Diver greets reclining leopard seal

Göran Ehlmé

Text by Peter Symes
Photos by Göran Ehlmé

PS: When did your interest in photography start?

GE: TV-shows and programmes when I was a kid in the 1970's played a big part, in particular, Cousteau and other shows. Also Jan Lindblad (*a Swedish naturalist, writer, photographer and film maker who won acclaim for his wildlife films —ed.*)

PS: Who taught you photography?

GE: It came gradually

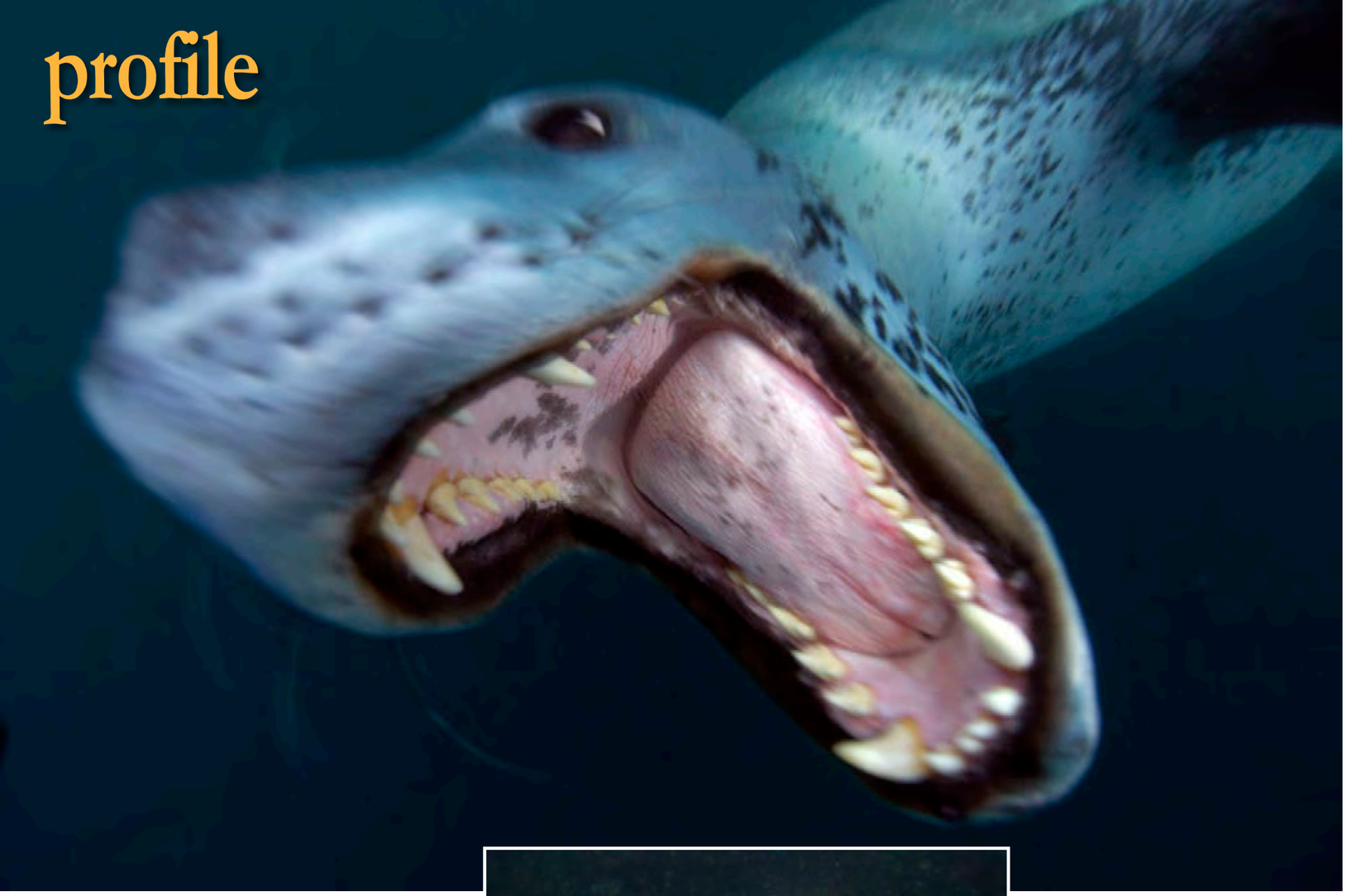
PS: You are both the co-founder of Waterproof and a renowned prize-winning photographer. What is the relationship between these activities? Did you start in business to finance an interest or are they separate?

GE: It is quite simple, really. I was a photographer first. Then, I learned to dive. It all began when I was 11 in 1976. I started with my dive training when I was 14 years old since I could get certified at age 15. I was in eighth grade then, and at that stage, I had to do a 'praktik' (*a short one or two week field trip with some practical work experience aimed at giving young students an impression and introduction to working life and various trades and crafts. —ed*). I went to Aqua Sport (a local dive shop) and asked if I could spend my praktik there, but I actually ended up in SubAqua instead, which was a vacuum cleaner company. Somebody got the paperwork mixed up, but it was okay because they also made wetsuits.

It was owned by two guys who used to work for Poseidon, and there, I learned to use a blind stich machine. This was tricky. Either you could or you couldn't! But I figured it out, and soon I had an extra job. The lady who usually did this job suddenly died, and suddenly I was the only one who could blind stich. So, I went there after school. Neoprene, as we have come to know it later, was invented there. It became quite big, but due to bad management, it went under later on.

The workshop became Vulkan. Wetsuits were forgotten, as they didn't want to do it. Windsurfing became big in the 1980's, but nobody knew how to fix and repair the suits. I then talked to my brother, Bjorn, about helping, but setting it all up was a bit of a challenge. We didn't have 380 volts in the kitchen at home, but we managed, nonetheless, to get the business off the ground. Soon, these activitities came into conflict with Vulcan, who asked us to stop competing: "Either leave or co-

Göran Ehlmé



THIS PAGE: *My, what big teeth you have...*

Leopard seal in action

Polar

operate". So, we started Waterproof in 1984 while I was working as a carpenter at the same time.

But constructing wetsuits felt right as the ocean was dear to me. As [land] photography was dear to me, too, taking the photography down under the surface was only the next logical step

I bought an underwater camera (from AquaSport, incidentially). It was a Nikonos IVa. The first images—30 rolls shot in the Red Sea—were a complete disaster. They were all over-exposed, so I put underwater photography on the shelf for a while. But in 1987-88, I was going up to Lofoten and I got off to a new start.

Waterproof and I are the same thing. I can always justify diving and taking pictures doing it because it brings pictures to our catalogues. The force that pushes me forward is having a good time, and in the beginning, it was purely for fun. It was only later it became professional. There was never money in stills even in the 1980's. That is why I went into video.

Now, we have more owners. That is because I do not want to be in conflict with what I do.

We can sit in the office and design beautiful items, but you can really only work on the visual appearance. You have to be in the field. Most of the time outside, you wait

THIS PAGE: Attack of the killer Leopard seal. Penguins are no match for the jaws of a leopard seal. Here the seal plays with its food like a frisbee in the pool

for wildlife. Ninety percent of the time, you wait. Sometimes you wait for eight hours in your drysuit, so you will notice if something is not working. You don't necessarily do that after one hour.

PS: Waterproof was one of the first, if not the first, to use cold water destinations in the marketing. I am referring to some of your early work and Waterproof promotions that was shot on Iceland in the 1980's. Where did that idea come from?

I like the tropical seas, but it is not my world. It doesn't touch my heart, as I do not get to see stuff that I understand. In cold waters, I find animals I know from home. I grew up in Scandinavia. I like to see animals that I can somehow relate to, that touches me. But

Göran Ehlmé and friend (left)
Penguins leap out of the sea onto ice flows (below)

destinations like, for example, New Zealand also work for me.

I dislike that the world is turning into a Disney World where you are told what to do. Everything is prefabricated down to the tracks of the rainforest. I hate it when there is no adventure.

When I went to Iceland, it was actually prohibited to dive in Thingvellir, though some years earlier, some black and white images were taken for Poseidon up there.

PS: You seem to have a preference for the colder regions of the planet? Where did that interest come from? What do the polar regions have to offer divers that tropical destinations don't?

GE: Diving in cold water means that you can explore locations where nobody else has been, just like Ernst Shackleton or Roald Amundsen, and there are no people around. You are back to being an explorer, that is what I love. In the tropics, you can't explore anymore.

To me cold water also means tranquility and an untouchable frontier.

PS: What is the most important lessons you have learned about wildlife by having interacted with them?

GE: In regards to marine mammals, it is important to realise how very similar we are to them. It is really surprising, actually. A lot of animals like to interact with humans. They care for their young, and they are gentle towards humans—they mean no harm.

You don't expect animals to kick you just for the fun of it. You don't let your fear interfere with your interaction with the animals. In the old days, you would not make the distinction between curiosity and an attack, and scare stories sold more newspapers.

The more time you spend with

Background

Göran Ehlmé of Sweden has planned and led many field trips to the polar areas and was the first to lead diving expeditions to the Arctic and Antarctica. He has more than 24 years diving experience, is a certified PADI Instructor and has been diving the polar areas since 1993. He dives both open water and under the ice during summer and is particularly experienced with walrus, emperor penguins and leopard Seals.

With Waterproof Expeditions, he likes to share his experiences of the polar regions with divers around the world. As an underwater cameraman, Ehlmé has been on assignment filming many documentaries for Animal Planet, BBC, Canal Plus and National Geographic. He recently won the BBC's Shell Wildlife Photographer of the Year 2006 award with his winning image of a feeding walrus underwater in North East Greenland. (see next page)

Ehlmé has filmed beluga, narwhal, seals, walrus and other mammals in the Canadian Arctic, Greenland and Svalbard. In Antarctica, he filmed humpback and minke whales and all the members of the seal family including the leopard seal. He has also captured most penguin species, including emperor penguins, as well as many invertebrates on film. In the Azores (Faial and San Miguel) he spent four seasons diving with sperm whales, and since 1985, he has been diving with orcas in Norway and became familiar with the whales themselves and the logistics and techniques involved in getting close to them.

Ehlmé's footage has been used in numerous series and films over the past ten years.

- Archives of Emperor Penguins under water in the Hollywood Production, March of the penguins, 2006
- Lord of the ice: Leopard seals (Discovery/Saint Thomas Productions, 2003)
- What do the walruses know? (SVT,DR, 2003)
- Wildlife special: Killer whales (BBC/Discovery, 2003)
- Hunt for the red whale: Killer whales (Survival, 2003)
- Blue planet: Frozen seas (BBC/Discovery, 2002, narwhal, walrus and emperor penguins)
- Toothed titans (National Geographic, 1999, feeding walrus sequence)
- White whales and narwhals chattering of ghosts (Canal+, 1999)
- Lea the Leopard Seal (Saint Thomas/Canal+, 1998)
- Avaq: The Arctic toothwalker; walrus (Scandinature)
- Svalbard: Where the polar bears reign; walrus (Scandinature)

For his company, Waterproof International in Sweden, Ehlmé is the head designer of neoprene drysuits, wetsuits and accessories. He has been testing the suits during is camera work in the polar regions and has designed them with his experiences in mind. The quality and design of the suits have won many awards for the best suits all over the world. ■

THIS PAGE: Feeding walrus; Diver and manatee (bottom right)

the animals, the more logical it all seems, and it begins to make sense. We are not all that dissimilar.

PS: Are there any other creatures you would like to document in the future?

GE: I would still work with the polar regions. So far, I have only done "the easy parts". I would definitively like to do the emperor penguins. They are always out to open sea and quite tricky to follow. Also, the Giant octopus and feeding Sperm whales are high on my list of priorities.

PS: What do you look for in an image? What makes a picture great in your opinion?

GE: Tricky question. It can be so many things.

PS: Video or still photography? When is one media better than the other?

GE: In the recent years, I have been working mostly with stills because it is easier and the equipment is lighter and less complicated, which makes it more fun. I have gone back to video lately though, but it requires more people. For me, it is 50-50 which one I prefer.

PS: Where do you see the biggest (technological) advances taking place?

GE: What I learned when I dealt in white shirts was that they were all made in Bangladesh, so it was meaningless to discuss quality. It is a matter of design. The same principle applies to photography; you

can pretty much decide on the quality you want.

The big question at the moment is will Nikon and Canon take over the video market, or will Sony and Panasonic take over the still photography market? Evidently, the technologies are about to fuse. Still photography as we know it today will go extinct, wiped out by what BBC and National Geographic are capable of. They can just take frames out of their High Definition videos. Nobody can compete with that.

PS: Which features would you like to see invented?

GE: Sidescan sonar video. The side scan sonar images are nice, so just imagine if you could do the same with video. You could use sound to see really deep and record what i.e. the Sperm whales are doing. Imagine what you could see.

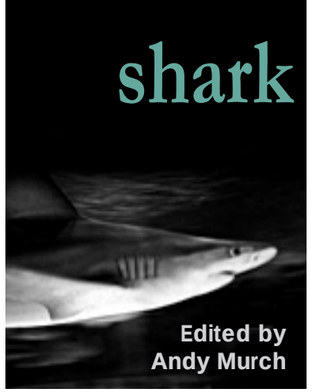
PS: Who inpires you? Do you have any role models?

GE: I have no clue really. Do what you like, be happy and have a good time.

PS: What other dreams would you like to live out before you retire?

GE: Hmmm..... just to see some other places. I already travel a lot. Perhaps seeing British Columbia. But I am already living my dream. I never had to work for the sake of making money. I always enjoyed what I do and have been lucky making money doing so. ■

Giant barnacle-encrusted tail fin of a humpback whale



Edited by
Andy Murch

THIS PAGE:
Life under an oil rig

"Ironically, the oil rigs that pepper the continental shelf and are now the cause of so much devastation, are also oases of life that harbor complex and vibrant ecosystems."

Refugees of the Gulf Oil Spill

Text and photos by Andy Murch

As I write this, the eyes of the world are focused on the mesmerizing river of crude oil that has incredulously been pumping thousands of barrels a day into the northern reaches of the Gulf of Mexico, enveloping and poisoning everything it touches.

The headlines are filled with graphic images of oil clad sea birds, drowned turtles, beaches covered in sticky black globules and marshlands clogged in a reddish brown blanket of death. It is both a sad and angering picture.

Recriminations fueled by a collective feeling of helplessness, reverberate from coffee shops to courtrooms, but to me the finger pointing is irrelevant.

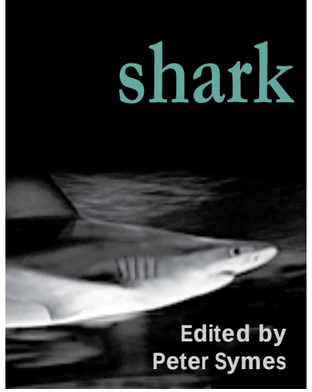
At every level, people and organizations have mobilized to contain the slick and rescue as many air breathing animals as possible. The size and scope of the terrestrial effort is comforting but below the surface there is little that anyone can do.

The northern gulf is a critical deepsea habitat. Ironically, the oil rigs that pepper the continental shelf and are now the cause of so much devastation, are also oases of life that harbor complex and vibrant ecosystems. Colonies of immobile invertebrates cling to every wire and strut, feeding an army of crustaceans, mollusks and reef fishes. Enormous clouds of tiny bait fish morph from one shadow to the next and are preyed upon by schools of snappers and other teliost species, which in turn support large aggregations of silky and dusky sharks.

Perched between the apex predators and lesser life forms, small endemic shark species such as the Gulf of Mexico Smoothhound Shark (*Mustelus sinusmexicanus*) jockey for position in the food web.

The first and only time I encountered a Gulf of Mexico Smoothhound, I initially thought that it was a smooth dogfish (*M.canis*) which is a closely related, wide ranging resident of the eastern seaboard. When I later learned that is was a virtually unknown species confined to a tiny patch of seafloor in the northern gulf, I felt equally surprised and privileged to have had the chance to encounter it.

I was aboard a research vessel at the time and the tiny shark was pulled from the depths for study amidst a large assortment of other interesting abyssal fishes. After the lab coats had taken fin clips for DNA analysis and generally had their evil way with the hapless shark, I slipped into the water and swam it over to the oilrig that we were tied off to. When I released it into the shadowy



depths, it swam tentatively at first as if not trusting its liberty. Then, after eying me cautiously, it headed for a barnacle-encrusted crossbeam and began weaving its way down to the sea floor 600 feet below.

The images that I took of that little smoothhound shark have been haunting me ever since I heard about the spill. I am optimistic that most pelagic sharks had the wherewithal to swim south at the first bitter taste of oil. But, what has become of vulnerable endemic species like the gulf smoothhound? Did they all flee into open water like land animals running from a forest fire, or did they cling to the habitat they know, inadvertently exposing their delicate gill structures and other organs to the viscose residue floating around them in the water column like a giant toxic lava lamp?

After the Exxon Valdez disaster in Prince William Sound, the composition of marine life within range of the spill was changed forever. Some species quickly bounced back while other once plentiful creatures remained severely depleted. Pink salmon populations displayed stunted growth and sea otters and ducks showed higher than normal mortality rates in subsequent years (partially because they ingested prey from contaminated soil). There were no studies done on shark mortality in those isolated Alaskan waters because dead sharks invariably sink. However, there must have been casualties up and down the food chain.

Sharks are famous for their capacity to overcome almost all environmental threats (other than overfishing). Female sharks held in isolation in aquariums have even procreated without the aid of a mate. But for a small endemic species like the gulf smoothhound whose entire habitat is under siege, a dislocation of this magnitude could presage its demise.

There are no refugee camps or rehabilitation centers in the ocean but sharks are resilient creatures. They are resistant to toxins and blessed with keen spatial senses that will help them find their way back to ground zero once the deluge is finally under control. But for those that fled and survived the initial spill, the question remains, what kind of brave new world will they be returning to? ■

THIS PAGE: Smoothhound shark (*Mustelus sinusmexicanus*)

Virgin birth may be sharks' secret survival strategy

Parthenogenesis—a form of asexual reproduction found in females where growth and development of embryos occurs without fertilization by a male—may be part of an extreme survival strategy for sharks, say researchers.

In parthenogenesis, females' eggs start dividing without being fertilised and produce daughters that are genetically similar to the mother. Parthenogenesis in sharks was first observed in a captive hammerhead shark in 2001, but this was an isolated incident, and the shark pup died after three days, making it difficult to say much about its evolutionary significance.

Kevin Feldheim at the Field Museum in Chicago, and an international team of colleagues, have now shown that the incident was not exceptional and sharks born from a virgin mother can survive for many years.

The team were inspired by the 2001 birth to keep eggs produced by a captive white-spotted bamboo shark at the Belle Isle Aquarium of the Detroit Zoological Institute. The female had never encountered a male during her adult life, and biologists had assumed the eggs were infertile. To their surprise, seven incubated eggs produced two pups, which survived for over five years. Genetic analysis confirmed that they were parthenogens.

These findings demonstrate that some female sharks are capable of producing multiple, viable offspring through parthenogenesis. "The demonstration of parthenogenesis in a third lineage of sharks raises the prospect that this reproductive capability may not be uncommon in these ancient fishes," the authors conclude. ■

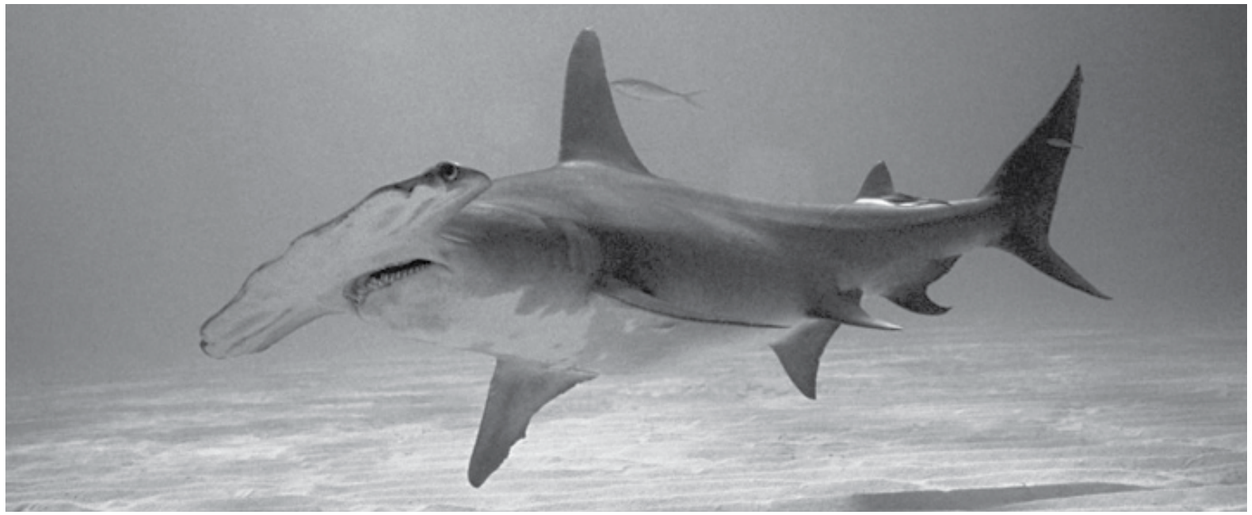
Sharks sniff out their prey in stereo

A new discovery helps explain why sharks are so good at catching their prey. They smell in stereo to help them home in on dinner.

It turns out that sharks can detect small delays, no more than half a second long, in the time that odours reach one nostril versus the other. When the animals experience such a lag, they will turn toward whichever side picked up the scent first.

To follow the scent trail left by their prey across the ocean, sharks swim in the direction of the nostril that sniffed the odour first, scientists have found. The findings, just published in *Current Biology1*, suggests that when a shark moves into a patch of odour, the smell hits one nostril before the other—and that tells the shark to turn either left or right.

By moving from side to side from one patch to another, the animal maintains contact with the odour plume as it tracks its prey, said Jayne Gardiner at the University of South Florida in Tampa. ■



WOLFGANG LEANDER

How does a hungry shark decide where to look for a tasty meal when there's no tempting morsel in plain sight?

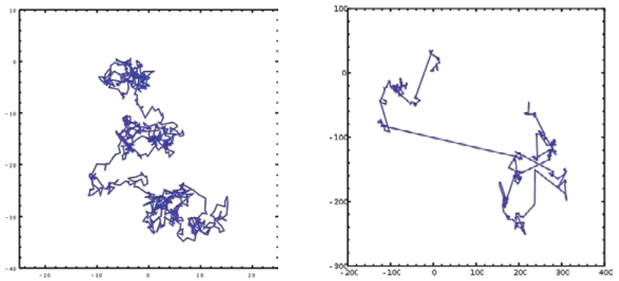
Sharks also apply math while hunting

Sharks and other predatory sea animals may actually use math when they hunt, according to new study, which appeared *Nature.*

When sharks and other ocean predators can't find food, they abandon Brownian motion, the random motion seen in swirling gas molecules, for a *Lévy Walk*—a mix of long trajectories and short, random movements found in turbulent fluids.

On a graph, the Levy walk, which consists of rare, long forays in one direction, has a squiggly pattern, and its shape stays the same no matter what the viewing scale is.

Researchers analyzed over 12 million movements recorded over 5,700 days in 55 radio-tagged animals from 14 ocean predator species in the Atlantic and Pacific Oceans, including silky sharks, yellowfin tuna, blue marlin and swordfish. The data showed that Lévy flights interspersed with Brownian motion can describe the animals' hunting patterns. ■



Sharks hunt for food by alternating between Brownian motion (left) and Lévy flights (right), depending on the scarcity of prey

How to be good on air

What accounts for huge differences in air consumption? Even divers with fairly similar size and experience have different consumption rates, which couldn't be attributed only to differences in fatigue or stress levels.

Text by Asser Salama
(TDI/SDI/CMAS Instructor)

Since different people have different lung volumes, different metabolisms and different genes, the point here is that there is no ideal air consumption rate. In other words, you shouldn't be ashamed of using more air than your buddy.

So, let's forget all about gauge competitions. Large air reserves are useful only when they translate into longer, safer or more enjoyable dives. But if all you're after is bragging rights to having more air left over at the end of the dive, maybe you're missing the point behind diving in the first place.

Having a lot of air by the end of the dive is not the ultimate proof of diving excellence that we sometimes make it. However, improving your air consumption often leads to longer (and may be deeper) dives. Here are some tips to help lower your consumption rate:

Master buoyancy control

Stop moving underwater; just freeze. If you start to sink, then you are not neutrally buoyant. This is because your BCD is not adequately inflated. Believe it or not, adjusting your buoyancy by using the BCD is far less air-consuming than adjusting your depth level in the water column by finning and/or hand movements.

NO bicycling: Air cells in the BCD pulls up at the chest area. Compensation for poor trim takes effort, which translates into more air consumption

Achieve horizontal trim

Normally, a diver using a bit more-than-needed weight in a conventional BCD won't be able to achieve a horizontal trim. The weight around the waist pulls down, while the air cells in the BCD pulls up at the chest area. Compensation for poor trim takes effort, which translates into more air consumption.

Minimize the "hole in the water" made by your body. The less water you have to shove aside, the less energy and air you have to consume. One way is to reduce the amount of weight you carry because extra weight needs extra BCD inflation to lift it. A more inflated BCD pushes aside more water. Another way to shove aside less water is to trim your body in a horizontal position so that your legs are following through the hole made by your shoulders and not enlarging it. Many divers do, in fact, swim with their heads up and fins down.

Wings and integrated weight pockets help achieve a good trim, but you can still get the right trim and weight while using a conventional BCD.

Get fitter

The fitter you are, the quicker your heart returns to the normal rate after exercise. If you have to swim a long distance to reach a dive site, or carry your kit a long way, you will start the dive at elevated breathing and heart rates. Actually, some virgin dive sites like Ras Abu Galoum north of Dahab, Red Sea, Egypt, require a 90-minute camel ride! After a period of exercise, a fitter person returns to the normal breathing pattern faster than a less fit one.

Practice finning

Do lots of slow lengths instead of few rapid ones. This will help the right muscles develop. Try and do as many lengths underwater as you can, and take into consideration that underwater finning is not the same as surface finning. There are plenty of underwater kicks to choose from. However, the majority of divers use either the frog kick or the flutter kick. An excellent piece of advice is to use the "modified" flutter and/or frog kicks. The modified version

involves bending the knees 90 degrees and doing smaller, slower lengths.

Breathe deeply

It's somewhat against basic logic. Why does breathing deeply make a limited air supply last longer?

Some divers think that breathing from the top half of their lungs is a means of saving air. They take short, shallow breaths, but unfortunately they end up wasting air instead of saving it. Actually, what they're doing is influencing more carbon dioxide build-up. And believe it or not, it's the need to blow out excess carbon dioxide not the lack of oxygen that urges you take the next breath.

Short, shallow breaths leave your lungs filled with excess carbon dioxide. As this carbon dioxide urgently needs to get out, you're obliged to take another breath although you don't need the oxygen yet.

Do not skip a breath

On the other hand, don't exaggerate the slow, deep breaths to the point of hyperventilation, which can lead to fainting due to suppressing the urge to breathe. The best breathing pattern is to take slow, deep inhales followed by slow, complete exhales. Do not play with your breathing pattern. Breathe normally and don't hold your breath. It is worth noting that in some circumstances when perfectly-neutral buoyancy is ultimately important, for instance when you're hovering over some fragile corals for a photo, this best breathing pattern may disturb your buoyancy. You'll have to change it for a short while and take shorter, quicker breaths.

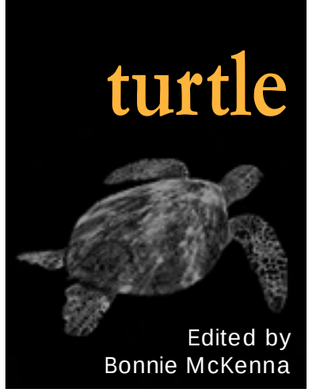
Check your gear

Check your equipment for air leaks. Often, you can't see the leaks yourself. A little bubbling from your tank's O-ring or your BCD inflator can sum up to several bars/PSIs over an hour's dive. A free-flowing octopus occasionally dumps air a lot faster. Detune it if you can, and mount it with the mouthpiece facing down. Don't detune your primary regulator though. Detuning your primary regulator leads to increasing your breathing work. This increase leads to an elevated carbon dioxide production rate, which leads to accelerating your breathing rate and eventually translates into wasting more air.

Asser Salama is a mechanical power engineer, an MBA degree holder, and a TDI/SDI/CMAS instructor. He teaches both recreational and technical diving courses and organizes trips all over the Egyptian Red Sea. Salama is the current president of Red Sea Shadow, the largest online SCUBA diving community in Egypt. He enjoys writing and software development. Email Asser at asser@red-sea-shadow.com. ■

Some virgin dive sites like Ras Abu Galoum north of Dahab, Red Sea, Egypt, require a 90-minute camel ride! After a period of exercise, a fitter person returns to the normal breathing pattern faster than a less fit one

turtle tales



Edited by
Bonnie McKenna

SCOTT BENSON / NOAA

Proposed leatherback critical habitat

In response to Turtle Island Restoration Network's 2007 petition and 2009 lawsuit, NOAA has just announced its proposal to designate 70,600 square miles (182,853 square kilometers) offshore of California, Oregon and Washington as critical habitat for the leatherback sea turtle. The new protected area sets aside important jellyfish feeding areas and migratory routes as a safe haven from permanent ocean structures that inhibit migration and impact the jellyfish populations that leatherbacks feed on. ■

Thousands of turtle eggs relocated

News from the Gulf of Mexico off the southern coast of the United States continues to threaten wildlife that depends on the Gulf for food and nesting areas.

Years of work to protect the nests of Loggerhead sea turtles along the Alabama coast are threatened. Now, officials are digging up the approximately 700 nests on the Alabama and Florida beaches, packing the eggs in Styrofoam boxes and flying them to a facility in eastern Florida where they can mature. Once the eggs have hatched, the young turtles will be released in darkness on Florida's Atlantic coast. Translocation of nests on this scale has never been attempted before.

Sea turtles that hatch in the northern Gulf of Mexico typically spend a few months near the coast and then eventually enter the Loop Current to make their way into the Atlantic. According to the U.S. Fish and Wildlife Services, the National Oceanic and Atmospheric Administrations National Marine Fisheries Service, and the Florida Fish and Wildlife Conservation Commission, approximately 50,000 hatchlings could be lost to the oil.

Officials plan to dig up the eggs at about day 50 of their incubation, after their sex has been determined. Workers will be trained in special egg handling techniques. Workers have to be careful not to turn the eggs over or roll them so as not to disturb the membranes that connect the embryo to the shell and cause them to die.

U.S. NATIONAL PARK SERVICE

Some of the concerns regarding egg relocation include a change in the genetic makeup of the east coast Loggerheads, which are not identical to those found in the Gulf of Mexico, and the breeding populations of Loggerheads will be depleted in the Gulf.

Smaller scale relocations of Kemp's ridley turtles have been successful. This will be a wait and see operation. Thane Wibbels, a herpetologist at the University of Alabama said, "You are either reactive or proactive, and if you're reactive, it's too late." ■

Burning turtles alive

It has been reported that turtles caught in drag booms as boats circle large amounts of oil have been set afire.

The Sea Turtle Restoration Project has been successful in obtaining a moratorium on burning the oil until the turtles have been removed. ■

Gulf oil leak threatens turtle hatchlings' food

Scientists warn that turtle hatchlings could choke on tiny tar balls as they feed off the Sargassum seaweed along the Gulf Stream. Or, the oil could poison and kill the food source before the hatchling could reach it. If the tar and oil foul the algae, the turtles could mistake the toxic bits for their favorite food.

"All of these effects are speculative," said Blair Witherington of the Florida Fish and Wildlife Commission, adding that scientists have not had much experience studying large oil spills. ■

How can accidental captures of loggerhead turtles be reduced?

Spanish scientists have studied the interactions between loggerhead turtles (*Caretta caretta*) and fishing gear such as longline hooks used at the water's surface.

Populations of loggerheads are in decline all over the world, and particularly in the Mediterranean Sea where more than 20,000 turtles are accidentally caught each year. Finding responsible and sustainable fisheries solutions were one of the prime objectives of the research study.

The scientists used real commercial fisheries data taken by scientists on board fishing vessels. They found that using fish as bait reduced the incidental catch of the loggerheads, but impacted the swordfish yields. Stopping the use of small mollusks such as squid could not ensure the incidental catches of loggerheads would be prevented.

The methods proposed by the researchers did not involve modifying equipment, and could reduce the number of turtles caught while maintaining the fishermen's profits.

Most accidental catches happen during the day, more than 35 nautical miles from shore, and in the summer. The proposal, although untested, made by the scientists is to limit longline fishing during these times to drastically reduce the capture of turtles.

UKANDA / CREATIVE COMMONS

turtle tales

Edited by
Bonnie McKenna

Natural gas threatens Australia's flatback turtles

Western Australia's flatback sea turtles are being threatened throughout their life cycle by natural gas projects. Satellite tracking shows that after nesting on Barrow Island off the coast near Onslow, flatbacks swim north along the coast into the Kimberley area to feed.

The sea turtles will lose their nesting area on Barrow Island due to the massive Chevron Gorgon natural gas plant. They will also face a major disruption of their feeding grounds near James Prices Point north of Broome if a proposed natural gas plant is sited there.

At the proposed natural gas plant at James Price Point, marine turtles have been sporadically studied but the research has never been published. Satellite tracking is the first concrete evidence of flatback activity. Broome's residents have photographed sea turtles and nesting tracks in the area. However, representatives from the petroleum company deny that any sea turtles nest near or on James Price Point.

The Turtle Island Restoration Network (TIRN) is calling on Chevron, the joint venture partners and the Australian government to halt natural gas development in the Norrthwest until research can fully study the environmental harm to marine turtles, whales, flora and fauna and human communities. TIRN is also encouraging the Western Australian government to release its draft Marine Turtle Recovery Plan, make public the marine turtle database, and to engage Australian and international sea turtle biologists to implement a long-term sea turtle protection and recovery plan to ensure the survival and prevent the extinction of Australia's flatback sea turtle. ■

U.S. NATIONAL PARK SERVICE

Kemp's ridley sea turtles in the Gulf of Mexico

The recovery of Kemp's ridley sea turtles face a dramatic set-back as the massive oil spill from the Deepwater Horizon disaster effects coastal nesting beaches.

"I have great concerns for the environmental impact the spill will have on our fragile coast," said Dr Andre Landry of Texas A&M University's Sea Turtle and Fisheries Ecology Research Laboratory. "We are entering the prime time of the ridley nesting season in which adult females will be in nearshore waters nesting three to four times every 14 to 21 days."

There are five species of endangered and threatened sea turtles in the Gulf, but the area of the spill encompasses one of the only Kemp's ridley foraging and migration routes to their last remaining nesting beaches in Texas and Mexico. At least 33 dead or dying Kemp's ridley turtles have already washed up on shore, but scientists think these casualties are linked to shrimp trawl activities.

As the oil moves east toward Florida's beaches, the oil could impact the nesting areas for loggerheads and green sea turtles.

"This spill could not have come at a worst time for migrating and nesting Kemp's ridleys. I am outraged that shrimp trawling has increased in Louisiana in anticipation of an oil closure, their careless actions kill hundreds of endangered turtles each year," said Carole Allen, Gulf director of the Sea Turtle Restoration Project and founder of HEART (Help endangered Animals Ridley Turtles). ■

U.S. NATIONAL PARK SERVICE

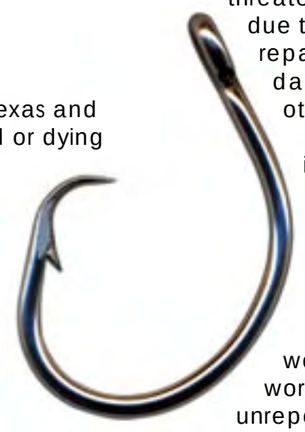
Turtles in Peril

A recent paper coauthored by Brian Wallace, science advisor at Conservation International, and colleagues from Duke University and San Diego University, suggests that fisheries bycatch may pose the biggest threat to marine turtle populations worldwide.

The study estimates that in the last 20 years, about 85,000 sea turtles have been reported as bycatch. However, due to massive under-reporting, by large and small fisheries, the actual bycatch is estimated to number in the millions.

Sea turtles are threatened by numerous factors, but fisheries bycatch is the most acute threat to sea turtle populations today.

The global decline of sea turtles threatens more than the turtles themselves; additionally, the bycatch also threatens poor fishing communities due to the loss of time and money repairing fishing gear and nets damaged by sea turtles and other bycatch species.



MUSTAD.NO

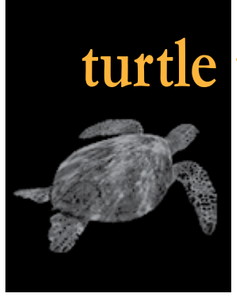
The authors of the study identified several regions that should be the highest priority for efforts to reduce sea turtle bycatch: the eastern Pacific, Mediterranean Sea and western Atlantic.

Ninety-nine percent of the world's fisheries, around the world, operate in these areas unreported, unmonitored and uncensored.

The study's authors recommend the adoption of turtle-friendly practices outlined by the UN's Food and Agriculture Organization including:

- Use of turtle exclusion devices (TEDs) on trawl nets
- Replacing J hooks with circle hooks
- Substituting squid bait with fish bait

The authors also suggest that consumers support seafood from responsible sources, which will encourage more sustainable practices. ■



How sea turtle hatchlings use their flippers to move quickly on sand

After climbing out of their underground nest, baby turtles must move quickly and traverse a variety of terrains for several hundred feet to reach the ocean.

While the turtle's flippers are adapted for life in the water, their flippers enable excellent mobility over numerous obstacles and sand of varying moister content and empaction.

According to Daniel Goldman, assistant professor of physics at Georgia Tech, "On hard-packed sand at the water's edge, the turtles push forward by digging a claw on their flipper into the ground so that they don't slip, and on loose sand they advance by pushing off against a solid region of sand that forms behind their flippers." ■

U.S. NATIONAL PARK SERVICE

Hatchlings race to the sea

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Loggerheads march to beat of own drum

Increasingly threatened loggerheads follow their own paths in travel and eating.

With loggerhead sea turtles in serious decline, researchers' would like to know more about where the turtles go, and what they eat so they can better protect their habitats. A team from the Archie Carr Center for Sea Turtle Research, at the University of Florida, is reporting some surprising findings in the turtle's shells.

An analysis of the chemical elements found in the shells suggests that the turtles are remarkably individualistic in their range, diet or both. The findings are unexpected because loggerheads are known to swim thousands of miles and eat up to 80 types of prey.

The findings also shed light on the turtle's habits over a span of 12 years, at least three times as long as the longest study using satellite-tagged turtles.

Although the analysis revealed that the turtles were surprisingly different in their individual diets and travel, it did not reveal specific discrete food items or locations.

The findings need to be refined, but the research could help scientists and public policy makers find and protect specific areas of the open ocean or coastal waters where loggerheads congregate. Such protected area may be more urgent; on March 10, U.S. federal agencies proposed upgrading the turtle's status from "threatened" to "endangered" among the seven Atlantic and Pacific populations. ■