Juara Turtle Project

Additional information

15 January 2019

Brief History

First, there was a government-run hatchery here in Juara, that was operating mainly as a tourist attraction. It operated on a five-year contract and that expired in 2006. At that time the government hatchery was located to where Riverview Chalets is now located.
As the government was stepping out in 2006, John Amos saw the value and potential in the hatchery. John approached the government (Fisheries Department) and they gave him permission to continue the hatchery project, even though he had no exact knowledge on how to go about doing it; and all funding will have to come from his own pocket.

An international school in Singapore, UWCSEA, that was in close contact with John, was keen in supporting John Amos's idea. They decided to contribute RM30,000 each year for the project, mainly to support and fund for the egg collection costs. UWCSEA now also pay an employee to work at the hatchery project as their student coordinator/ facilitator, and help with the operations of the place.

The hatchery remained at Riverview for a year, then moved to Lagoon to avoid large tourist crowds, and be closer to the nesting sea turtles on Mentawak beach.
In 2008, Tom Wuebbens was working for UWCSEA as a kayak instructor and he slowly got involved with the hatchery project as the UWCSEA sea turtle coordinator position. That same year, 2008, the Royal family of the state of Pahang came to Juara and wanted to help support the project. Since John was already doing it on Tioman, they went and asked John what the project needed and he mentioned about the sea turtle egg collection permits and sanctioned beaches. That is when we got involved with the Royal Family for the first time.

Not too long after, John and Tom thought that it would be ideal to establish the sea turtle hatchery project as an independent sea turtle conservation organisation. To focus the work, and to generate better awareness regarding issues on environmental responsibility. This is when Tom contacted his friend Charlie Fisher, who was back in the USA, and asked him to come over to work on the project.

The new (current) buildings of Juara Turtle Project were constructed in October 2008, and the first volunteers arrived in June 2009. Charlie stayed and operated the project since he arrived, while Tom returned to the USA to complete his degree, then returned to JTP.
As of August 201, Tom worked full-time at UWCSEA in Singapore as an outdoor education teacher. John still lives at Riverview and is a driving force behind the Juara Turtle Project, also Riverview Chalets and Lagoon continued to provide physical, logistical and financial support whenever necessary.

The Juara Turtle Project now, strives to operate and function in a sustainable manner, maintaining food gardens and taking extra care to preserve its surroundings. The Project itself is always under scrutiny as to whether it is providing more positive effects than negative, keeping in mind that there will constantly be an increase in development along the beaches and that we try to bring more people here, so we are always doing our best to manage it in the most appropriate way. Conservation is about having consideration and making compromises.

Sea Turtle Conservation

What we do here is try to help the sea turtle population on Tioman Island, which we think will mainly be achieved by enforced environmental laws, positive direction from the government, general respect and consideration for the natural environment/ eco-systems, and the general realisation that natural areas are an economic asset and conservation is an investment financially, as well as environmentally. On site we pitch in by protecting the eggs in a hatchery until the baby turtles hatch. We have tried leaving eggs on the beach but people have taken them. We also educate people that come here, to be more aware about environmental consideration.

We try to interfere as little as possible in the sea turtle's natural life-cycle, therefore we do not keep baby turtles. Any turtles that are kept here are being rehabilitated or are unable to survive in the wild. The importance of spreading awareness about environmental threats is a major aspect of the project. People must achieve a sustainable relationship with nature or else we watch it disappear. When visitors come here it is a very small appreciation of what goes on here. If people just want to see a turtle and leave, then the kind visit is of no value to the turtles and should never happen. Visitors should always be told about what the problem is; lack of environmental consideration from people.

Extinction

Sea turtles are expected to be extinct in the next 50 years at the current rate of population decline. Modern sea turtles have lived on Earth for the last 110 Million Years, but in the last 200 years have begun to die off at an increasing rate. Widespread human industrialisation has been impacting the planet as well in the last 200 years, directly contributing to the extinction of many animal and plant species. Knowledge of the problems humans are causing for other species and reaction to these problems with compromise and strategy is essential to life thriving on Earth. Most likely they will go extinct quite soon, maybe with exception to a few small populations that will hold out for a bit. So awareness is very important.

Habitat Protection

Habitat protection is also an important consideration when doing conservation work. If there is not suitable habitat, there is no reason to sustain the species that live there. If you don’t protect the home for the turtles, there is no reason to protect the eggs or turtles. One way JTP is fighting for the protection of sea turtle nesting grounds is we have petitioned for several beaches on Tioman, Sri Buat and Tulai islands to be sanctioned. This means there would only be regulated development allowed on these beaches. These appeals were made with help from TAT, or friends in the Pahang State Royal Family. They would put regulations on these beaches for development, limiting it or having regulations like low/ no lighting, buffer zone of no development near the beach, or just no development. Enforcement of Marine Park's laws is another way of protecting the marine environment. Marine Parks is a federal agency that has set regulations for the 2 nautical miles surrounding Tioman and other marine parks. These rules include no fishing, no collecting of corals or other natural items found in the ocean, and restrictions on marine recreation. The rules are not well enforced, for example you can rent fishing equipment at many jetties on Tioman.

Awareness

Awareness of environmental threats and marine park regulations is the first and most important part of being a responsible tourist and human being. Knowing that what you do that impacts the planet we call home is important. As well, knowing that humans are not the only ones needing this space to live. Millions upon millions of beautiful life forms share this planet. Having consideration and respect for nature is a priority. At Juara Turtle Project, we are working to spread awareness to the residents of Juara, the primary school students, international school students, volunteers, visitors and the future generation. Many people have no idea about environmental consideration. Therefore, effects of having an aware population would be very dramatic for nature's well being.

Sea turtles

There are seven types of sea turtles in the world. 4 types are native to Malaysia: the Leatherback, Green, Hawksbill and Olive Ridley Sea Turtles. On Tioman, it has been 15-20 years since the Leatherback or Olive Ridley turtles have nested here, so they are considered extinct from this area.

The Green sea turtle is now the most common type of sea turtle in the world as well as on Tioman Island. Green turtles have a smooth shell, called the carapace and vary in colour from grey, brown or black on top and a lighter yellow colour on their underside, called the plastron. Adult Green turtles feed on Algae and Sea grass mostly, while the babies eat small surface animals and plants. The Hawksbill sea turtle is the only other type of sea turtle that is still nesting on Tioman. Hawksbills are distinguished by their prominent hooked beak (like a hawk, or eagle) and their over-lapping scutes on the carapace. Hawksbills are amber coloured with black or brown accents and a white or yellow plastron.

The largest and most critically endangered Sea turtle is the Leatherback. Leatherback Sea Turtles have been recorded diving to1200 meters deep. The only type of sea turtle that is not currently listed on the endangered species list is the Flatback sea turtle, native only to Australia.

Life-Cycle

A sea turtle's life can be very long but is also very strenuous. The eggs will incubate for around 50 and 70 days before hatching (1.5 months). In the nest, when a significant number of baby turtles have hatched, the baby turtles will work together to dig up through the sand to reach the surface. The eggs are at risk to animals, here mainly monitor lizards, and of course people. At the surface turtles are at risk to predation from crabs, lizards, and birds, while in other parts of the world wild dogs, pigs and racoons threaten the baby turtle's lives. On their way to the sea, the hatchlings use visual clues to find the ocean, like light. In any natural setting, there is more light over the ocean than there is over land, but in developed areas, boats, resorts and restaurants invade with lights brighter than the sky. This distracts the hatchlings from the ocean, leading them away from the water and exposes them to dehydration, animal predators, and death on land.

When the hatchlings reach the ocean they will swim for days and end up in ocean currents. They find food sources along the way, such as shrimp and crab larvae, but this food isn't essential because they have back up energy for up to two weeks from the yolk sac which is absorbed when inside the egg. Sharks, large fish, and sea birds are natural predators for the new born turtles as they swim away from shore. Rubbish, like cigarette butts, in the ocean from human waste looks like food to the turtles and will kill the babies if they eat it. Rubbish is, sadly, abundant in the ocean and many marine creatures are

negatively affected by it. The turtles will swim and float along with ocean currents until the currents cross at the feeding grounds. This is where the young turtles find islands of sea grass and plants to hide inside from natural predators while they forage for insects, snails, fish larvae and small crabs.
Turtles in open water will migrate with ocean currents, some hiding with seaweed and others exposed, until they have grown to a size or age at which they return to coastal waters, usually between 5 and 10 years or when the shell has reached the size of a dinner plate.. When sea turtles find reefs close to the coast, their feeding habits are more adult like, meaning less intake and a change in diet. Each type of turtle has a specific common food, jelly fish for Leatherback turtles, sea grass for Green turtles, coral sponge for the Hawksbill.
Sea turtles take up a preferred feeding area, a home feeding ground, where they spend most of their time and return to the same feeding ground after nesting later in life, year after year. Living near the coasts again, the turtles are fairly safe from natural predators because of their size, but this is when the threat of crossing paths with human dangers is more likely. Sea Turtles are killed on purpose, and by accident. When turtles surface for air, they are exposed to boats, propellers, barges, and jet ski's which can cause fatal collisions to the turtles. Some fishermen use long lines for fishing, which can hook them, or tangle the turtles limbs causing amputation, or often drown them. Turtles are caught to be eaten or to use their shell to make hair combs, buttons or oil. Turtles will be carelessly caught by fishing nets, drowning them because they must surface to breathe. Rubbish is still and even more of a concern for the adolescent turtles because now they are large enough to eat plastic bags that look like a favourite meal, jellyfish. If a turtle eats rubbish it can choke, or the rubbish will create intestinal blockage which will also cause the turtle to die. Consideration and care are needed to try and prevent creating hazards for turtles and other animals things etc.
Depending on the species of turtle, reproductive maturity takes anywhere from 5-35 years of age. This is a large reason why the Sea Turtles are having trouble, because it takes so long for them to be reproductive. The Green turtles mature between 25 and 35 years of age, and this is when the females can begin to lay eggs.
First, the turtles leave their home feeding grounds and begin their migration back to their mating grounds, which is near to a beach where they were born. A turtle's birth beach is the same beach where she will lay her own eggs on.
The eggs are fertilised by the males in the ocean. The female then emerges from the ocean at night to lay her eggs in the sand.
The beach where the nesting turtles were born was once a suitable place for the sea turtle nests, but after 35 years, the beach may have changed. Hotels, boats, concrete, and people could now be on the beaches where the turtles used to lay their eggs. If a sea turtle is unable to find a suitable beach to lay their eggs, they will abort the eggs into the ocean.
When the female sea turtle is ready, she will approach the the beach, usually at night, and crawl up close to the vegetation line. She will then clear a space with her front flippers, then dig a big pit, anywhere from a few inches deep to a half a meter deep as the green sea turtles do. Inside the pit, the nesting female digs the egg hole with her back flippers. This hole is about 20cm across and between 50 and 60 cm deep, dug with the hind flippers. The eggs are laid into the hole and then covered with sand using the back flippers again. Green Turtles lay around 120 eggs while a Hawksbill can lay up to160 eggs on average. She then returns to the sea, ready to mate again to lay more eggs. A female nesting sea turtle can nest up to eight times in one year, but only nests one year out of every fours (on average).

Hatchery
The way we try to protect turtle eggs is by bringing them to an enclosed hatchery until the baby turtles hatch. This is not ideal, it is much better to leave the eggs in place where they were laid, but that is not possible here now. Still a hatchery should always be viewed as a temporary feature, not a solution. It is better to have the entire area protected and not need to take, or hide, the eggs.

-Beach Monitoring-
At night we monitor Mentawak beach by taking turns walking the entire length of the beach 3 hours before and 3 hours after high tide. We are looking for a nesting turtle so that we can bring the eggs to the hatchery, as well as tag her to know if this turtle returns for it's next breeding season, or for reference to other projects around the world. While monitoring the beach we are also checking the hatchery for baby turtles that may have hatched.

-Boat Patrol-
We also collect and protect eggs from 2 more beaches along the East coast of Tioman. Early each morning during the nesting season, between February and October, we check the hatchery for baby turtles, then go by boat at 7am to look for turtle tracks. We do this boat patrol with a juara family that used to have the turtle egg collection permit. Now we employ them for their skills.

-Egg Location-
If there are fresh tracks on the beach we will go to where the turtle has dug a pit and possibly laid eggs. To find the nest, we first examine the area to find the general egg location, then a metal rod is poked into the sand, feeling for a soft area in the sand. The smell of turtle eggs can also be detected from the tip of the rod.

-Egg Collection-
Once the eggs are located, the sand is dug away to expose the nest. The eggs are carefully removed, being careful not to rotate them. If they get rotated it will likely kill the already developing embryo, also it is important to collect the eggs soon after they are laid for the same reason. They are counted and placed in a polystyrene with the same orientation as they were laid in the nest.

-Secondary Nest-
The eggs are brought to the hatchery and two secondary nests are dug. The nests will be the same depth as the original nest and half of the eggs will be placed inside each one, again maintaining the same orientation. The nests are then covered with sand and a basket is placed around the hole, a few inches into the sand. The basket is for containing the baby turtles when they emerge. This keeps them from wandering loose in the hatchery, makes it easy to count them and to know which beach they need to go back to for release. The nest are set to mimic the nests natural location by depth of eggs, and amount of shade.

-Temperature-
The eggs are buried at the specific depth the turtle laid them in for the correct temperature for incubation. This is usually between 50 and 60cm and the temperature must be between 28 and 31 degrees Celsius. The temperature at which the egg is incubated also determines the gender of the turtle. The eggs at the bottom of the nest, also the cooler temperature will produce males, while the warmer temperature will produce females. To monitor the temperature of the sand in the hatchery a temperature logger is buried. We tell the kids- “cool dudes, and hot chicks”

-Location of Hatchery-
The hatchery is moved every year so that the nests are in fresh sand. Bacteria and maggots can grow in the old nests which would then contaminate the eggs that are incubating. Also after September, any new nests must be nested further from the ocean to protect them from monsoon waves in November.

-Hatchlings-
The sea turtle eggs will incubate for 7-8 weeks (1.5 months). Many will hatch at the same time and crawl together upwards, although it is not uncommon for one or two turtles to hatch before or after a group of them hatch. We check the hatchery frequently so that the baby turtles are not spending much time inside the basket outside. We put the turtles into a polystyrene box with a wet cloth at the bottom and keep them in the dark so that they will sleep and conserve their energy. Immediately we return the baby turtles to the beach where their eggs came from and release them. The same beach is important to maintain the natural situation, if turtles nest at that beach still it is for a reason and we don’t want to manipulate them. We want to release the turtles as soon as possible so that their energy is used to swim, and it is their instinct to swim when first born so it is important that they get the chance to. We do not keep the baby turtles because less human interference is better, Turtles can survive just fine without human “help” or interference, what they need is for people to leave them alone with more space to live. The turtles have extra energy when they are born, used for swimming out to open water, away from land and natural predators, such as birds and sharks. If you keep the turtles their wasting their energy making them slower and more vulnerable when they are released.

-Excavation-
Ten days after the last turtle has hatched, we excavate the nest. We dig out the eggs shells to count how many are empty to calculate a hatchling success rate. Last year the green sea turtles had an 85% hatchling success.