another food source and depending on the size of the critter, bones may be scattered over a wide range as bits are drug or carried away.

In salt water it is not uncommon to find large concentrations of crabs and shrimp near a decomposing body.

Hyoid Bone The yellowish bone in the image, it is horseshoe shaped and is the only bone in the body that floats, unconnected to another bone. It can be felt by pressing a finger into the crease where your chin becomes your neck. http://www.yorku.ca/earmstro/journey/larynx.html

The only bone in the human body not connected to another is the hyoid, a V-shaped bone at the base of the tongue between the mandible and the voice box. Its function is to support the tongue and its muscles. Typically if the hyoid bone is fractured, it is an indicator of strangulation.
Once the flesh and tissue have gone, all that is left of a body is its skeleton. There are 206 bones in the adult human body and any single one of those 206 could be the only indicator of WHY that body ended up in the water. The processes of skeletal remains recovery is very slow and tedious in clear water and painfully slow in zero visibility environments. Proper scene and dive preparation will help keep things organized and can actually speed up the process.

Bones are generally classified according to their appearance – long, short, flat or irregular. The bones in the arms and thighs are examples of long bones. The bones in the hands and feet are short bones. The shoulder blades, ribs and sternum are flat bones and the spinal bones are irregular.

Fortunately each bone has its own place and it is possible to determine where each bone originated. This being the case, it is possible to determine if the body was intact and decomposed on the spot. If bones are missing, it is important to know which ones and your search pattern must expand. Finger bones may still have rings around them.

Jewelry items OR BONE PINS may be found in areas relative to the body parts on which they were worn or attached. Necklaces, pendants, brooches, belly button rings, toe rings or other items used in body piercing will all have significant location relative to where they were worn.

In zero visibility it will be impossible to identify each bone or note anything unusual about them. It will also be unlikely that any photographs of the bone(s) will be useful. In clear water it may be possible and every effort should be taken to photograph the bones, fragments or other items found within the search area. While we as Public Safety Divers are not qualified to make an assessment of why that person’s bones were found at that site or what happened to them to cause them to be there in the first
Bones found with round holes in them could cause reason to look for a firearm in or near the search area.

Once a search area has been defined, it is impossible to know what other items are related to the skeletal remains. Therefore, everything is assumed to belong and is documented and collected. Clothing, pieces of cloth, odd objects or items that could be carried in a pocket or purse or even items such as rope or wire fragments could be critical clues. In the event of a skeletal remains recovery, no item is insignificant.

In the recovery of any skeletal remains, it is mandatory that the exact location of the body be marked, so that the dive team can return to the site for a further search even years later. Using a metallic marker that is photographed and metal stamped prior to placing it in the water will help. The marker will be documented by measurement and or GPS and should be easily found with a metal detector even if it is entirely hidden by silt.

While it is not common, it is not unheard of for a dive team to find a vehicle in the water that contains the remains of the driver, passengers or homicide victims. If the entry into the water was violent, it is possible that the remains of the victims will be mixed or overlapping. If this is the case, to prevent the possibility of losing evidence, it might be more prudent to leave the remains intact and recover them inside the vehicle. Photographing the interior if possible will help since this provides investigators more to work with but ultimately the decision on how to recover the remains should be left to the AHJ Investigator.

The condition of the remains themselves will determine how the skeletal remains will be collected. If connective tissue still exists and the bones are still attached to each other, all possible effort should be made to preserve them intact. A mesh body bag or a mesh dive bag that can be securely closed underwater and that will allow fluids and water to drain without allowing the smallest bones or items to escape, is recommended. Bones tend to shrink if they dry so it will be very important to ask your local medical examiner how they want skeletal remains preserved.

George Shotton Charged With Murder 3 Years After His Own Death

In 1961 three boys in Wales discovered skeletal remains behind a rock in a cave. Upon examination, it was concluded that the body had been sawn into three sections.

The pelvis and skull and long bones indicated that the remains were of a woman about 5 feet 4 inches tall. The teeth and skull suggested the woman was between 20 and 28 years old. There were a few scraps of cloth and a wedding ring dated to 1918 recovered with the remains.

Further investigation discovered the victim to be Mamie Stuart, wife of George Shotton.

George was also married to another woman at the time. Mamie went missing in late 1919. In 1920 George was charged with bigamy and at his trial the prosecutor accused him of killing Mamie. Without a body, nothing could be proved.

40 years later the skeletal remains of Mamie Stuart were discovered and identified. George Shotton was charged with murder in 1961 ... but had died of natural causes in 1958.
Clothing items found on the remains that are collected should be left in place. But it is important to remember not to store wet cloth or clothing in plastic bags. It is unlikely that you will be asked to store bones in plastic bags but important to know better just in case. Cloth stored wet in plastic propagates the development of mildew and bacteria that can ruin potential evidence. Cloth items found near the remains should be recovered and stored in paper bags.

Victim identification can be made using skeletal remains and/or items, object or personnel affects located in the near vicinity. Items such as eye glasses, rings, jewelry, pocket items or even keys can lead to identification. Heavier, denser personal items such as leather belts and belt buckles or shoes will last longer underwater and can assist in identification. Bones themselves can also lead to positive identification if comparative information is available. Broken bones leave scars that are able to be seen and identified by X-ray.

It is important to collect water samples with the remains.

Silicone shelled, microscopic algae live in distinct colonies in natural bodies of water. The diatoms have distinctive shells that are identifiable under magnification. A diatom test on the marrow of the bones can reveal whether or not the victim was alive when they were in the water. If the person was alive and ingested or inspired water and drowned, diatoms would have been able to enter the bloodstream. As their heart continued to beat, diatoms would have been deposited into various internal organs and eventually into the bone marrow.

There is evidence to suggest that no two diatom colonies are alike and that colonies are indigenous to the specific body of water where they are discovered. This would mean that the diatom shells could positively identify

**Louisiana Pair Convicted in Slaying of Couple**

http://news.ewoss.com/articles/D89A51CO0.aspx

April 06, 2005

VILLE PLATTE, La. (AP) - Two bikers were convicted Wednesday of killing another couple from their motorcycle club, hacking off their legs with a chain saw, then sealing the remains into plastic boxes.

Larry Suratt and Cynthia Anderson face mandatory sentences of life in prison without parole for the second-degree murders of Larry Cook and Sheila Kirby, who had lived near Denison, Texas, before coming to Louisiana.

The couple's corpses were found in the boxes in Bayou Cocodrie in 2003.
specific bodies of water and match to diatoms recovered in bone marrow.

Dental

Teeth survive much longer than the bones of a skeleton. Teeth can survive a range of destructive conditions that destroy bone – even intense fire. Teeth can provide an indication of age and if corresponding dental x-rays are available, teeth can afford positive identification of an unknown victim. From the size, condition and number of teeth, a forensic odontologist can determine much about the age, race and even sex of the remains.

When recovering teeth, it is assumed that at least a lower jaw partial or complete skull is present. Teeth in a location without a reason do not offer much useful evidence. Efforts to locate the skull or lower jaw should be made if skeletal remains are located without a skull. Unlike other parts of the body that will hold an air cavity, the skull will not float or become buoyant during decomposition. If the head is severed from the body and disposed of separately, as in the Durst Case in Galveston, the relative importance of the head will greatly increase. It may be impossible to prove a homicide without a skull showing the wound.

It is possible that the lower jaw will separate from the skull as the skull decomposes. The lower jaw one will usually hold teeth in place and if found, part of the investigator's report should include the quantity, condition of the teeth, position on the jaw, color and any unusual or remarkable damage. A secondary search of the area should be made if teeth are missing from the skull or jaw bone.

In some instances, depending on the condition and length of exposure, DNA can be extracted from teeth.

Mass Casualty

While we will not go into depth concerning mass casualties, it is important to be aware of the concepts for managing mass fatality due to a catastrophic incident needs to be addressed.

Instances of this type would include severe body fragmentation that results from an airplane crash. It could include long recovery times relative to a mass transit catastrophe.
like the bridge collapse on South Padre Island in 2001 or the bridge collapse in Minnesota in 2007. While these examples place the event in and under water, severe body fragmentation is not limited to just these examples. Other events that can cause severe body fragmentation could include suicide/homicide bombers, mining explosive accidents, building collapse, flash floods or even suicide by ferry.

For the sake of brevity, we will focus on a worst case scenario; severe body fragmentation. This occurs in the crash of airliners and the effect was probably most publicized in the aftermath of the crash of ValueJet 592 on May 11, 1996.

According to Roger Middleman the Chief Medical Examiner for the Miami-Dade County Medical Examiner Department, over 4,000 fragments of human remains resulted in the crash. There were 110 people on the plane and the quantity of remains recovered represented only about 25% of the estimated weight of the passengers and crew. By 2000, 119 fragments were identified representing 70 of the 110 people who perished.

The DC-9 crashed into the Florida Everglades at about 460 miles per hour from an angle between 70 and 80 degrees. The surface at the point of impact was a limestone rock layer covered by about eight feet of water. The collision disintegrated the plane and its passengers.

The impact was so great that one of the investigators said “I found a leg that was intact and still had pants on. In the pocket was a nickel that was bent from the force of the crash.”

In such a catastrophic event, special consideration needs to be given to a wide variety of issues that will not commonly be related to skeletal remains recovery. These will include and are not limited to:

1. Bio-hazards in the crash zone
2. Extraordinary manpower needs to conduct the search
3. Personal protection for personnel
4. Storage facilities for severe fragmentation
5. Refrigeration needs
6. Cataloging and storage of items, parts and pieces
7. Documentation and photography needs
8. Long term storage of items, parts and pieces
9. Trays, bags, evidence markers and containers
10. Family, media, rehab needs and facilities
11. Portable restrooms
12. Morgue requirement on and off site
13. Decontamination requirements
14. Additional basic equipment
15. Medical care for responders
16. Boats, tents, tables, chairs, garbage bags ....

The list will continue to grow the more we plan.

Other considerations must be given to the workers in regard to Critical Incident Stress and after fact counseling. Family members on site or working with the investigation will need support.

The ValueJet search ended after 7 weeks. The results of the intense search were 4,282 individual fragments. The initial response lasted 29 days and employed around 120
workers a day. This type of event is beyond the capabilities of even a large municipality. While you can expect governmental assistance and resources, they are NOT First Responders. You are.

The only way an event resulting in severe body fragmentation can be handled successfully is by preplanning far in advance and by revising the plan on a regular basis. Planning and preparation are the only way that an emergency response agency will be able to handle such an event.

Knowing where additional resources are as well as how to find needed resources are not enough. Being able to access and activate those resources in a manner in which they will be useful is imperative to the successful investigation and recovery processes of such an event. Such planning can fit a variety of major incidents and be modified as needed. Such was the case on September 15, 2001.

During the night September 15, 2001 a barge hit a bridge support of the bridge connecting the coast with South Padre Island, Texas. The crash knocked out an entire section of the bridge taking with it the water and power lines. With no lights and no warnings people driving across the bridge plummeted into the Gulf of Mexico.

The Texas DPS Dive Team was called to locate and recover the vehicles. The bodies of victims were removed once the vehicles were recovered and secured. The fire department assisted using their Jaws of Life.

Six vehicles went off the bridge that night. Of the 11 people who plummeted into the water, only 3 survived. The last victim was recovered 9 days after the initial incident.

Mass casualty is a potential happening anywhere, any time.

A successful rescue or the recovery of multiple victims will depend on training, preparation, preplanning and a willingness to do what most will not.

*Photos courtesy of the Texas DPS Dive Team.*
Water Pollution

As our rivers, lakes and shorelines become more heavily populated, our diving population has to become more aware of the potentially hazardous presence of pollution in the water. Collectively, our waterways and the sea have been traditional dumping grounds for pollutants of many types and degrees of danger. In 1991, a Los Angeles Times article indicated that 2000 U.S. beaches were closed due to sewage spills. California, as always, a leader had 745 closures with 588 occurring just in southern California. This was quite probably only a fraction of the closures that would have occurred if consistent and regular monitoring was being done across the board. The lack of any standardized program for monitoring our waterways is clearly a problem.

Flush Areas?

Areas of special concern are harbors and similar areas which do not "flush" well; rivers, especially those with high levels of industry on the shores; sewage outfalls which go out to sea but are often overloaded and areas which have their deposits of soft, silty materials dropped as the currents reduce their velocities in dispersal areas. Heavy metal contamination, for example, has caused a major problem with the dredging of a large marina entrance due to the fact that hazardous levels of contaminants including heavy metals, have been identified in the silt and the material cannot be pumped or dumped deeper into the sea as is commonly done. It has been estimated that there are on the order of 15,000 chemical spills that enter our water areas each year in the U.S. alone. The contaminated areas are growing and now include many recreational diving areas as well as scientific study sites and search and rescue operations.

The health consequences of the water pollution have not been quantified by careful study but many local health professionals are concerned with infectious and immunosuppressed patients who are ocean swimmers, lifeguards and divers. Until adequate epidemiologic data is available the recourse would appear to be logically focused upon conservative practices in selecting dive sites and conditions.
This increase in areas of pollution is a worldwide problem and has effected many diving operations. Diving in polluted water requires additional precautions and, in many instances, sophisticated equipment and procedures. Avoiding diving in areas with high potential for pollution, particularly after heavy rains, is fundamental in urban or industrialized areas.

**Microbial and Chemical Hazards**

The problem centers around the fact that microbial and chemical hazards can affect the human body by skin contact, entry through orifices and invasion through the skin. The number of specific hazards and their relative severity is beyond the scope of this presentation. The following list was produced in the NOAA Manual and the details were obtained from the medical literature.

**Vibrio** - 34 species of this family of bacteria are known and cholera and El Tor vibriones are among those known to be pathogenic to man. Cholera vibriones have recently been found in Santa Monica Bay in California and have raised concerns although it is not known to have produced any disease. Other vibriones may be anaerobic and produce disease states such as purulent otitis, mastoiditis, and pulmonary gangrene. V. Proteus found in human fecal material is a common cause of diarrheal disease. V. Vulnificus is found in sea water.

**Enterobacteria**

**Escherichia** - found widely in nature, occasionally pathogenic to man, produces carotenoid pigments and can often be recognized by the orangish pus. E. coli, which has some pathogenic strains is often found in fecal material, and can produce urinary tract infection and epidemic diarrheal disease.

**Shigella** - produces dysentery

**Salmonella** - 1000 serotypes, ingestion can produce gastroenteritis including food poisoning, typhoid and paratyphoid.

**Klebsiella** - can produce pneumonia, rhinitis, respiratory infection.

**Legionella** - causes Legionnaires disease and Potomac fever. Perhaps inhibited in salt water.

**Actinomycetes** - causes a "ray fungus" actinomycosis an infectious disease in man which inflames lymph nodes, develops abscesses, can drain into the mouth causing damage to the peritoneum, liver and lungs.

**Pseudomonas** - pathogenic to man, "blue pus" formed by some pseudomonas infections can lead to a wide variety of
infections including wound sepsis, endocarditis, pneumonia, meningitis. It is known to flourish in dark, warm, damp places, i.e. inside hoses, bladder compartments and similar places that are not cleansed after being infiltrated by contaminants.

**Cryptosporidiosis** is a gastrointestinal disease caused by the parasite *Cryptosporidium parvum*. It causes severe diarrhea from getting the parasite in the mouth while drinking or swimming.

**Viruses** - infectious agents which can result in fevers (frequently severe), mononucleosis, and a wide range of disease states.

There are seven currently recognized hepatic viruses:

<table>
<thead>
<tr>
<th>Type of virus</th>
<th>Route of Transmission</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Fecal-oral</td>
<td>Common, no chronic component</td>
</tr>
<tr>
<td>B</td>
<td>Blood-borne</td>
<td>DNA virus, 5-10% chronic</td>
</tr>
<tr>
<td>C</td>
<td>Blood-borne</td>
<td>RNA virus, 50-80% chronic</td>
</tr>
<tr>
<td>D</td>
<td>Blood-borne</td>
<td>RNA, needs prior Hep B to exist</td>
</tr>
<tr>
<td>E</td>
<td>Fecal-oral</td>
<td>Asian, rare USA</td>
</tr>
<tr>
<td>F</td>
<td>Fecal-oral</td>
<td>Existence debated</td>
</tr>
<tr>
<td>G</td>
<td>Blood-borne</td>
<td>Being evaluated clinically</td>
</tr>
</tbody>
</table>

**Parasites** - many types with all manner of effects, all bad, can are found in polluted water. Cercaria, schistosomes are examples.

**Chemicals** - There are over 15,000 chemical spills in the U.S. waterways each year and many of these are releasing chemicals that are incompatible with man and the equipment that is worn.

As detailed information becomes available on this issue the divers will become sensitized to the need for preventive measures before, during and after diving. At present the scientific and public safety diving communities are developing techniques for isolating the diver from the potential problems and decontaminating all exposed elements of the diving equipment. It appears eminent that the recreational community will feel the need to exert greater care in the future.

It is becoming increasingly important to develop an understanding of the variations in the local conditions to which individuals expose themselves. Some areas become particularly hazardous following heavy rains, hot weather and windstorms. Local health authorities can usually be called for advice regarding any tests that have been performed and the results. They should also be able to identify areas of high concentrations of pollutants that should be avoided.

**What Measures can be taken?**

When diving in areas where pollution is suspected or expected the following issues are worthy of evaluation.
1. The individual diver should consider the need for appropriate vaccinations and inoculations. Many of the diseases can be avoided if the individual has taken the appropriate "shots". However, these vaccinations and inoculations must be done in advance and it is recommended they be identified and included as part of the requirements of team membership, as well as boosters scheduled as needed.

Some that should be considered are:

- Hepatitis A, B and C. (There is no vaccine currently available for Hepatitis C).
- Cholera,
- Polio
- Tetanus.
- Typhoid, Smallpox and Diphtheria

2. Pollution and filth are often associated. If the water contains obvious trash and garbage it is quite probably an unhealthy diving environment and another location should be selected (for training?). If the water looks nasty it probably is nasty!!

3. Many diseases have an incubation period before they exhibit symptoms. Medical advice is as close as the phone and early diagnosis and treatment can sometimes be improved if the doctor understands that an individual may have been submerged in polluted water.

4. Information on chemical spills can be obtained from the Chemical Transportation Emergency Center (1 800 424 9300 US).

5. "When in doubt- Check about"

What does NOAA recommend?

A basic procedure if one has to dive in high risk water involves reducing the exposure of the diver. NOAA has pioneered a sophisticated SOS (suit over suit) system that will virtually isolate the diver from any contact with the water. This system is somewhat complex inasmuch as it requires complete system integrity from the times the diver dresses out until the system has been decontaminated following the dive. Strict procedures are followed to ensure that the diver's body does not contact the fluid in which it is immersed.

Previously, many public safety divers wore a single dry suit and a full face mask during their dives. However, Stephen Barsky now states that "Full-face masks only provide minimal protection and should only be used in environments where the pollutants are known, and do not pose a threat of death or permanent disability. In environments where the pollutants are not known, or where they lead to death or permanent disability, a helmet should be worn connected to a mating dry suit with mating dry gloves. This is considered the standard today." (See Reference below)

If good seals are involved and the diver is effectively rinsed, scrubbed down and rinsed again prior to breaking any existing seals, the probability of exposure to the pollutants can be minimized. Special care must be taken to clear (or clean?) hoses and fittings that interface with the life support system. A failure to rinse bladders and hoses which may later be linked to the diver's mouth or lungs could provide a path to the host days after the dive. The use of snorkels, alternate air sources, and oral inflation devices and hose connections should all be given
careful attention since they can carry contaminants directly into the mouth. Positive pressure, "self-bailing" breathing systems have definite advantages in that they resist flooding.

In order to help reduce their exposure to contamination, recreationally equipped divers may be able to reduce, not eliminate, their exposure. Such equipped divers are advised to place their regulator in their mouth and their mask over their nose before entering suspect water and keep both in place until they have safely exited the water and been decontaminated. There WILL be exposure if there is direct skin contact, water leaking into a recreational mask and contact and possible ingestion through the mouth held regulator.

Polluted water is a fact of our lives. The degree of pollution can only be mitigated through education and the "upstream" elimination of the sources of the contaminants. Knowing there is the potential of exposure to life threatening disease, vaccinations should be mandatory. The attitude that careful rinsing of diving gear is a waste of time "cuz it’s just going to get wet again next time it is used" should must be replaced with the attitude that one should begin every dive with clean gear.

References:
Glen Egstrom, Ph.D
Medical Seminars, Inc. 1992

Colwell, et.al. Microbial Hazards Of Diving In Polluted Waters, Maryland Sea Grant Publication UM-SG-TS-82-01.


Not a dive call but...

Charlotte Bay accident: Man spent two hours trapped underwater in excavator ordeal
February 8, 2017 Ben McClellan, The Daily Telegraph

The incredible will to live of a man trapped for more than two hours in a dam has been credited for his survival.

Emergency services are amazed the Charlotte Bay man survived the ordeal.
Picture: 9NEWS

Daniel Miller, 45, was trapped by the roll bar of his excavator when it slid into the dam on his property at Charlotte Bay, near Forster, on the mid north coast at 2.30pm on Wednesday.

Mr Miller managed to arch his back to bob his head above the waterline and cry for help sporadically during the ordeal.
Luckily, a neighbor 500m away heard him and alerted emergency services.

A delicate rescue operation involving NSW Fire and Rescue and the Rural Fire Service managed to extricate Mr Miller and the dam was drained as hydraulic equipment was used to free him.

A firefighter jumped into the water to help Mr Miller while his colleagues used a range of rescue equipment and techniques to steady the excavator.

Mr Miller was rushed to John Hunter Hospital, in Newcastle, where he remains in a stable condition.

Foster NSW Fire and Rescue Captain Paul Langley said Mr Miller would not have lasted much longer if help had not arrived.
“He is a very lucky person. The guy’s face is all that was sticking out of the water,” he said.

“He was pretty stressed and had taken in a lot of water.”

Forster Deputy Captain Steve Howard said he was amazed Mr Miller survived for two hours.

“How he kept his back arched with is nose above the waterline was quite incredible for that amount of time. I don’t know how he has done it but obviously the will power to live,” he told Channel 9.

He remains in a stable condition in hospital.

Picture: Top Notch Video Pty Ltd

The 45 year old was taken to the John Hunter Hospital in Newcastle after two hours in the water.

Picture: Top Notch Video Pty Ltd.

PSDiver Magazine Issue 116
Continuing Education

CE CHALLENGE

As a team, review the articles presented and select one or more that offers similar diving conditions to your service region. Once selected, using the event(s) featured, outline a tabletop scenario for your team to engage with.

Once you have developed the scenario, PREPLAN a team mission that will mimic the original events. Include in your preplan such things as known bottom conditions, environmental hazards, biological hazards, a review of each team member’s medical “Fitness to Dive” authorizations and their inoculation or vaccination records.

Other things to include in your preplan is a list of divers that qualify for the dive and a determination of that criteria and what it entails.

Include immediately available equipment, equipment that is available but may be delayed and resources that could be required that are provided through Mutual Aid agreements.

Determine the potential of contaminate exposure the divers will incur and include a decontamination element in your preplan. Include the steps to take if you have a diver in distress on the surface or underwater. Verify that you
have appropriate measures in place that will allow a rapid rescue attempt.

Include the potential need for documenting a found object, the level of documentation required by the local Medical Examiner or Forensic Pathologist as well as the required methods of preservation, storage and transportation to that office. Fire, EMS or Independent teams usually are released from the chain of evidence once the object located hits dry land. Not all teams function that way. However, ALL teams should know the requested or required steps in which evidence they recover is handled, documented, transported and preserved.

Depending on your scenario, determine if you have appropriate collection vessels. Discuss the potential need and include a plan of action if need overwhelps the capacity and where and how you will be able to obtain additional containers when on site.

As a team, review each element of the scenario you have created and review your dive team operational guideline or SOP. Do the actions within your scenario meet or exceed the written guideline? Does the written guideline include procedure or practice you could employ in your scenario? If not, include the addition of a review and modification of your operational guidelines.

When the tabletop scenario has been developed and discussion exhausted, then, as a team, move the tabletop scenario to a safe and secure dive site and use the scenario details to conduct an actual search and recovery human body parts.

Do not chop up one of your divers.

Instead, use the tennis shoe you filled with concrete as your target. But since it was such a brilliant idea at the time and you filled a few shoes with concrete, have one person toss them into the search zone you have previously determined. Toss all or no less than 2.

No less than 2 is important. The TARGET of the search will be identified -Blue Nike runner, lace up top etc. The second shoe is not to be mentioned but IS to be thrown into the search zone in such a way the diver will find it BEFORE the target object.

By “salting” the search zone with a like item, once – or if, discovered, you will have an indicator of how efficient and effective the diver is performing the search.

If more than one object is to be located, divers can be rotated in to continue searching until they have either discovered them all or missed. The zone in front of the diver should be resalted.

Each diver should perform the function of Primary Diver, Line Tender and Backup Diver at least twice.

Because you determined the necessity of decontaminating your divers when they exit the water, if possible, include the local fire department in your drill.

Prior to your training day, contact the local Fire Department and tell them what you are doing. Describe the necessity of decontamination and offer them the opportunity to conduct some has-mat decon training.
during your own event. This will give both groups the opportunity to learn and work together.

When the scenario reaches its conclusion and before team members begin to leave, conduct a debriefing of the scenario.

The debriefing should not be a verbal repeat of the scenario but an honest evaluation of the actions and outcomes of the experience. What did we do right? How did we know or determine those actions? What did we do wrong? What elements or issues caused a failure of the system we put in place? What steps can we consider that could correct or improve or functionality?

Individually, divers should be afforded the opportunity to comment on the same questions but on a personal level. What went wrong when they were alone that they were able to overcome? What element was lacking or involved that created the problem? What, if anything, can be done to prevent the issue from becoming a problem in the future? Is there a training or a piece equipment that could be adjusted that would benefit the diver if the same or similar circumstances occurred?

Each diver, should have the opportunity to present and answer these questions. Each person involved in the scenario, including guests invited to participate, should as well.

Finally, after the day is concluded, equipment cleaned, repaired, and stored to mission ready condition, share your experience with us. If you had questions that were unanswered by the events of the day or suggestions other teams might prosper from, share.

You can email Mark directly (psdivermontly@aol.com) or comment in the Yahoo Discussion Group, PSDivers Public Safety Diver Forum or our Facebook Group Public Safety Diver – PSDivers Group.

It is the consequences or risk that we are concerned with.

Recovering biological objects exposes our divers to potentially fatal pathogens, period.

If we willingly expose ourselves to know and unknown hazards, if those we ask are willing to do the same knowing do we each have the necessary skills, knowledge and experience to overcome them?

What we do to prepare for hazards, exposures and the vast unknowns is how we will build divers and reduce the consequences of risk. But to do it, we need to develop and work within systems designed to keep us and our divers alive and well. The systems we describe as risk assessment shadow every aspect of our work. They must allow for dynamic changes and must ultimately afford our team members the ability to fail safely.

We want to talk with you, not about you.

**What are you going to do next?**
Free Course: Crime Scene First Responder

The International Crime Scene Investigators Association announced today their first online course, free to all law enforcement, anywhere in the world. The course is a refresher for patrol officers as first responders at the crime scene.

The course is hosted on the Law Enforcement Learning site, which requires registration and verification as a law enforcement professional.

"Crime Scene First Responder for the Patrol Officer" will review the steps involved at the scene for the uniformed first responder, and demonstrate the importance of this task by actual case work. Students who complete this course will receive a certificate from the International Crime Scene Investigators Association.

You can learn more and register here.

About ICSIA

The International Crime Scene Investigators Association was created to assist law enforcement personnel who are involved in the processing of crime scenes. The discipline of crime scene processing is such a unique field in forensic science and law enforcement that this discipline needed its own organization. Crime scene processing is a multidisciplinary function. Crime scene processors must have a working knowledge of all the disciplines in forensic science and apply that knowledge to the documentation of the crime scene, identifying the fingerprint evidence, and the physical and testimonial evidence left at the crime scene. Find out more about us at icsia.org.

Training Courses and Seminars

June 20-22, 2017
In-House Side Scan Sonar Training

We will be hosting a three (3) day side scan sonar training at the Seacoast Science Center in Rye Beach, NH. Practical sessions on UNH Gulf Challenger, based in Newcastle, NH. Participants will develop a thorough understanding of sonar image analysis as well as get hands-on experience with single beam sonars such as the dual-frequency Klein 4900 and the high-speed, Multi-Beam Klein 5000 V2.

Training limited to 30 seats
Make sure you register early!

For reservations:
contact Sales@KleinMarineSystems.com or call Carol Morrissey at +1 (603) 893-6131 Ext. 272

Download the 2017 Training Information
EdgeTech Announces 2017 Sonar Training Seminar

EdgeTech, the leader in high resolution sonar imaging systems and underwater technology, will be holding their annual sonar training seminar in New Bedford, Massachusetts September 26-28, 2017.

This comprehensive course will cover sonar theory, operational training, basic system maintenance and post processing data for all of EdgeTech’s standard side scan sonar, sub-bottom profiling and combined systems.

The format for the 3-day seminar includes 2 1/2 days of classroom instruction and 1/2 day at sea.

Topics and systems to be addressed include the following:

- 4125 Side Scan Sonar Shallow water side scan sonar operations
- 4200 Side Scan Sonar Offshore multifaceted side scan sonar solutions
- 3100 Sub-bottom Profiler Sub-bottom profiling system for various operations
• 6205 Side Scan/Bathymetry Combined side scan sonar & MPES bathymetry system
• 2000 Series Combined Systems Combined side scan/ sub-bottom profiler systems
• Acoustic Release Systems Push Off Release Transponder Pop-up recovery package

For additional information or to reserve your spot please contact Amy LaRose Tel: +1-508-291-0057 Email: Amy.Larose@EdgeTech.com Space is limited.

IMPORTANT NUMBERS:
Chemical spill information can be obtained by calling 1-800-424-9300.
DAN Medical Information Line at 1-919-684-2948 DAN operates a 24-hour emergency hotline (1-919-684-9111) to help divers in need of medical emergency assistance for diving or non-diving incidents
Centers for Disease Control and Prevention
1600 Clifton Rd. Atlanta, GA 30333, USA
800-CDC-INFO (800-232-4636)
National Suicide Prevention Lifeline
Call 1-800-273-8255 Available 24/365

First Responder Support Network
The mission of the First Responder Support Network is to provide educational treatment programs to promote recovery from stress and critical incidents experienced by first responders and their families.

These training agencies have recognized PSDiver Monthly as a valued addition to their programs and Continuing Education requirements.

Public Safety Diving Association (PSDA)
ERDI
Life Saving Resources
Lifeguard Systems – TEAM LGS
Dive Rescue International

Crisis resources.

We welcome all training agencies and organizations to participate. For details, email PSDiverMonthly@aol.com