Scuba Diving Merit Badge

Troop 344/9344

Pemberville, OH

Scuba Diving Merit Badge Requirements

1. Do the following:
   a. Show that you know first aid for injuries or illnesses that could occur while scuba diving, including hypothermia, hyperventilation, squeezes, decompression illness, nitrogen narcosis, motion sickness, fatigue, overexertion, heat reactions, dehydration, injuries by aquatic life, and cuts and scrapes.
   b. Identify the conditions that must exist before performing CPR on a person, and explain how to recognize such conditions. Demonstrate the proper technique for performing CPR using a training device approved by your counselor.
2. Before completing requirements 3 through 6, earn the Swimming merit badge.

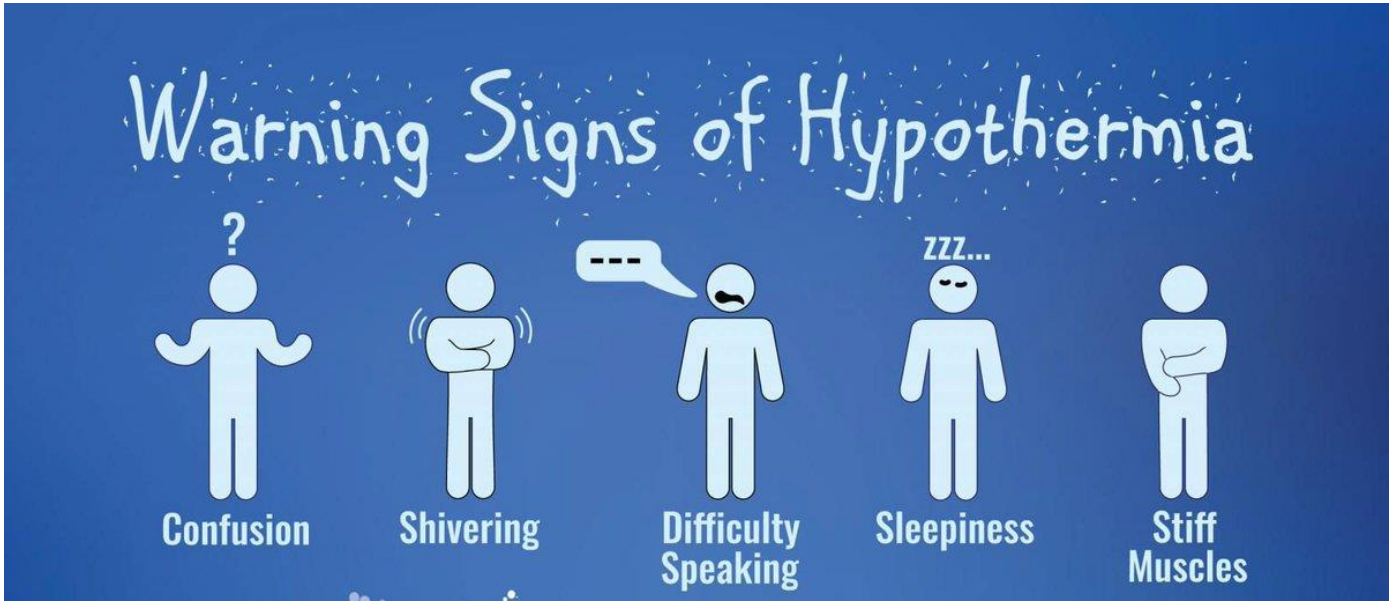
Scuba Diving Merit Badge Requirements

3. Discuss the Scuba Diver's Code with your merit badge counselor, and explain the importance of each guideline to a scuba diver's safety.
4. Earn an Open Water Diver Certification from a scuba organization recognized by the Boy Scouts of America scuba policy.
5. Explain what an ecosystem is, and describe four aquatic ecosystems a diver might experience.
6. Find out about three career opportunities in the scuba industry. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.

Requirement 1a

Show that you know first aid for injuries or illnesses that could occur while scuba diving, including hypothermia, hyperventilation, squeezes, decompression illness, nitrogen narcosis, motion sickness, fatigue, overexertion, heat reactions, dehydration, injuries by aquatic life, and cuts and scrapes.

Hypothermia



- Occurs when body cannot make heat as fast as it loses it.
  - Internal body temperature drops below 95°F.
- Early signs include shivering and bluish lips
- May result in loss of muscle strength and coordination.
- It may become difficult to think clearly or do simple tasks.

First Aid for Hypothermia

- Anyone who starts to show signs of hypothermia should immediately be taken out of the water, thoroughly dried, put in dry clothing or wrapped in blankets, and moved to a warm place.
- Remove wet clothing and wrap victim in warm covers.
- Apply direct body heat.
- Re-warm neck, chest, abdomen, and groin first.
- Give warm, sweet drinks if conscious.
- Monitor breathing, get medical help, and administer CPR if necessary.

Hyperventilation

- Abnormal increase in volume of air breathed in and out of the lungs.
- Occurs during stressful situations or panic.

Hyperventilation Symptoms

- Hyperventilation is the result of overbreathing – either deliberately or because of panic.
- Hyperventilation causes the carbon dioxide level in the blood to decrease.
- This reduces blood flow to the brain, which may result in the following symptoms:
  - Weakness.
  - Tingling in fingers/toes.
  - Dizziness/lightheadedness.
  - Confusion.
  - Agitation.
  - Chest pain or fast and pounding heartbeat.
  - Dry mouth.
  - Nausea.
  - Feeling as if you can't catch your breath.
- Reaction to the symptoms causes even greater hyperventilation.

Hyperventilation: Treatment

- Calm the person down by identifying the source of anxiety and addressing it.
  - Hyperventilation is often triggered in wilderness settings by a fear of heights, equipment failures, or by a minor injury that causes anxiety.

- If a diver shows signs of panic at any time, bring that person back into the boat or onto shore.
- Calm the person and encourage slow breathing.
- Have the person breath into a bag, covering both the nose and mouth with the bag. This will increase the amount of carbon dioxide in the blood.
- Before resuming any activity, find out and resolve the cause of the panic.

Squeezes

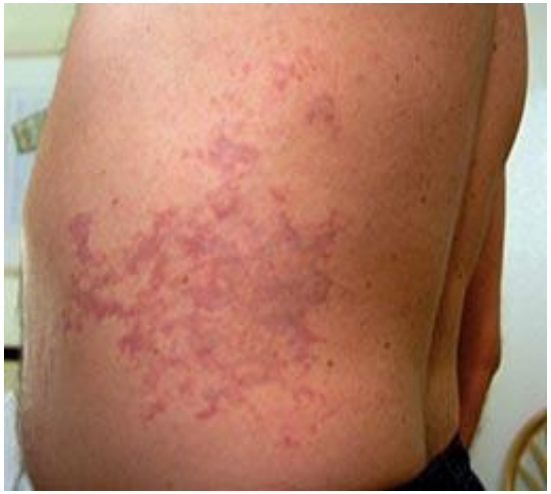
- Natural air spaces such as the sinuses, ears, or diving masks respond readily to the underwater environment as long as you equalize them to the surrounding pressure.
- A scuba diver's tissues may be injured if he fails to equalize these air spaces while descending or ascending.
- Any air space can suffer a pressure injury during ascent or descent.
- Descending pressure injuries are called squeezes.
- Ascending pressure injuries are called reverse squeezes
- A scuba diver may be injured if he fails to equalize these air spaces while descending or ascending.

Squeezes

- You can easily avoid these pressure injuries by equalizing early and often.
- The specific techniques to use to avoid squeezes will be discussed in your scuba certification classes.
- If you get a sinus squeeze, see a doctor if you experience significant pain, pain over a long period of time, or complications in healing.

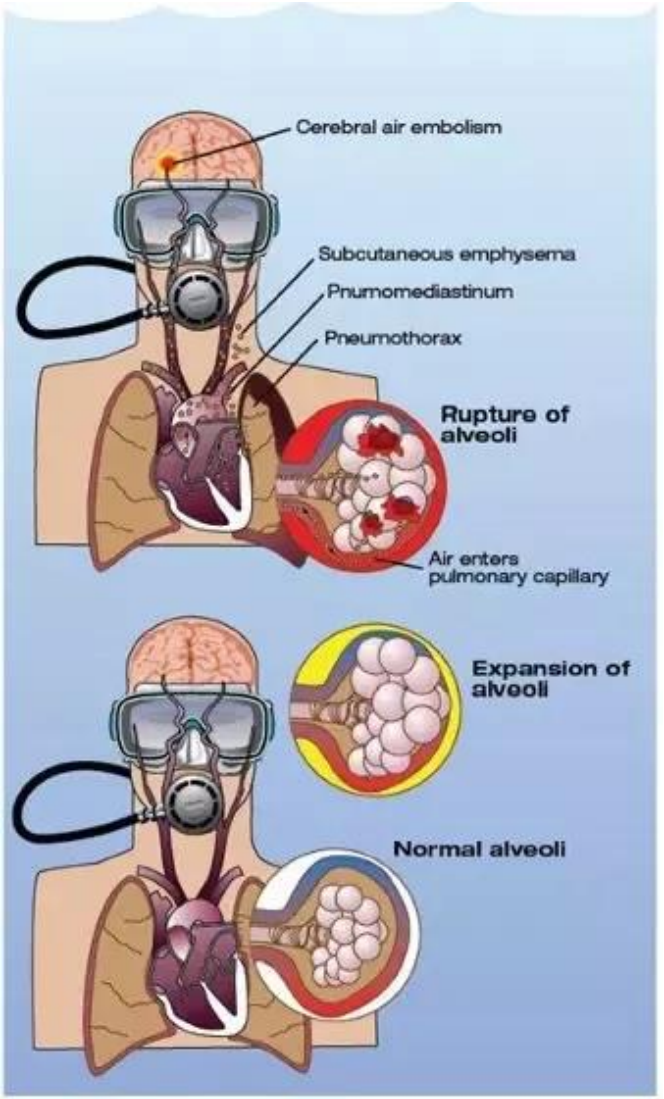
Decompression Illness

- One type of decompression illness is decompression sickness.
- Decompression sickness may occur when a diver exceeds time limits for specific depths as set forth by dive tables.
- Upon a too rapid ascent, nitrogen separates out of your blood and forms bubbles in your tissues or blood.
  - It is these nitrogen bubbles that cause decompression sickness.
  - The condition is called the bends because the joint and bone pains can be so severe they double you over.
- Symptoms of decompression sickness include:
  - joint pain
  - dizziness
  - headache
  - difficulty thinking clearly
  - extreme fatigue
  - tingling or numbness
  - weakness in arms or legs
  - a skin rash.



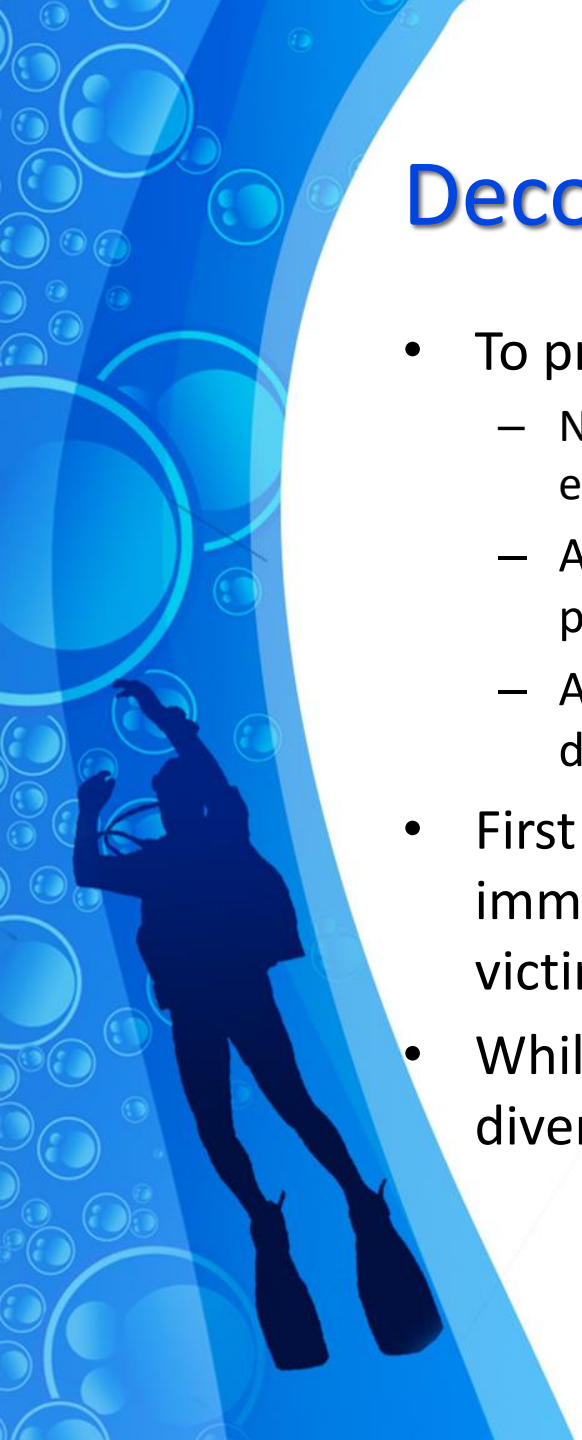
Decompression Illness

- A second type of decompression sickness is lung overexpansion.
- Lung overexpansion injuries may result if a diver fails to breathe normally or exhale during an ascent.
- Symptoms include:
  - Blueness in the lips (cyanosis)
  - Change in voice
  - Confusion
  - Convulsion
  - Dizziness
  - Dyspnea (shallow, labored, breathing)
  - Heavy chest pain
  - Hemoptysis (coughing up blood)
  - Loss of vision
  - Stroke or paralysis (particularly on one side of the body)
  - Vomiting
  - Unconsciousness (e.g. due to cardiac arrest)



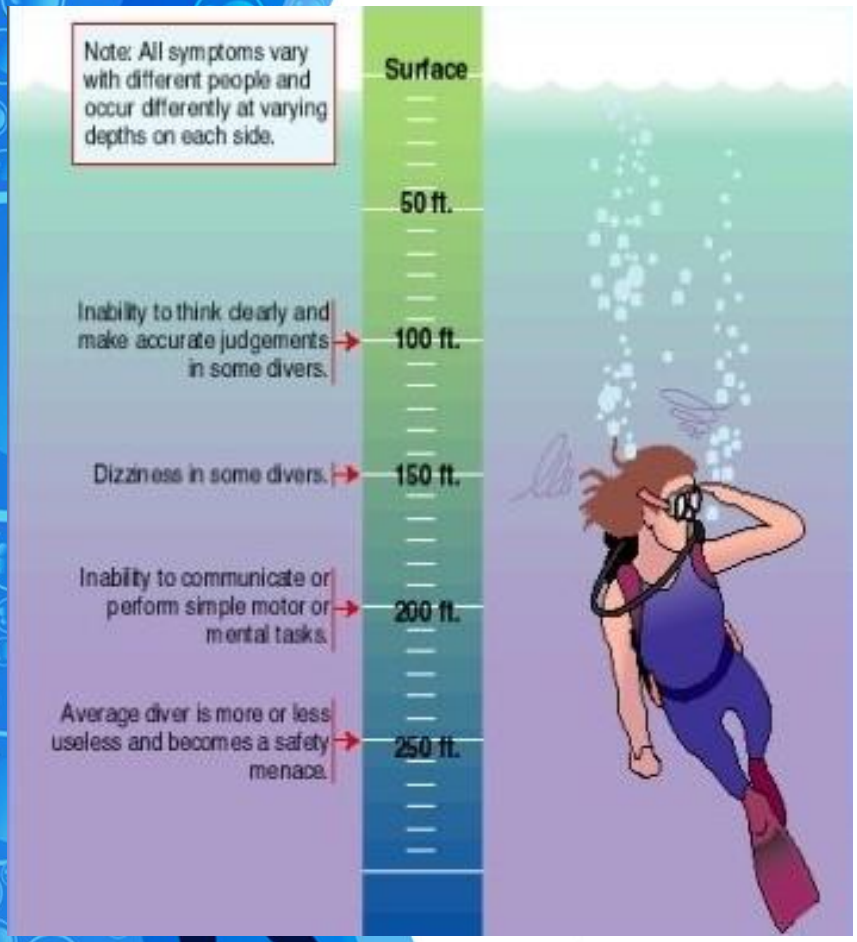
Decompression Illness

- To prevent decompression illness:
  - Never hold your breath when using underwater scuba equipment.
  - Ascend slowly after every dive, never exceeding 60 feet per minute, or the maximum allowed by a dive computer.
  - Always use dive tables and dive computers to plan your dives conservatively, well within depth and time limits.
- First aid for decompression illness includes immediately calling for assistance and getting the victim to a hospital and recompression chamber.
- While waiting for medical assistance, monitor the diver's airway, breathing, and circulation (ABC's).



Emergency Hyperbaric Chamber

Nitrogen Narcosis



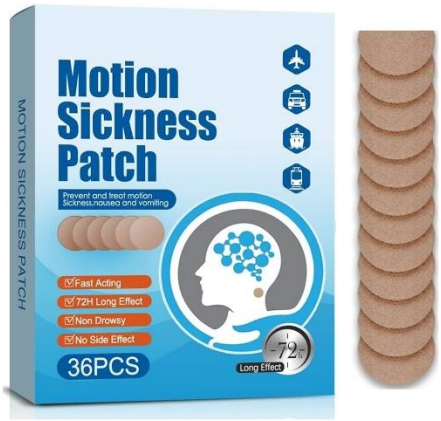
- Nitrogen narcosis describes the anesthetic effect of breathing nitrogen gas at high pressures that typically occurs in divers at depths below 70 feet of sea water.
- Symptoms include light-headedness, euphoria, and loss of fine motor coordination and can progress to intoxication, increasingly worsening judgment, and slowed reflexes.
- The symptoms of nitrogen narcosis will clear rapidly when divers return to the surface.
- To avoid this problem, beginning divers should stay within safe diving depths of 60 feet or less.
- If you begin to feel the effects of nitrogen narcosis, simply ascend until the feeling goes away.

Motion Sickness

- Seasickness is a result of a conflict in the inner ear, where the human balance mechanism resides, and is caused by a boat's erratic motion on the water.
- Inside the cabin of a rocking boat the inner ear detects changes in both up-and-down and side-to-side acceleration as one's body bobs along with the boat.
- But, since the cabin moves with the passenger, one's eyes register a relatively stable scene.
- Agitated by this perceptual incongruity, the brain responds with a cascade of stress-related hormones that can ultimately lead to nausea, vomiting, and vertigo.
- Additionally, an affected person's symptoms can be magnified by the strong odors of things like diesel fumes and fish.

Motion Sickness

- Medicines can be used to prevent or treat motion sickness, although many of them cause drowsiness.
  - Talk to a healthcare professional to decide if you should take medicines for motion sickness.
  - Commonly used medicines are meclizine HCl (Bonine), dimenhydrinate (Dramamine), and scopolamine.



- To help prevent motion sickness:
  - While on the boat, stay in the fresh air on deck and out of the boat exhaust.
  - It helps to stay in the center of the boat, which moves the least.
  - Stay out of the boat's restroom (the head).
  - Stay hydrated by drinking water.
  - Limit alcoholic and caffeinated beverages.
  - Eat small amounts of food frequently.

- If you start becoming sick, if possible try lying down, shutting your eyes, sleeping, or looking at the horizon.
- Recovery is only a matter of time, and the survival rate is 100 percent!

Fatigue and Overexertion

- It’s important to make sure that you’re in good physical shape before going scuba diving, since it requires both strength and endurance.
- To keep your energy levels up for exploring the depths, eat right, stay hydrated and get plenty of rest before diving!
- Avoid diving in areas with strong currents or tides.
- If you’re feeling exhausted during the dive, take a break and float on the surface for a bit to catch your breath to help you recharge and prepare for the next part of your dive.
- Know your limits. If you feel like you’re getting too tired, end the dive early.

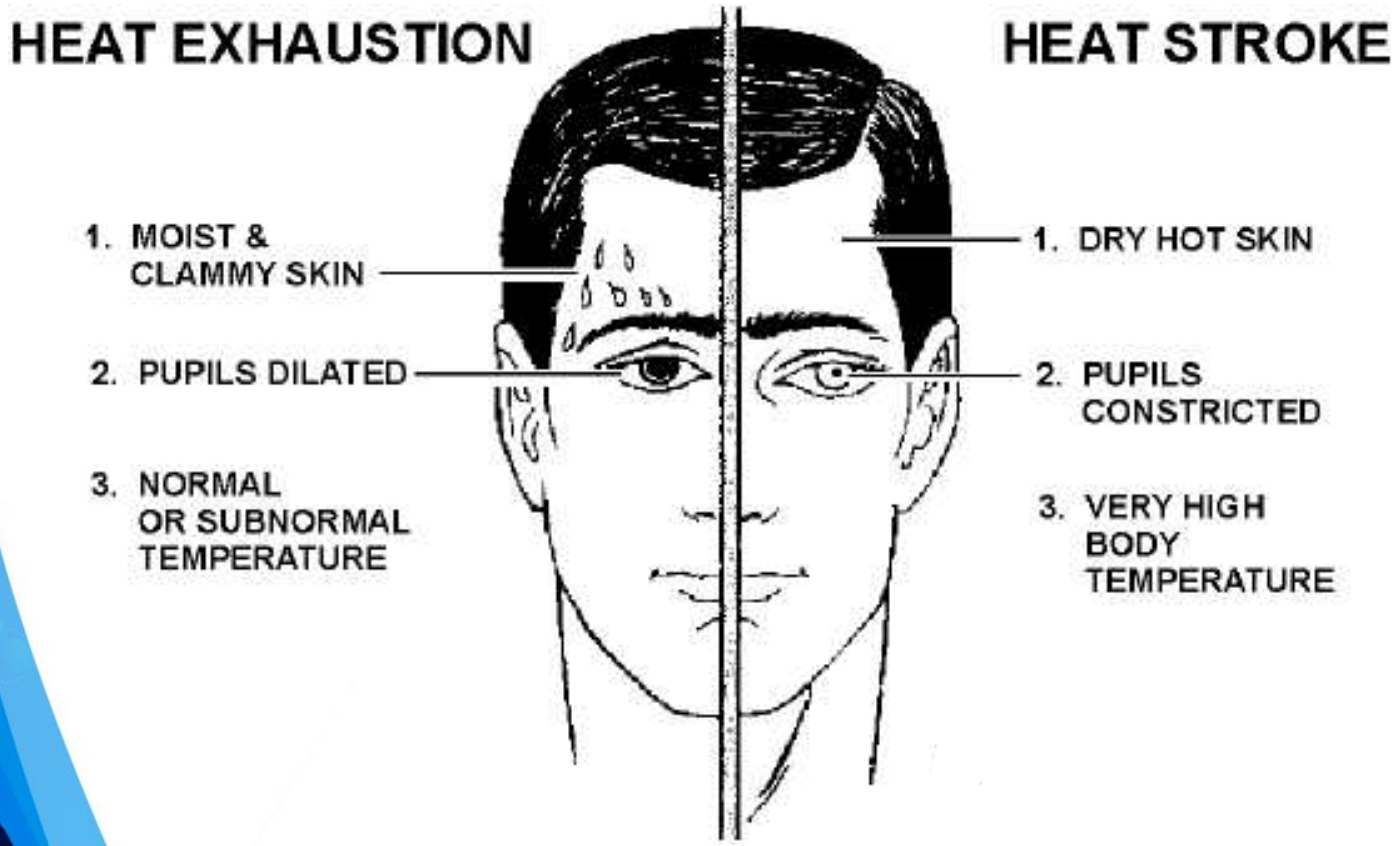
Sunburns

- Severe sunburn can be a significant first aid situation.
- Sunburn is preventable with protective ointments, clothing, or staying out of the sun.
- Long term effects of sunburn has been linked to skin cancers.

Sunburns

- Symptoms:
  - Redness.
  - Minor inflammation, or swelling.
  - Pain.
  - Dry, peeling skin occurs as the burn heals.
- Treatment:
  - Soak the wound in cool water for five minutes or longer.
  - Take acetaminophen or ibuprofen for pain relief.
  - Apply lidocaine (an anesthetic) with Aloe Vera to soothe the skin.
  - Use an antibiotic ointment and loose gauze to protect the affected area.
  - Make sure you don’t use ice, as this may make the damage worse.

Heat Emergencies

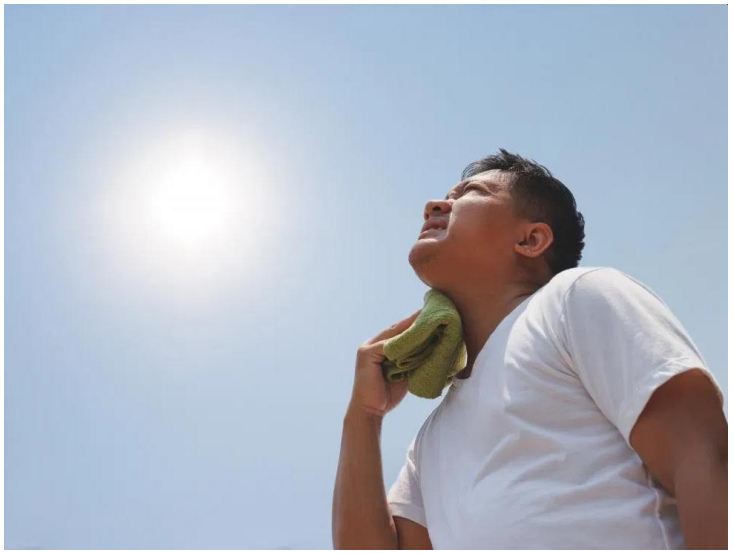


Heat Exhaustion Symptoms

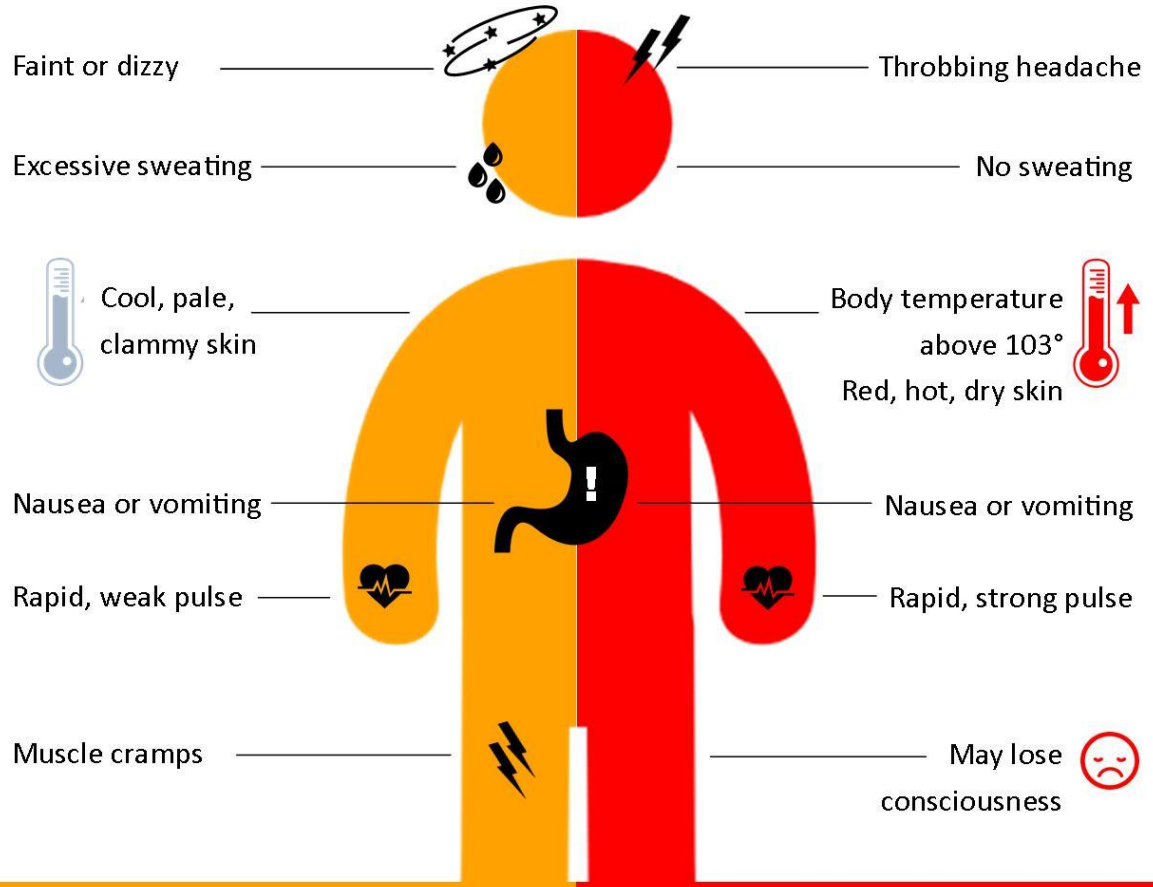
- Heavy sweating
- Thirst
- Fatigue
- Heat cramps
- Headache
- Dizziness
- Nausea
- Vomiting

First Aid for Heat Exhaustion

- Move victim from heat to rest in a cool place.
- Loosen or remove unnecessary clothing.
- Give water or a sports drink.
- Raise feet 8-12 inches.
- Put cool, wet cloths on forehead and body – spray skin with water.
- Seek medical care if victim's condition worsens or does not improve within 30 minutes.



HEAT EXHAUSTION OR HEAT STROKE



- Get to a cooler, air conditioned place
- Drink water if fully conscious
- Take a cool shower or use cold compresses

CALL 9-1-1

- Take immediate action to cool the person until help arrives

First Aid for Heat Stroke

- Call 911.
- Move victim to cool place.
- Remove outer clothing.
- Cool victim quickly.
- Apply cold compresses or spray skin with water.
- Put ice bags or cold packs beside neck, armpits, and groin.

Dehydration

Dehydration

When you are scuba diving, it is easy to forget the importance of staying well-hydrated. You are, after all, surrounded by water, and you may not feel as though you need to take a drink. Whether it is hot or cool out, drink plenty of fluids and eat enough throughout the day to keep your body well-balanced.

- When the body puts out more liquid than it is taking in.
- Ways we lose fluids:
  - Sweating.
  - Urination.
  - Vomiting.
- Signs of dehydration:
  - Thirst.
  - Yellow or dark urine.
  - Dry mouth.
  - Lightheadedness.
  - Nausea and vomiting.
  - Dry skin.
  - Cease sweating.
- Treatment:
  - Drink fluids (water, Gatorade).
  - Avoid physical activity.
  - Get inside air conditioned or cool area.

Injuries Caused by Aquatic Life

- Most injuries by aquatic life are caused by accidental contact.
  - Treat all organisms with respect and never tease or disturb them.
  - Avoid contact with animals.
  - Be cautious in murky water where you may have trouble seeing where you place your hands.
  - Avoid wearing jewelry that may resemble fishing lures.
  - Wear an exposure suit (lycra or neoprene).
  - Maintain buoyancy and stay off the bottom.
  - Be aware of local advisories which may issue warnings such as those about jellyfish or bacterial contamination along the shoreline.

Injuries Caused by Aquatic Life

- Treat venomous wounds such as stings by first focusing on the victim's airway, breathing, and circulation (ABC's)
- Manage bleeding and treat for shock.
- If possible and safe, remove spines or stingers with forceps or other tools.
- If possible, soak the affected area with hot water for 30 to 90 minutes keeping the area still.
- After flushing the wound with running water, dry the area and apply a triple antibiotic ointment.
- Cover the wound with a dry, sterile bandage.
- For more serious injuries, see a doctor.

Cuts and Scrapes

- Simple cuts are skin injuries caused by sharp objects.
  - Usually not very deep
- Scratches are areas of damage to the upper layers of skin.

Treatment for Cuts and Scrapes

- Wash the wound with soap and water for 5 minutes.
  - Remove any bits of dirt, small pieces of rock, or other debris.
  - If you have cuts or scrapes from contact with corals, be sure to clean the area carefully or infection may develop.
- Apply an antibiotic ointment such as Neosporin and cover it with a Band-Aid or gauze.
- See a doctor if your injuries worsen or do not seem to be healing.

Common Mistakes in Treating Cuts and Scrapes

- Don't use alcohol or Merthiolate on open wounds.
  - They sting and damage normal tissue.
- Don't kiss an open wound because the wound will become contaminated by the many germs in a person's mouth.
  - No kissing the Boo Boo!
- Let the scab fall off by itself; picking it off may cause a scar.

Requirement 1b

Identify the conditions that must exist before performing CPR on a person, and explain how to recognize such conditions. Demonstrate the proper technique for performing CPR using a training device approved by your counselor.

Cardiac Emergencies and CPR

- CPR is the important first response in the event of a cardiac emergency.
- CPR is used in near-drownings when a victim's breathing and heartbeat have stopped.
- Include individuals trained in CPR at every diving outing.
- CPR should be attempted only by persons trained and qualified under the supervision of a trained instructor.
- To receive CPR training, contact the **American Red Cross** or the **American Heart Association**.

CPR Protocols

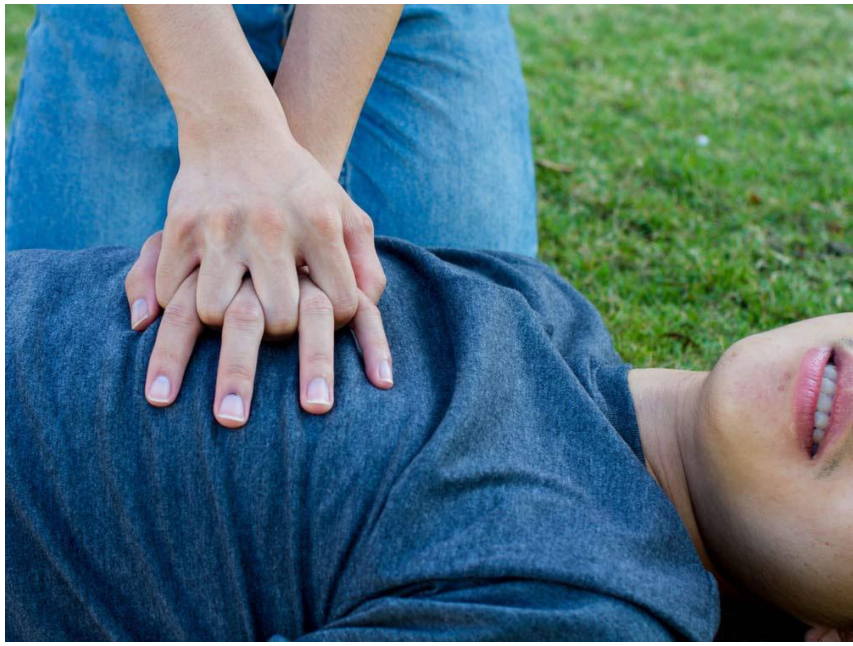
- The A-B-C order for CPR (Airway-Breathing-Circulation) has been changed to C-A-B Compressions-Airway-Breathing).
- This is based on medical research that shows CPR is more effective if done first and promptly.
- Volunteers will no longer check for a pulse or Look-Listen-Feel for breathing.

New CPR Protocols

1. Are you OK? – Check responsiveness.
2. Unresponsive? Assess breathing by looking at the victim (DO NOT open airway yet by tilting head…DO NOT Look-Listen-Feel).
3. Not breathing? Call 911 and send for AED if available.
4. Start with 30 compressions and then two breaths.
5. Continue with CPR – 30 compressions, then 2 breaths.

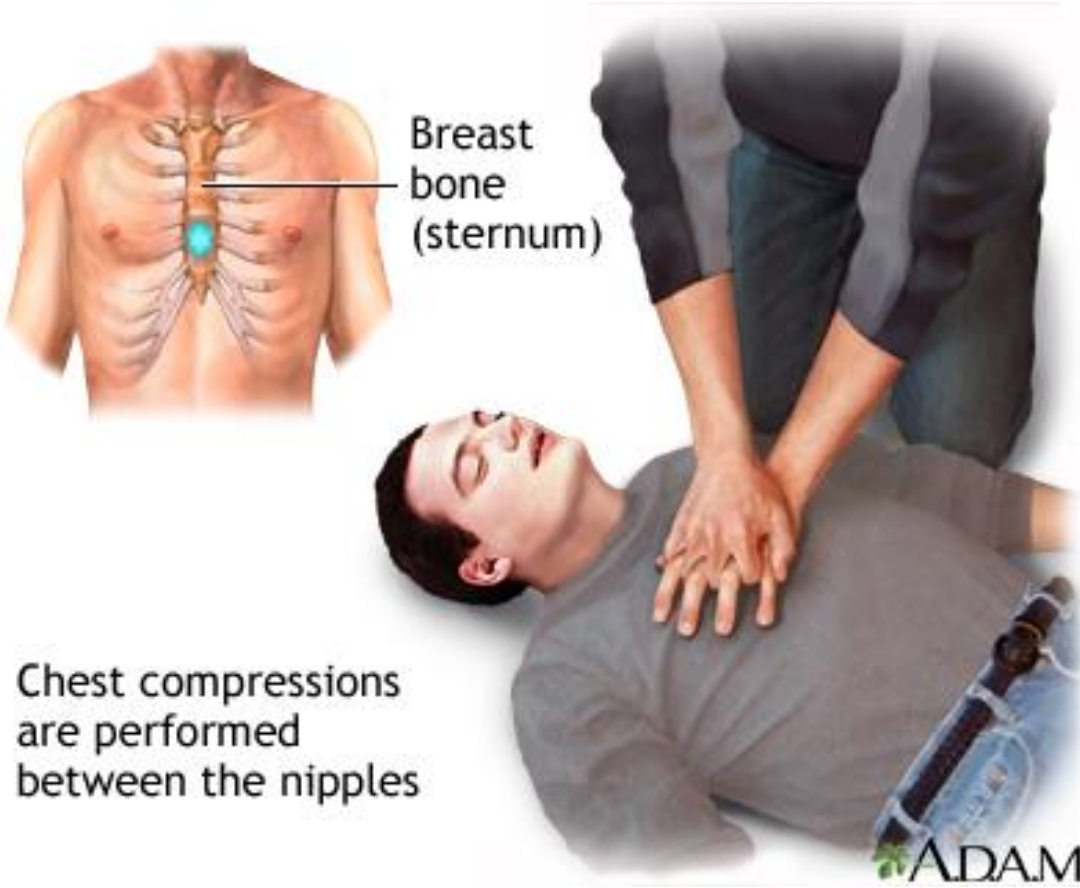
CPR Technique

1. Position on their back.
2. If victim appears to be not breathing or is gasping call 911, get AED, and start CPR.
3. Use a barrier device if you have one.



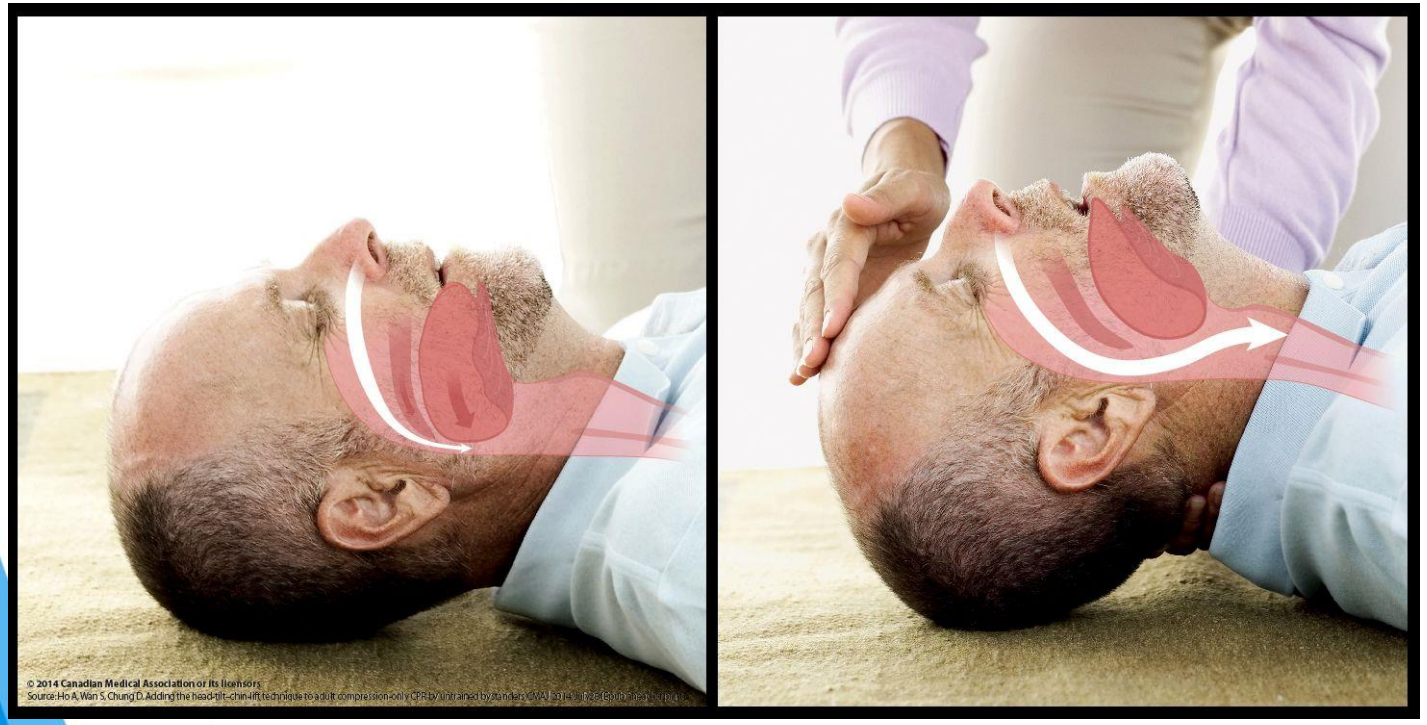
CPR Technique

30 compressions



CPR Technique

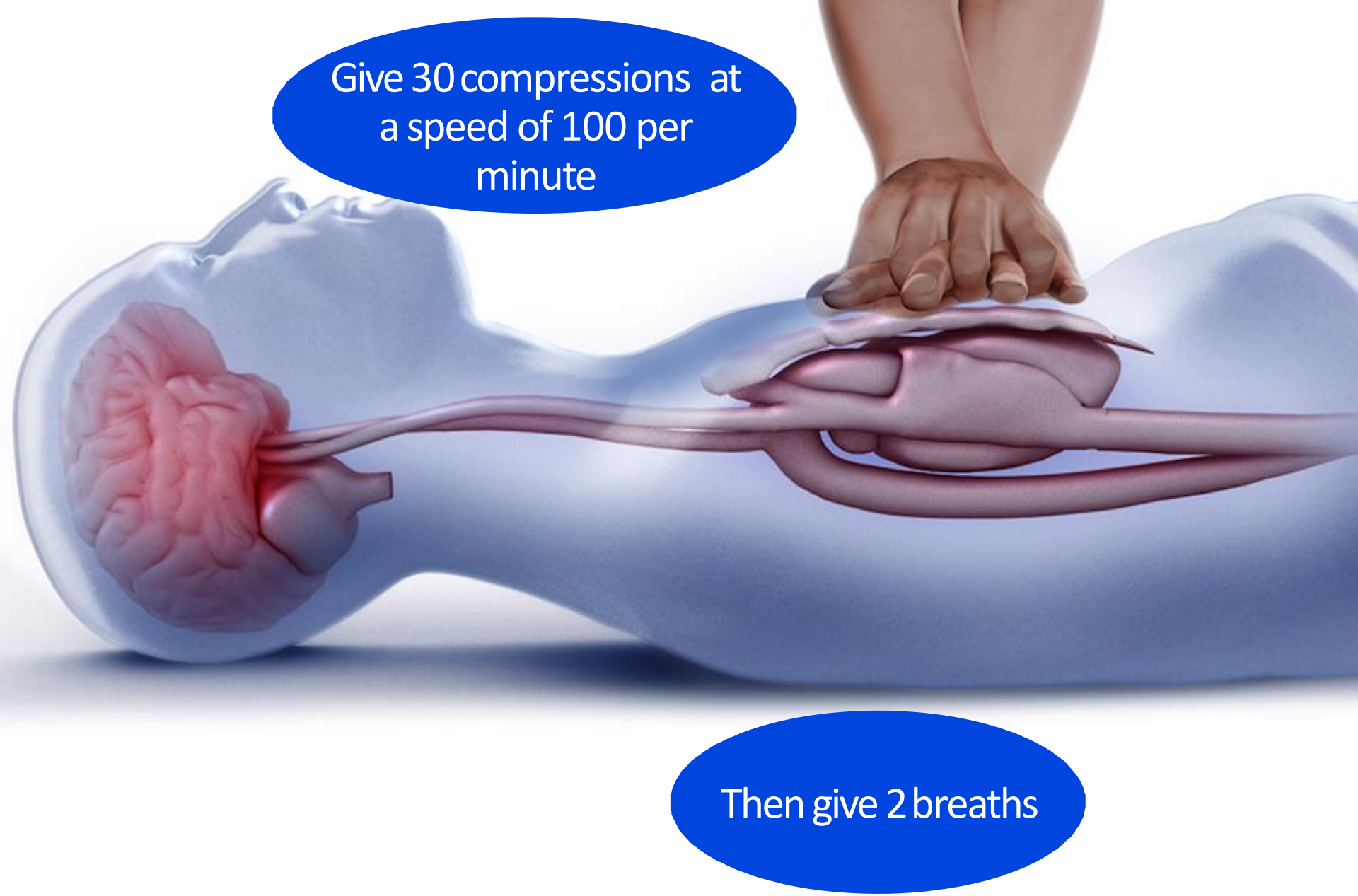
Open the airway



Use the head-tilt-chin-lift technique

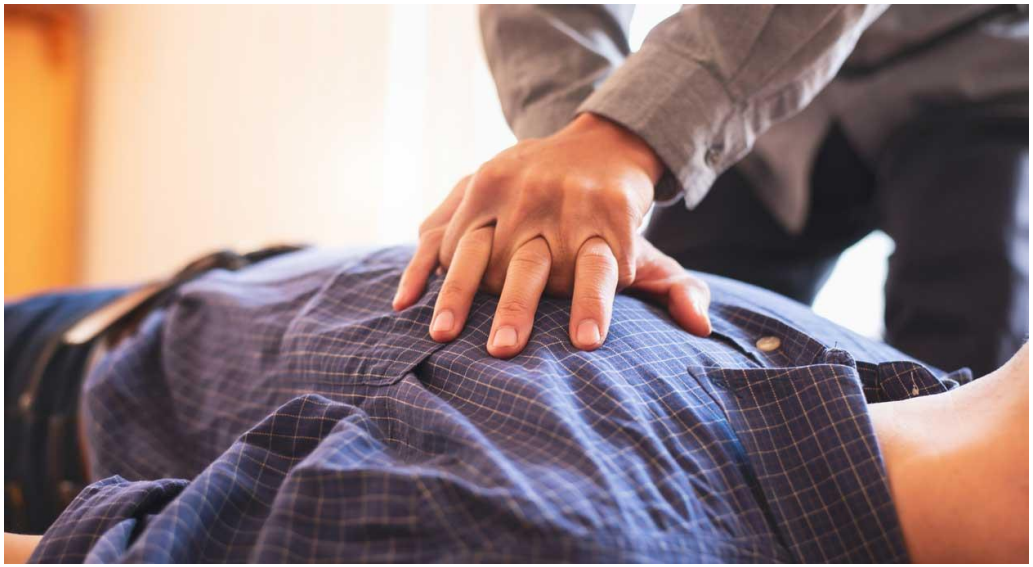
Rescue Breathing

Two breaths


Give 30 compressions at a speed of 100 per minute
Then give 2 breaths

Not Sure About Rescue Breathing?

- If you don’t remember how to do breaths then just do continuous chest compressions.
- If you don’t want to do breaths then just do continuous compressions.



Check Airway

- If victim may have been choking, check for object before giving rescue breaths. If you see obstruction, remove it.
- Then continue CPR.


Continue CPR until…
Victim moves.
AED arrives and is ready to use.
Help arrives.
You are too tired to continue.

What Happens if I Don't Remember?

- If you don't exactly remember the steps of CPR, do the best you can!
- If you can't figure out the breaths, then perform continuous chest compressions.
- With a heart in trouble, it is always better to try some kind of CPR than do nothing.
- Always call for help quickly.

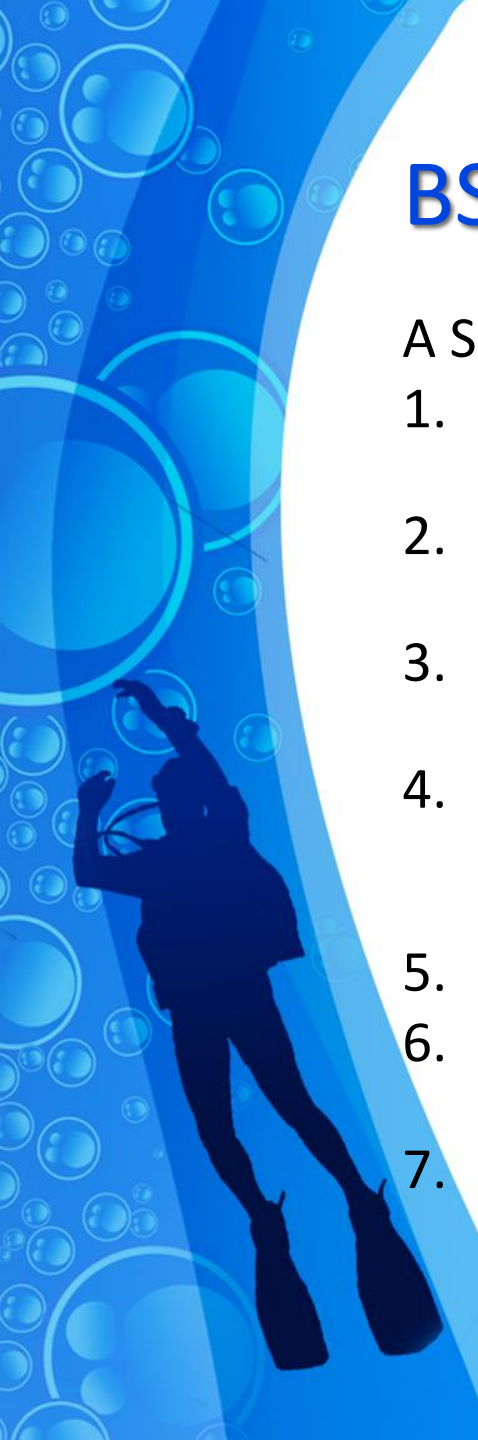
Requirement 2

Before completing requirements 3 through 6, earn the Swimming merit badge.

Requirement 3

Discuss the Scuba Diver's Code with your merit badge counselor, and explain the importance of each guideline to a scuba diver's safety.

BSA Scuba Diver's Code



A Scout:

1. Maintains good mental and physical fitness for SCUBA diving.
2. Keeps his dive skills sharp through continuing education.
3. Seeks professional orientation prior to diving at unfamiliar dive locations.
4. Seeks training prior to attempting specialized types of diving – such as night diving, cavern and cave diving, wreck diving, and deep diving.
5. Adheres to the buddy system throughout every dive.
6. Uses complete, well maintained, and reliable equipment with which he is familiar.
7. Always dive no deeper than the recommended depth for his certification level and experience.

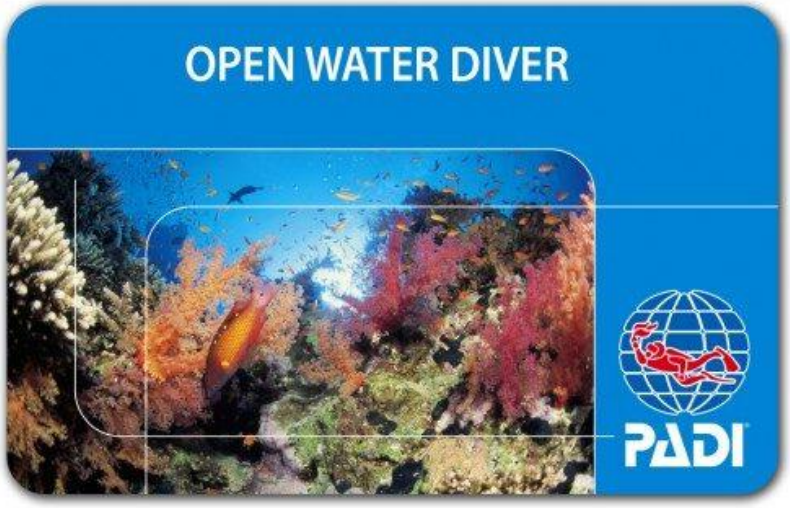
BSA Scuba Diver's Code

A Scout:

8. Always follows the time limits listed by special dive tables or a dive computer for a particular depth.
9. Is a S.A.F.E. diver – Slowly Ascends From Every Dive – and makes a safety stop at 15' for three minutes at the end of every dive prior to surfacing.
10. Breathes properly while diving, never holding his breath or skipping breathing.
11. Knows and obeys local diving laws and regulations, including fish and game laws and dive flag laws.
12. Understands and respects aquatic life, considers how his interactions affect it, and dives carefully to protect fragile aquatic ecosystems.

Requirement 4

Earn an Open Water Diver Certification from a scuba organization recognized by the Boy Scouts of America scuba policy.

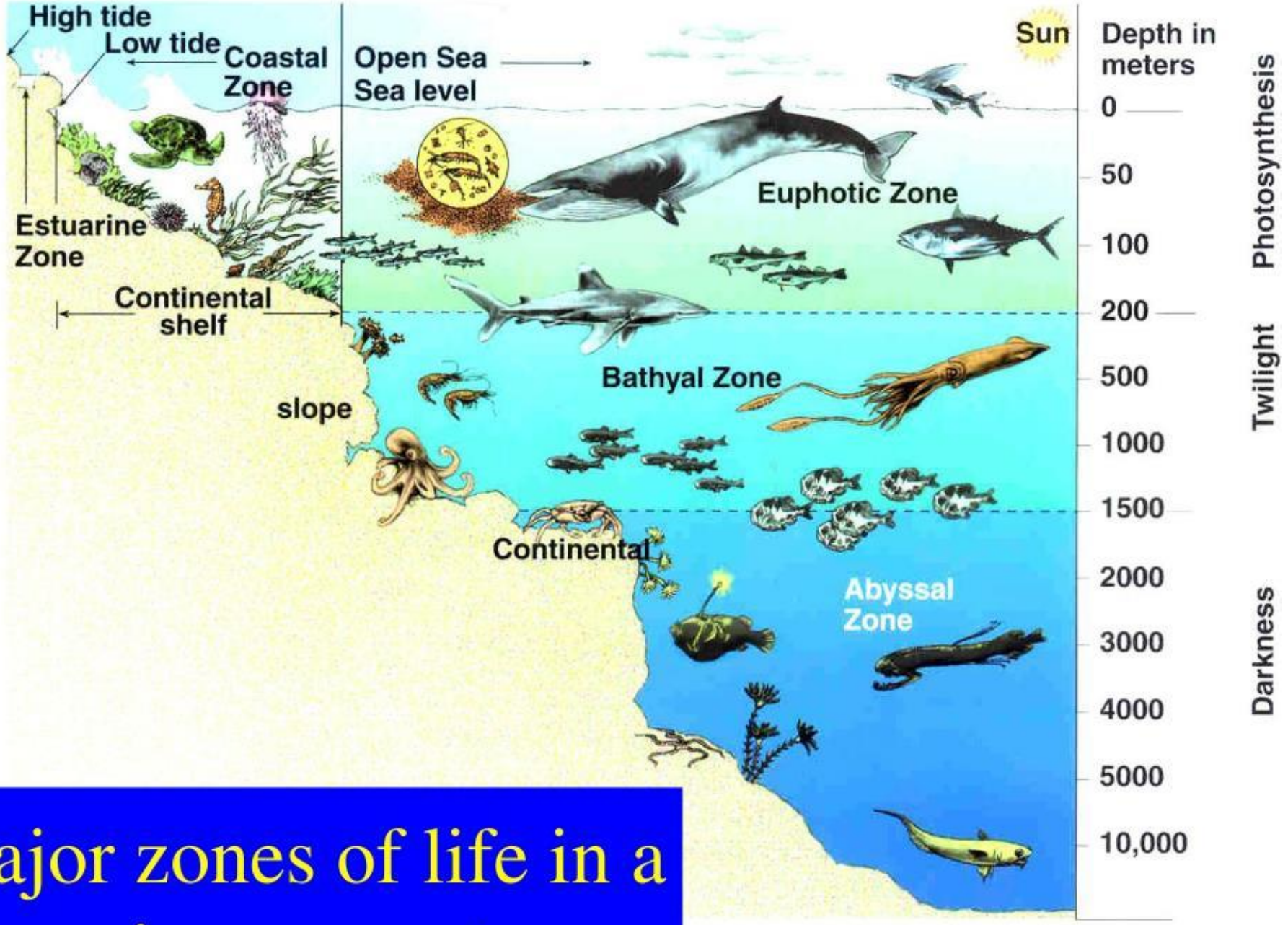


Requirement 5

Explain what an ecosystem is, and describe four aquatic ecosystems a diver might experience.

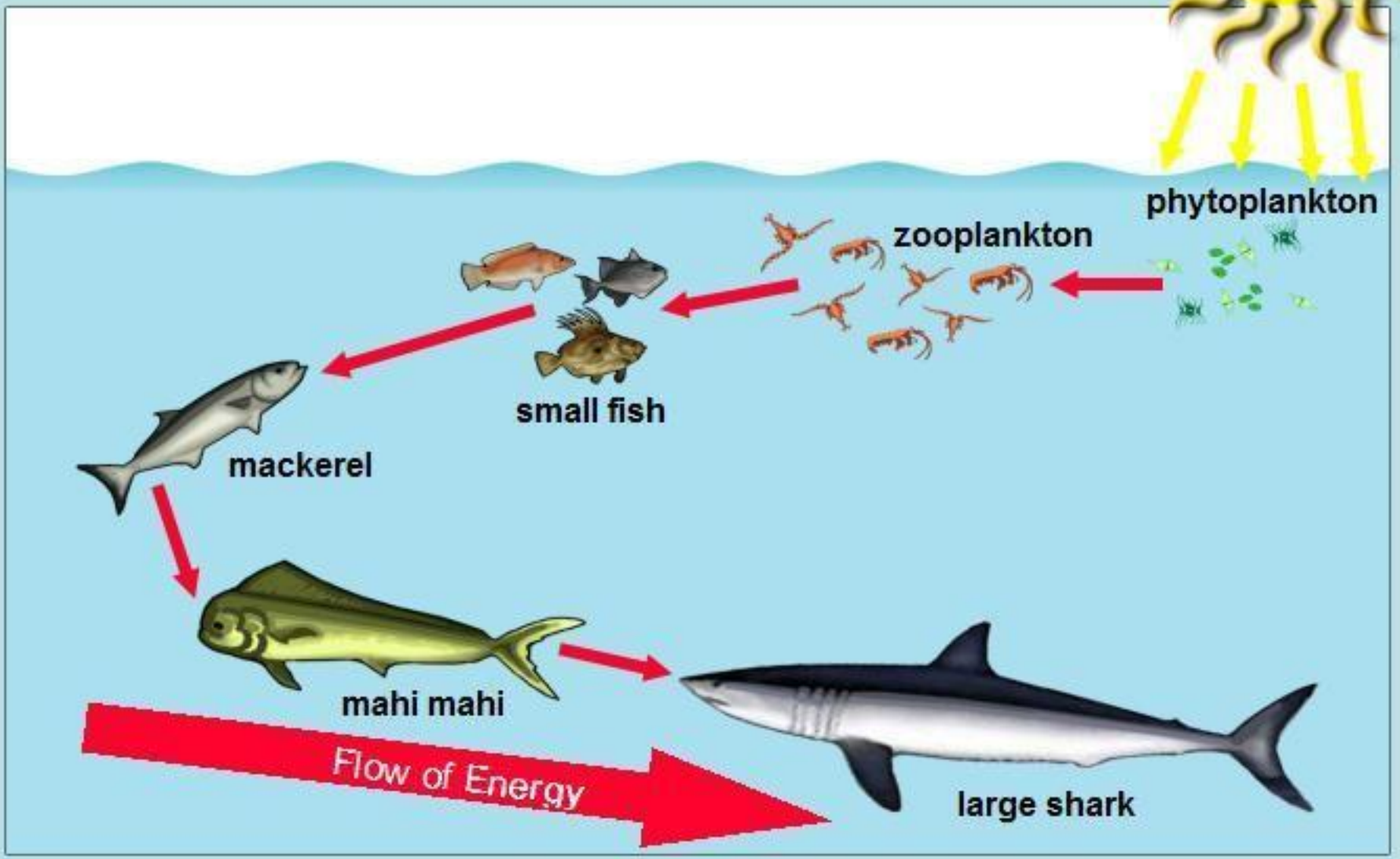
Aquatic Ecosystems

- An aquatic ecosystem is a specific underwater environment with a clearly defined:
  - Physical boundary,
  - Distinct physical conditions:
    - Temperature of the water
    - Depth
    - Light levels
    - etc.
  - At least one energy source (such as sunlight),
  - And a community of plants, animals, and other organisms that interact with one another and through which energy is transferred.



Major zones of life in a marine ecosystem

Food Chain


phytoplankton
zooplankton
small fish
mackerel
mahi mahi
Flow of Energy
large shark

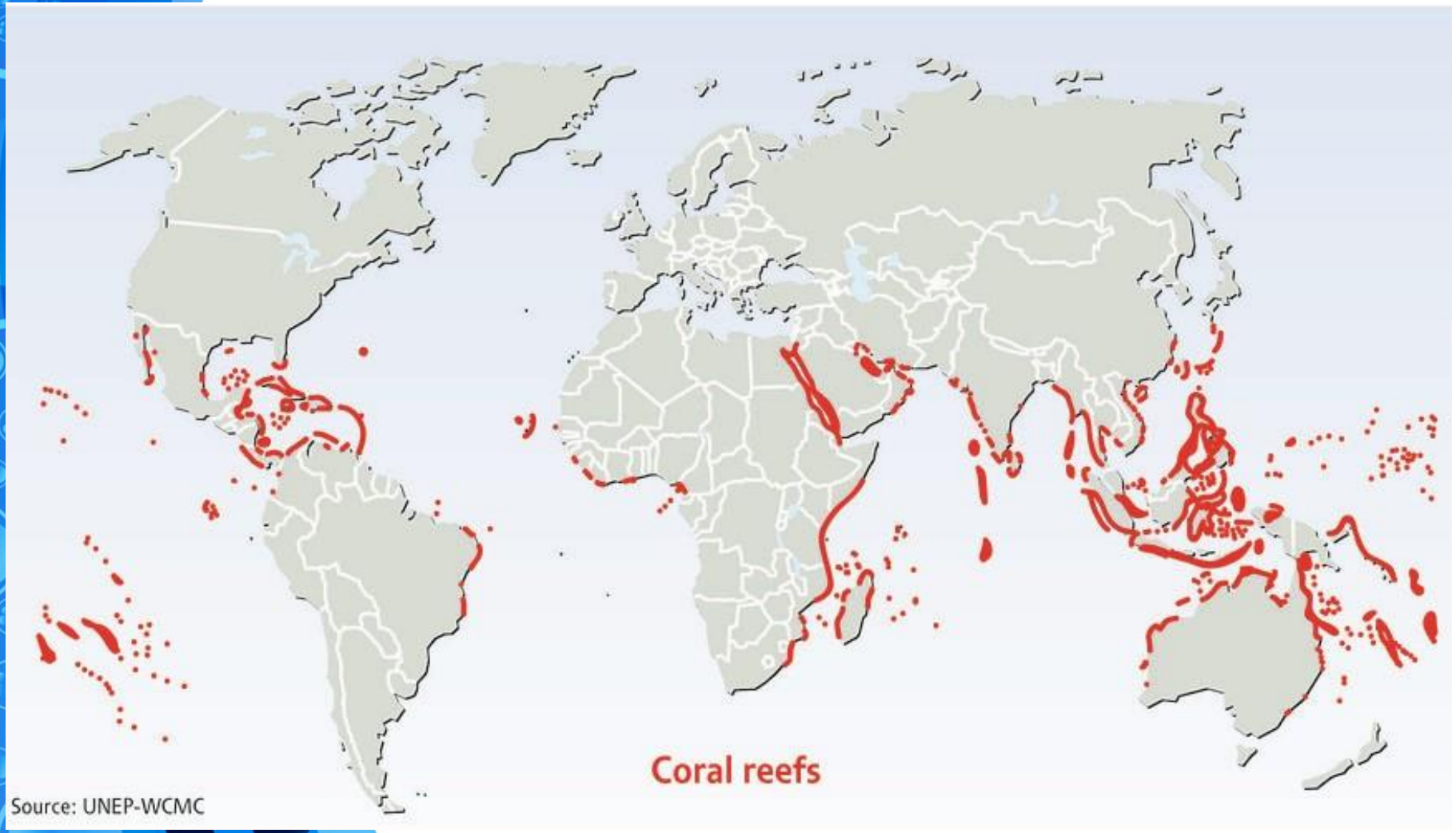
Marine (Saltwater) Ecosystems

Coral Reefs:

- A coral reef is an underwater marine ecosystem characterized by reef-building corals.
- Most coral reefs are built from stony corals, whose polyps cluster in groups.
- Most reefs grow best in warm, shallow, clear, sunny and agitated water.
- Sometimes called *rainforests of the sea*, shallow coral reefs form some of Earth's most diverse ecosystems.
  - They occupy less than 0.1% of the world's ocean area, yet they provide a home for at least 25% of all marine species.
- Coral reefs have declined by 50% since 1950, partly because they are sensitive to water conditions.
- They are under threat from excess nutrients (nitrogen and phosphorus), rising ocean temperatures, overfishing, and harmful land-use practices that includes runoff.

Coral Reef Ecosystem

Distribution of Tropical Coral Reefs

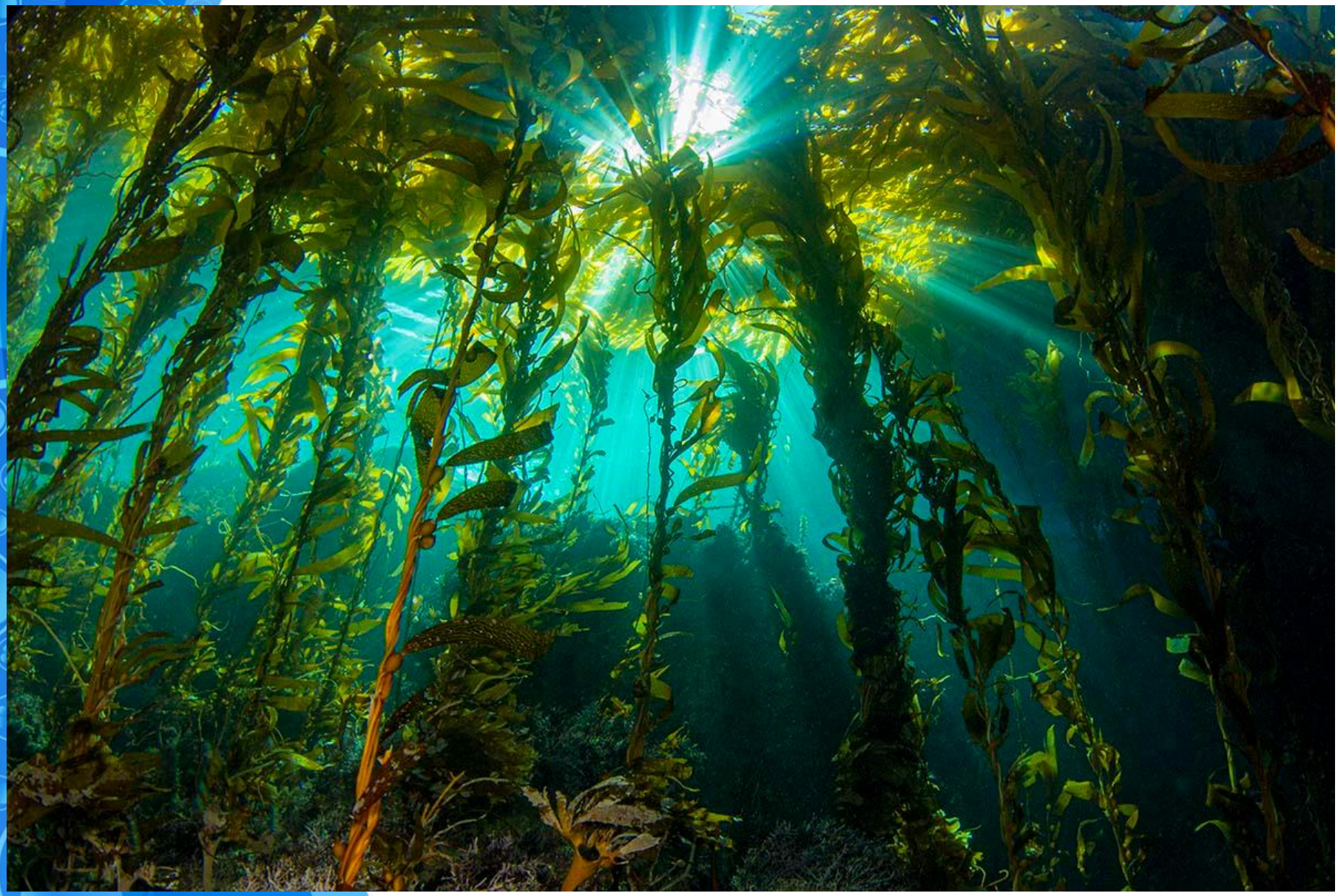


Marine (Saltwater) Ecosystems

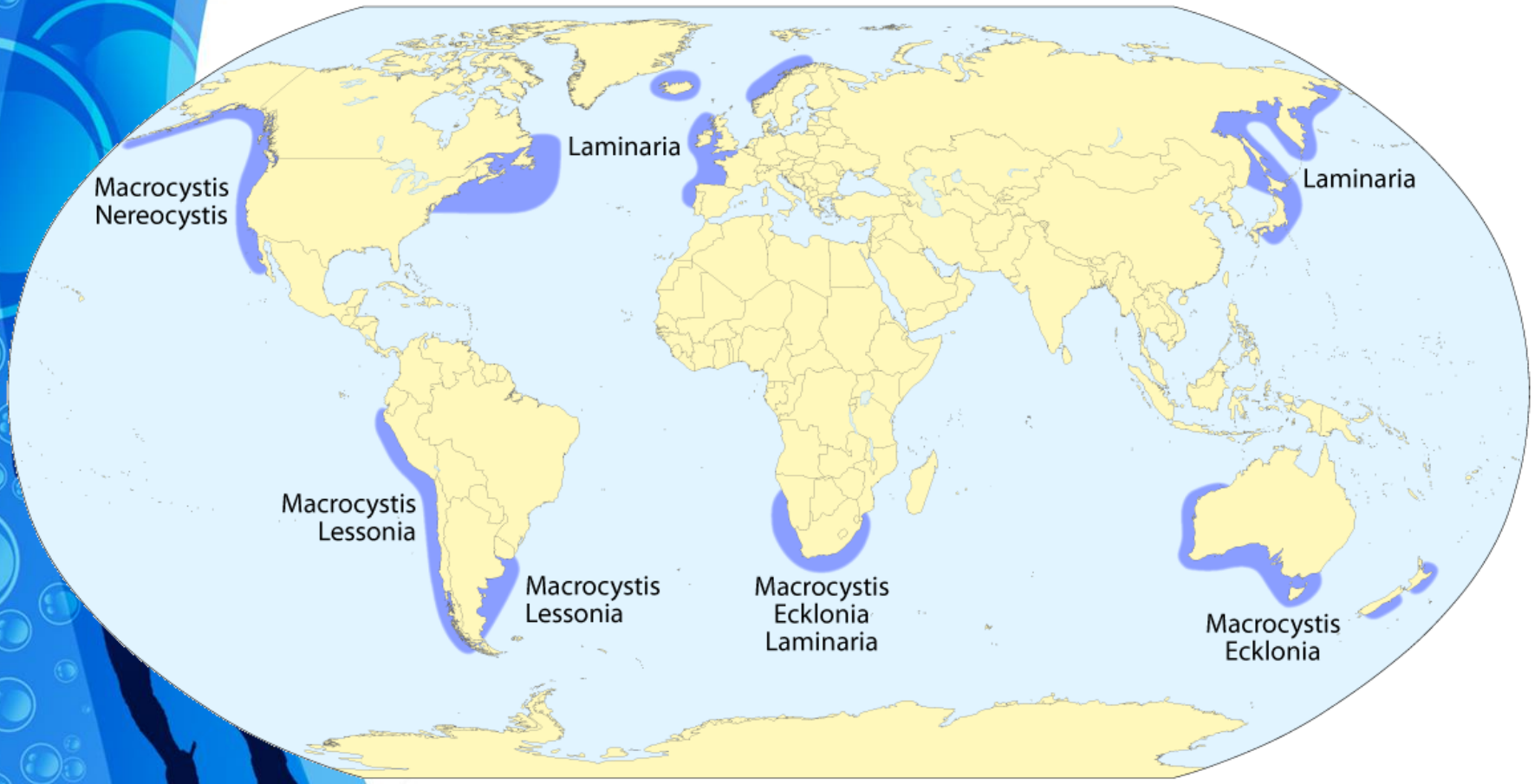
Kelp Forests

- Kelp are large brown algae that live in cool, nutrient-rich, waters.
  - Because they need light for photosynthesis, kelp forests form in fairly shallow waters close to the shore.
  - In ideal conditions, kelp can grow up to 18 inches per day reaching lengths up to 175 feet.
- Like trees in a forest, these giant algae provide food and shelter for thousands of fish, invertebrates, and marine mammal species.
  - Among the many mammals and birds that use kelp forests for protection or feeding are seals, sea lions, whales, sea otters, gulls, terns, snowy egrets, great blue herons, cormorants, and shore birds.
- Kelp forests experience seasonal changes.
  - Storms and large weather events, like El Niño, can tear and dislodge the kelp, leaving a tattered winter forest to begin its growth again each spring.
- Due to the combined effects of overfishing and climate change, kelp forests have all but disappeared in many especially vulnerable places, such as Tasmania's east coast and the coast of Northern California.

Temperate Kelp Forests



Distribution of Kelp Forests

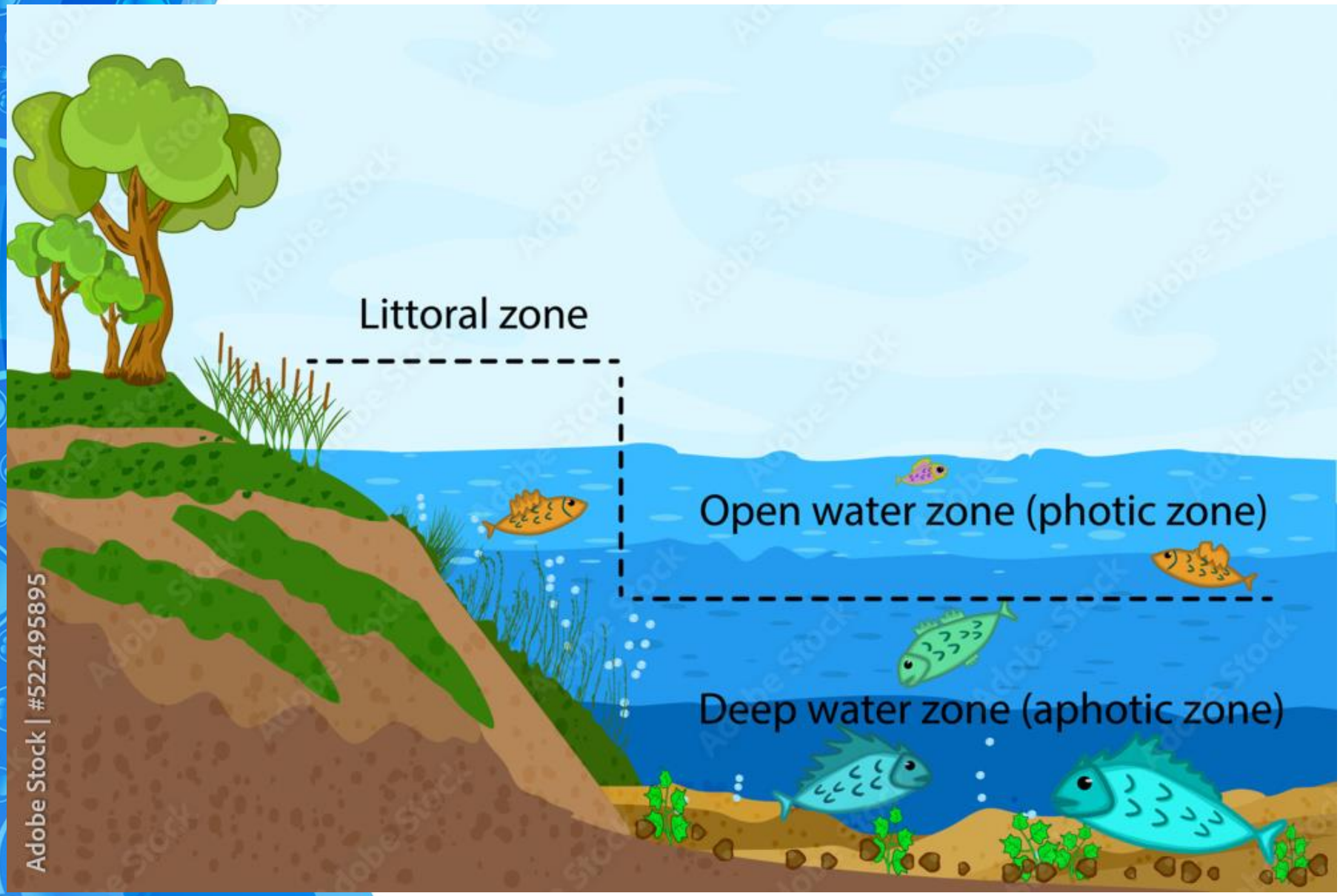


Freshwater Ecosystems

Lakes and Ponds

- Lakes and ponds are a diverse set of inland freshwater habitats that exist across the globe and provide essential resources and habitats for both terrestrial and aquatic organisms.
- Lake ecosystems can be divided into zones.
  - The first, the littoral zone, is the shallow zone near the shore where rooted wetland plants occur.
  - The offshore is divided into two further zones, an open water zone and a deep water zone. In the open water zone (or photic zone) sunlight supports photosynthetic algae and the species that feed upon them.
  - In the deep water zone, sunlight is not available and the food web is based on detritus entering from the littoral and photic zones.

Zones of Lakes and Ponds

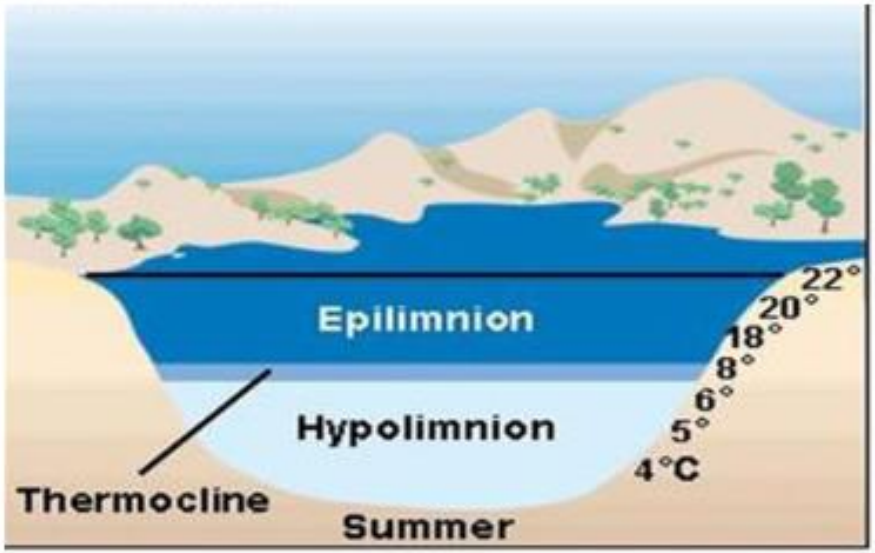


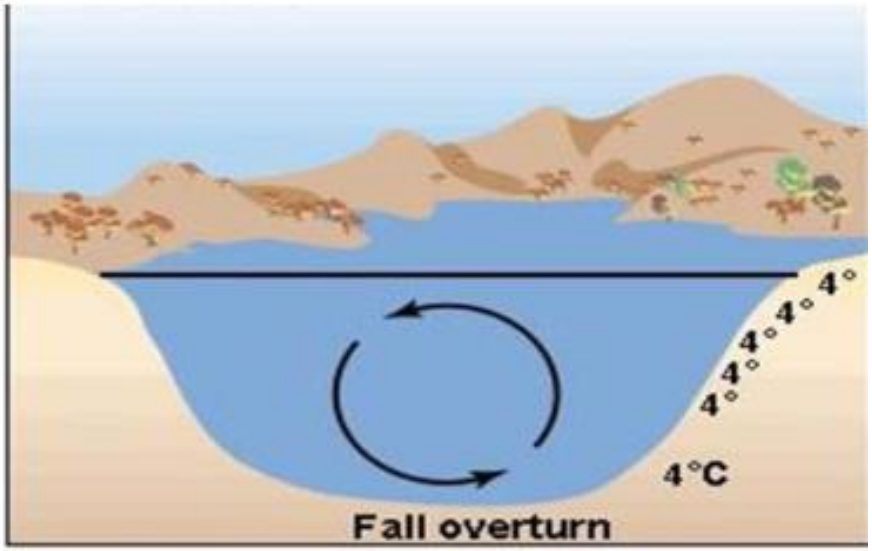
Freshwater Ecosystems

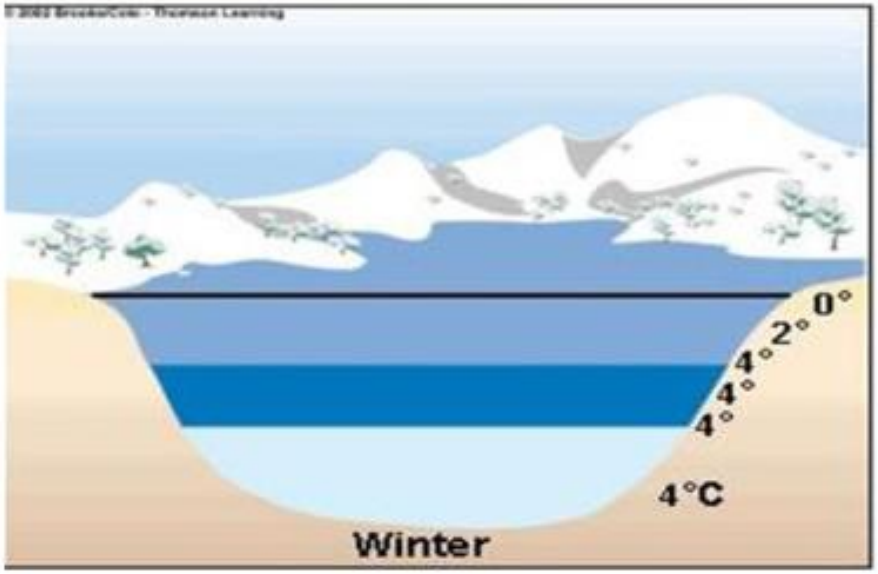
Lakes and Ponds

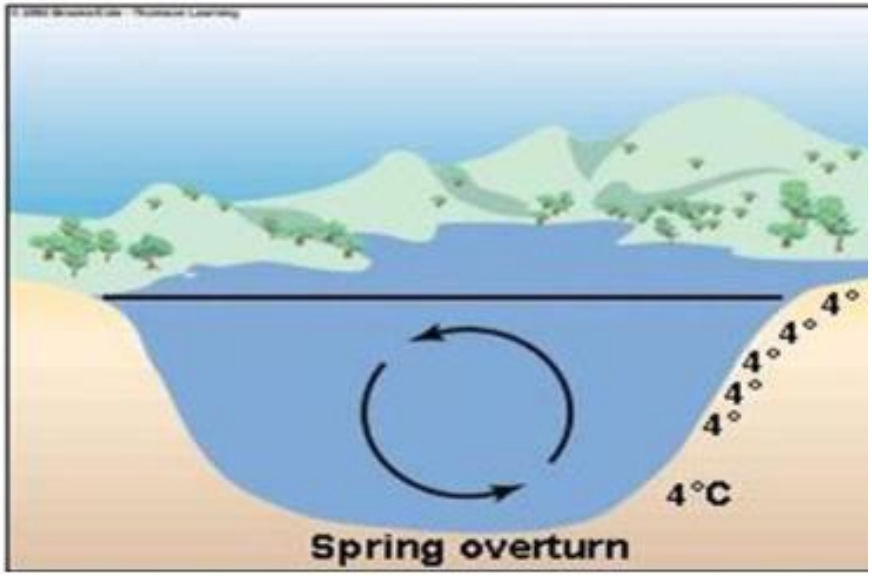
- In the spring, wind turbulence circulates the water throughout a lake supplying oxygen to the entire water column.
- As the temperature increases during the summer and wind subsides, **thermal stratification** occurs, producing distinct layers in the water column.
  - The upper warm-water **epilimnion** is separated from the lower cold-water **hypolimnion** by the **thermocline** (a zone of rapid temperature change).

Thermal Stratification of Lakes







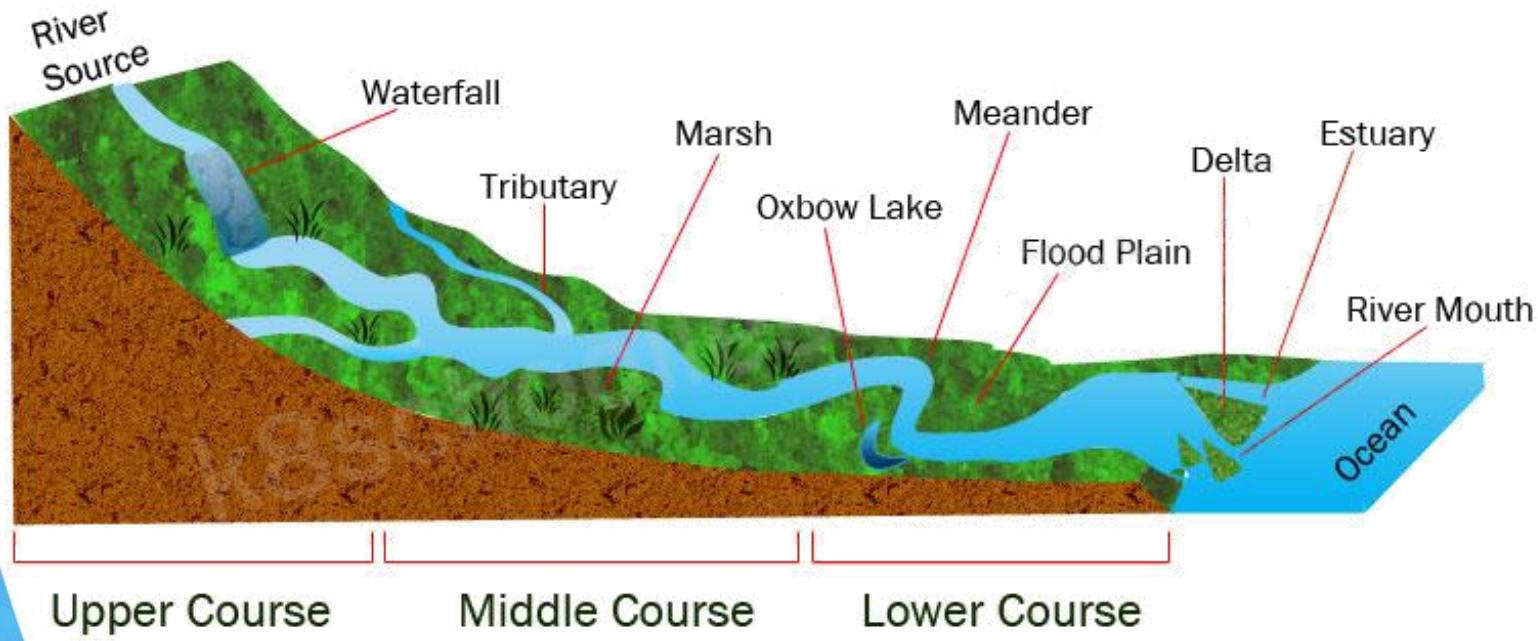


Freshwater Ecosystems

River Ecosystems

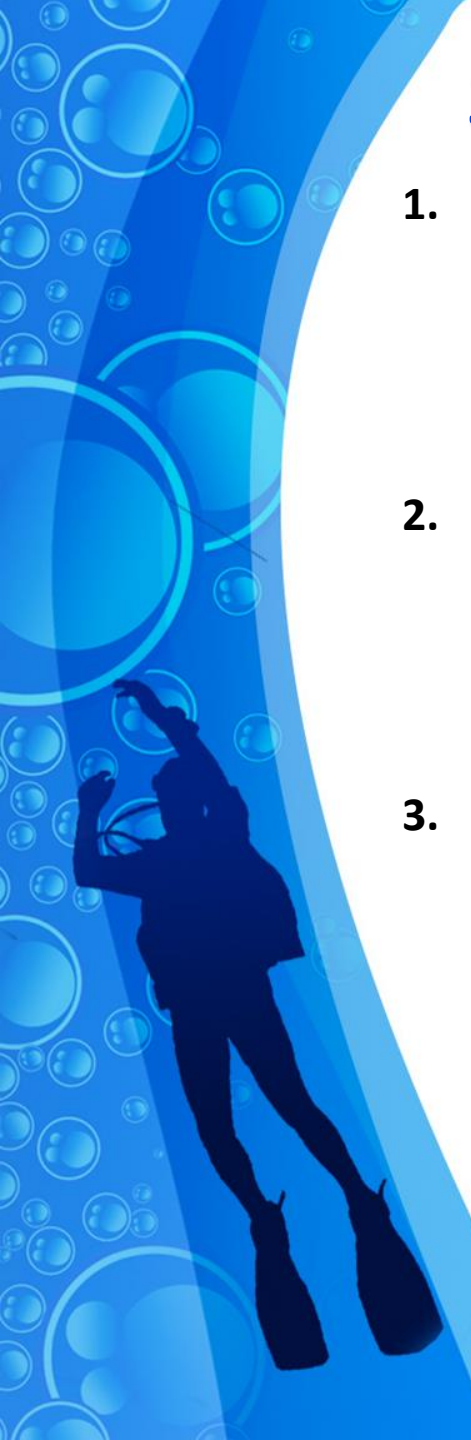
- River ecosystems are flowing waters that drain the landscape and are part of larger watershed networks or catchments, where smaller headwater streams drain into mid-size streams, which progressively drain into larger river networks.
- The strength of water flow varies from torrential rapids to slow backwaters.
- Flow can be affected by sudden water input from snowmelt, rain and groundwater.
- Water flow can alter the shape of riverbeds through erosion and sedimentation, creating a variety of changing habitats.
- Faster moving turbulent water typically contains greater concentrations of dissolved oxygen, which supports greater biodiversity than the slow-moving stream sections.

Riverscape


River Source
Waterfall
Tributary
Marsh
Oxbow Lake
Meander
Flood Plain
Delta
Estuary
River Mouth
Ocean
Upper Course
Middle Course
Lower Course

Rainbow River Drift Dive, Florida

Scuba Diving in Fresh vs Saltwater



1. **Buoyancy**
   - Due to the differences in salinity, the buoyancy in saltwater is significantly higher than in freshwater.
   - In saltwater, divers will typically need to wear more weight to counteract the increased buoyancy, while in freshwater, they may need to wear less weight.
2. **Waves**
   - Saltwater usually has more waves on the surface than freshwater, which can impact your diving experience. Waves can make it more challenging to maintain your balance and control your movements especially when you're ascending to the surface for rest stops.
3. **Temperature**
   - The most popular areas for saltwater diving are tropical areas where the water is frequently very warm, with divers often needing no wetsuit or only a shorty.
   - Freshwater diving spot are typically colder which means you may need a thick wetsuit, hood, gloves, or even a dry suit.
   - You will likely consume air more quickly on freshwater dives.
   - Temperatures in freshwater areas tend to have a greater variance from season to season than in saltwater environments.

Scuba Diving in Fresh vs Saltwater

4. **Visibility**.
   - Most divers long for over a hundred feet of visibility. In saltwater environments, high visibility is typical. In fact, in many places, 30-foot visibility would be considered a very bad day.
   - By contrast, 30-foot visibility would be viewed as a great day for many freshwater divers as visibility tends to be much less in these environments.
5. **Flora and Fauna.**
   - Saltwater environments are much larger in nature.
   - you see a larger variety of inhabitants as well as creatures of much greater size.
   - When scuba diving in freshwater, you'll likely see smaller, less colorful fish and other animals as well as less species diversity.
   - Marine life is typically less fearful of scuba divers in saltwater while freshwater fish may be more likely to keep their distance.
6. **Difference in Currents**
   - In general, saltwater environments are more prone to strong and unpredictable currents, which can pose a significant challenge to divers.
   - Freshwater environments are generally less affected by currents. There can still be some mild predictable currents present in freshwater environments, such as those caused by the flow of a river or underwater springs.

Requirement 6

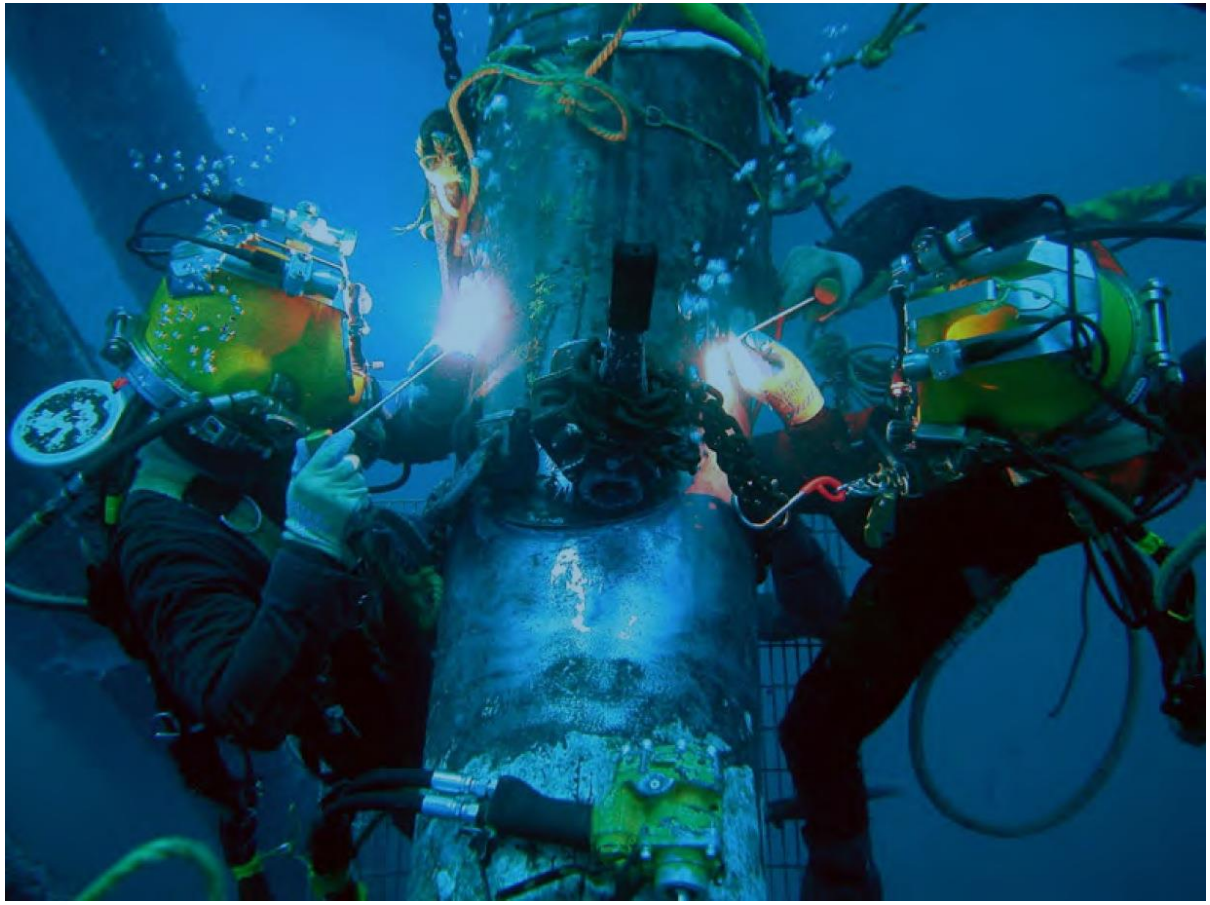
Find out about three career opportunities in the scuba industry. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.

Recreational Scuba Instructor

Recreational Scuba Instructor

- Primary duties: A diving instructor is a scuba diving professional who teaches others how to dive safely.
  - Their job can involve conducting demonstrations of how to use scuba equipment properly, guiding students during their first attempt to dive to ensure their safety and monitoring groups of divers while on scuba diving expeditions.
- While diving instructors can sometimes work for scuba diving companies that host excursions, they can also work for resorts or at attractions that offer scuba diving for tourists who travel to locations near the ocean.
- To become a scuba instructor with PADI you need to have been certified as an entry-level diver with any agency for at least six months before you can take the instructor course.
- Also you need to have an Advanced diver certification, a rescue certification, and a Divemaster or Dive Leader certification.
  - They do not have to be PADI certifications, but it helps once you start teaching PADI courses
- National average salary: $43,851 per year!

Commercial Diver



Commercial Diver

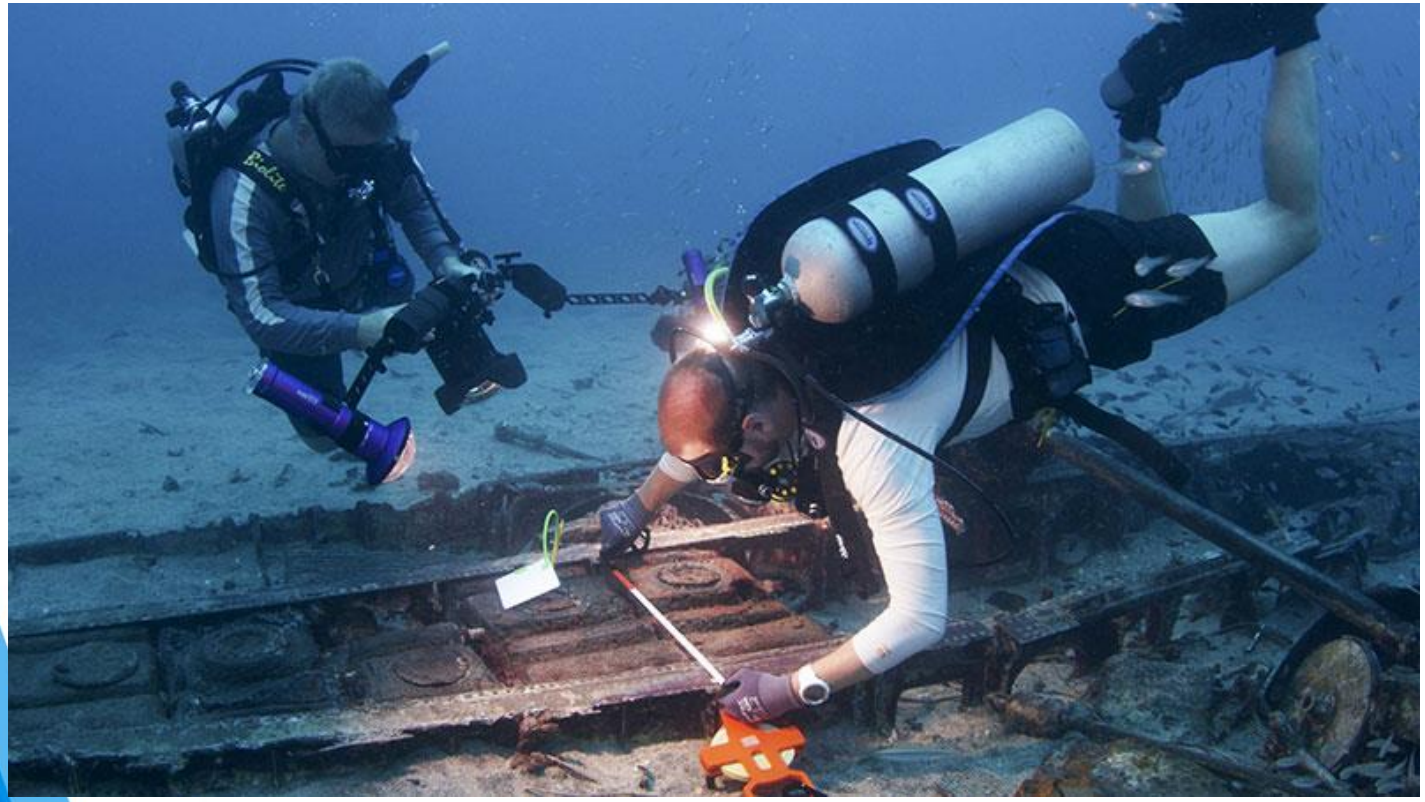
- The basic requirements include a high school diploma or equivalency. Applicants must also pass a diving physical.
- Good swimming skills, a strong desire to take on a difficult challenge, and a strong mechanical inclination are necessary.
- Commercial diver certification will cost between $15,000 and $20,000, and will take four to twelve months to complete.
- Much of the current demand for commercial diving in the United States is repairing oil rigs and the inspection and repair of bridges, dams and other structures due to floods.
- Commercial diving is hard, physical work.
  - A commercial diver may be out at sea working for two to six weeks at a time.
  - Ten-hour workdays are also common in the industry.
  - The underwater environment is often cold and dark with limited visibility.
  - Water currents can add to the challenging environment.
  - The physical demands placed on your body can be extreme at times.
- Starting annual pay for a commercial diver is in the $40,000 to $60,000 range, including full benefits. Once a diver gains experience and proves himself, the pay can grow to $100,000 to $150,000 a year.

Public Safety Diver

Public Safety Diver

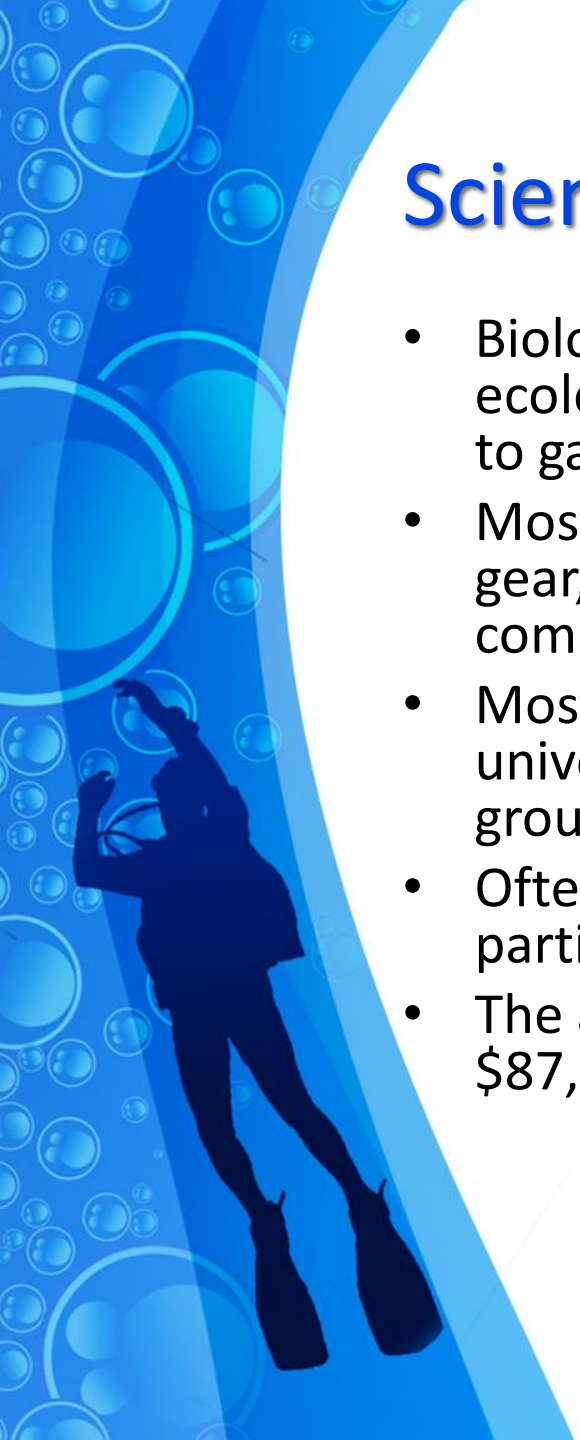
- Public safety divers perform underwater search and rescue operations and investigate and recover evidence from underwater crime scenes.
- Some examples of the types of situations that public safety divers may be called upon to handle include:
  - Search and rescue operations for drowning victims.
  - Recovery of evidence from bodies in criminal investigations.
  - Rescue of missing persons.
- Most public security forces have diving units: military, police, firefighters, and emergency medical services.
- To become a public safety diver, you will need to undergo specialized training and certification. This type of diving is dangerous and requires a high level of skill and knowledge.
- The average hourly pay for a Public Safety Diver in the United States is $24.70 an hour.

Scientific Diver



Scientific Diver

- Biologists, oceanographers, archaeologists, geologists, ecologists, and other scientists rely on scientific diving to gather underwater data for research in their fields.
- Most scientific divers use standard recreational scuba gear, some scientific divers also are technical divers or commercial divers with special certifications.
- Most scientific divers work for the government, universities, private institutions, or environmental groups.
- Often, scientific divers have advanced degrees in their particular field.
- The average salary for a Scientific Research Diver is $87,457 per year in US.



Underwater Photographer

Underwater Photographer

- An individual needs to have the experience of being a professional photographer before embarking on this profession.
- Diving certification is also required.
- Most underwater photographers work as freelancers for magazines, publications, and television.
  - Many international magazines and channels are continually searching for rising talents.
  - Start your career by selling your photos to smaller magazines to gain experience and get better.
  - As you get better, you can get hired as a staff photographer for major publications like Sports Diver or SCUBA or join networks like Animal Planet, Discovery Channel, etc.
- The average pay package for scuba diving photographers is around $35,000.
- There is no solid job for most underwater photographers and the pay is mostly based on your commercial success and skills.

ROV Pilot

ROV Pilot

- ROV pilots maintain and control the remotely operated vehicles (ROVs) used to explore the seafloor and water column.
  - They ensure the robots are ready for the science team to complete their goals.
  - When the ROVs are deployed to the seafloor, pilots “fly” the vehicles.
- ROV pilot technicians generally work on offshore vessels, platforms, rigs and marine laboratories, with some stationed in coastal facilities.
  - ROV pilots work long hours with shifts that can last up to 12 hours.
  - Jobs typically take weeks to a month out at sea.
- ROV pilot technicians often work alongside people of various nationalities.
  - Courtesy toward different cultures and personalities is necessary.
- ROV pilots have advanced degrees and certifications in many fields including ocean engineering, mechanical engineering, electrical engineering, biology, and computer sciences.
- The ROV pilot salary ranges from $91,920 to over $110,020 to start.

Military Diver

Military Diver

- There are multiple careers in the military where diving is a necessary skill.
- Military rescue divers, such as those in the U.S. Coast Guard, train to aid mariners, trapped submariners, and downed pilots.
- Special forces like the Navy SEALs are the most famous.
  - They use diving to get to and from their targets and conduct underwater surveillance, espionage, and sabotage.
- Most ships have divers whose main job is to work on the vessel below the waterline.
- There are underwater Explosive Ordinance Disposal specialists.
- The military also has a branch of diving virtually identical to commercial diving.
  - These professionals are tasked with everything from repairing military facilities to raising lost items of the seabed utilizing many of the same techniques used by commercial dive operators.
  - Many commercial divers come from the military since joining and serving means they can receive their training for free.
- No college degree is required to apply for a position as a Navy Diver. However, a high degree of difficulty should be expected. Training is tough and ongoing.