Tia Vierling

Period 1

Eareckson Honors Biology

Olive Ridley Sea Turtle

1. Classification

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a) Hierarchy

Hierarchy:	Name:	Meaning:
Kingdom	*Animalia*	Latin. Anim = life or spirit, -alia = a collection or group. Thus *Animalia* is a collection or group of animals with life or spirit.
Phylum	*Chordata*	Greek. Chord (khorde) = flexible rod-shaped organ. So the phylum *Chordata* describes a class of animals who have a notochord at some stage of development.
Class	*Reptilia*	Latin. Rept = creeping or crawling. Thus, *Reptilia*

		describes a creeping or crawling animal.
Order	*Testudines*	Latin. Testud = tortoise or turtle. So *Testudines* describes animals that are tortoises or turtles.
Family	*Cheloniidae*	Greek. Chelone (Khelone) = tortoise (The nymph Chelone, who refused an invitation to the wedding of Zeus and Hera, was transformed into a tortoise). So *Cheloniidae* describes a tortoise or turtle.
Genus	*Lepidochelys*	Greek. Lepid(o) = scales. Thus, the turtle is an animal with scales.
Species	*Lepidochelys olivacea*	Latin. Lepid(o) = scales. Oliva = olive. Thus, *Lepidochelys olivacea* is a

		turtle with scales whose carapace is an olive color.

b) Etymology: See above.

c) It is important to understand the classification of the *Lepidochelys olivacea* so that it can be correctly identified. If *L. olivacea* was the sea turtle targeted in management plans, it would be much easier to distinguish and protect it with awareness of its classification and identifying features.

2. Behavior

a) Innate Behaviors: Olive ridley sea turtles participate in *arribada* nesting behavior, during which thousands of turtles convene upon a single beach to engage in nesting ("Lepidochelys olivacea," 2015). This behavior, though never taught, is only known to occur in the genus *Lepidochelys*. During these *arribadas*, nesting females lay clutches of around 100 eggs at a time. However, there are still other olive ridley turtles that nest alone ("Olive ridley," 2014). This behavior helps the species to survive with an abundance of eggs during *arribadas*. This high nesting density means that more eggs are likely to survive within a mass of others. The lone nesters also contribute to the survival of the species in that if a disaster were to occur, wiping out all of the *arribada* eggs, the olive ridley would still survive. Another innate behavior of the olive ridley sea turtle is their instinct to travel towards the ocean when they hatch. They move towards the sea using moonlight reflecting off of the water ("Olive ridley sea turtle," 2016). This behavior helps olive ridleys to survive by making it easier for baby turtles to find their way to the sea, where they have a higher chance of survival than if they are left on the beach for predators to find in the mornings. Unfortunately, human actions are interfering with both the *arribada* and ocean-seeking behaviors. Poachers who know the locations of *arribadas* will take advantage of the mass of eggs, decreasing the number of eggs that survive overall, and the lights of cities and beachside resorts can draw turtle hatchlings away from the water instead of towards it.

b) Communication: Olive ridley sea turtles may communicate with each other when they are still in their eggs and not yet hatched through vocal communication (Main, 2014). This

means that human noises could interfere with turtle communication. Removing this type of interference altogether would be difficult, but humans could attempt to create quiet zones around known nesting beaches in order to prevent noise pollution.

c) Learned Behaviors: The beach fidelity of olive ridley sea turtles can be considered a learned behavior of imprinting, given that nesting turtles almost always return to the same beach where they were hatched, although, given the difficulty in tracking hatchlings, this may not actually be the case. Recent research indicates that these turtles find their beaches by memorizing the specific magnetic marker of their birth beach in order to navigate (Arnold, 2015). The olive ridley has been observed to feed slightly more carnivorously in immaturity than in adulthood, indicating a possible learned feeding behavior (A, 2012). If that were the case, this type of learning would be conditioning, because the turtles would receive positive correlated effects depending on which foods they ate.

d) Migration: Olive ridleys, like other sea turtles, engage in annual migration away from and then back to their birth beach. In between nesting times, these turtles engage in pelagic, or open sea, foraging. Olive ridleys mainly migrate between feeding and breeding grounds, though the routes they take to get from one to the other can be extremely long. This migration occurs so that the sea turtles can reach both breeding and feeding grounds during the year ("Olive ridley," 2014). Unfortunately, the wide range of migration of the olive ridley means that the species is put at risk, given that their migration makes them a shared resource among nations. Because of this, every country through whose areas the olive ridley travels must be involved in its protection.

e) Social Structure: Olive ridley social structure is relatively nonexistent, given their solitary migratory paths and general isolationist behavior. Olive ridleys do gather together in large groups during or directly before *arribadas*, but aside from those instances, they generally experience isolated lives. These sea turtles do not really interact with each other outside of mating ("Olive ridley sea," 2016).

f) An understanding of the *arribada* behavior is crucial to the management of olive ridley sea turtles because of the sheer number of eggs being laid in the same place at the same time. An understanding of this behavior is important so that these eggs can be protected and the unique nesting studied. As such an integral part of olive ridley reproduction, masses of eggs such as those produced by *arribadas* can aid in more olive ridley research, as well as provide important information on which beaches should be the most heavily protected in order to keep poachers from taking too high a number of eggs. With such a high number of future olive ridley sea turtle generations relying on *arribadas*, it is important to understand how to protect the eggs from these mass nestings in order to help manage sea turtle populations.

3. Reproduction, Growth, and Development

20/20

a) Courtship Behaviors: Although I found no research on courtship behavior specifically for olive ridley turtles, I did find courtship behavior diagrams for the Kemp's ridley, a cousin of the olive ridley. In the Kemp's ridley behaviors, a male sea turtle will approach the female, then circle her, nuzzle her, bite her, stroke her, and mount her (Frick et al. 2000). Aside from the likelihood that olive ridley turtles mate in a similar way, olive ridley males do have a flipper claw used to grab on to females during mating (A, 2012).

b) Location Requirements: Olive ridley mating pairs have been spotted both along the coastlines of nesting beaches and relatively far from shore. These sea turtles breed in the water. I have found no special location requirements for courtship ("Olive ridley sea turtle," 2016). However, olive ridleys do require beaches in order to nest. Beaches known to have olive ridley *arribadas* are located in Mexico, India, Costa Rica, Nicaragua, and Panama, although there may be undiscovered *arribada* beaches ("Lepidochelys olivacea," 2015). Olive ridleys do not bear or rear their offspring, so there is no necessary location requirement for those behaviors ("Olive ridley sea turtle," 2016). The nesting location requirements of these turtles are threatened by pollution and poachers, because pollution such as garbage on the beaches can render them unsafe for nesting turtles and poachers can take turtle eggs, sometimes even as a female is in the act of laying the eggs.

c) Breeding in Captivity: Breeding programs for sea turtles in captivity have been inconsistently successful. Some females choose never to deposit eggs in captivity, while others do lay clutches in captivity. The specific circumstances required for female sea turtles to produce eggs in captivity are relatively unconfirmed, other than the fact that the

female must choose to mate with a captive male. This choice is relatively uncontrollable ("Sea turtles in captivity," 2014).

d) Gestation Period: Hatchlings emerge after 50-80 days of incubation in the sand. Usually, hatchlings emerge at night, when they can use the moon's reflection off of the ocean to navigate towards the water. Clutches of about 100 eggs are laid at a time, with each female nesting two to three times per nesting season. However, most of the eggs and hatchlings are picked off by predators, leaving an estimated one of 1,000 turtles to reach maturity. The frequency of hatchlings depends upon the frequency of nesting during the nesting season, but about the same number of young are born per clutch laid. The young are never dependent upon their parents. Olive ridleys are born long after their nesting mothers have returned to the ocean ("Lepidochelys olivacea," 2015). Olive ridley baby turtles face both direct and indirect human-caused threats. Turtle eggs are routinely poached for their economic value, a direct threat upon olive ridley young. Light pollution and pollution in general hurt baby olive ridleys; human-made light can lead hatchlings away from the sea when they first emerge from the sand, and sea debris like plastic and paper trash can block their airways or entangle them.

e) Offspring Care: Olive ridley turtles do not rear their young. Offspring are on their own once a nesting female has laid her eggs. The baby turtles receive no parental care ("Olive ridley sea turtle," 2016).

f) Sexual Dimorphism, Sexual Maturity, and Age: Sexual dimorphism is present in olive ridley turtles. Males have a hooked claw on their front flipper, used to grab on to the female during copulation. Females have a more circular carapace, while males have a

longer, tapered carapace, as well as a softer shell in general (A, 2012). Sexual maturity for the olive ridley can be reached between ten and eighteen years, although the average age for the beginning of sexual reproduction is about fifteen years ("Olive ridley turtle," 2014). The average lifespan of an olive ridley turtle in the wild is about fifty years ("Olive ridley sea turtle," 2016).

g) It is important to understand the reproduction of the olive ridley so that their breeding habitats can be protected. Since captive breeding in sea turtles is unreliable, open ocean breeding habitats need to be kept free of entangling trash so that mating in the wild can continue to occur unhindered.

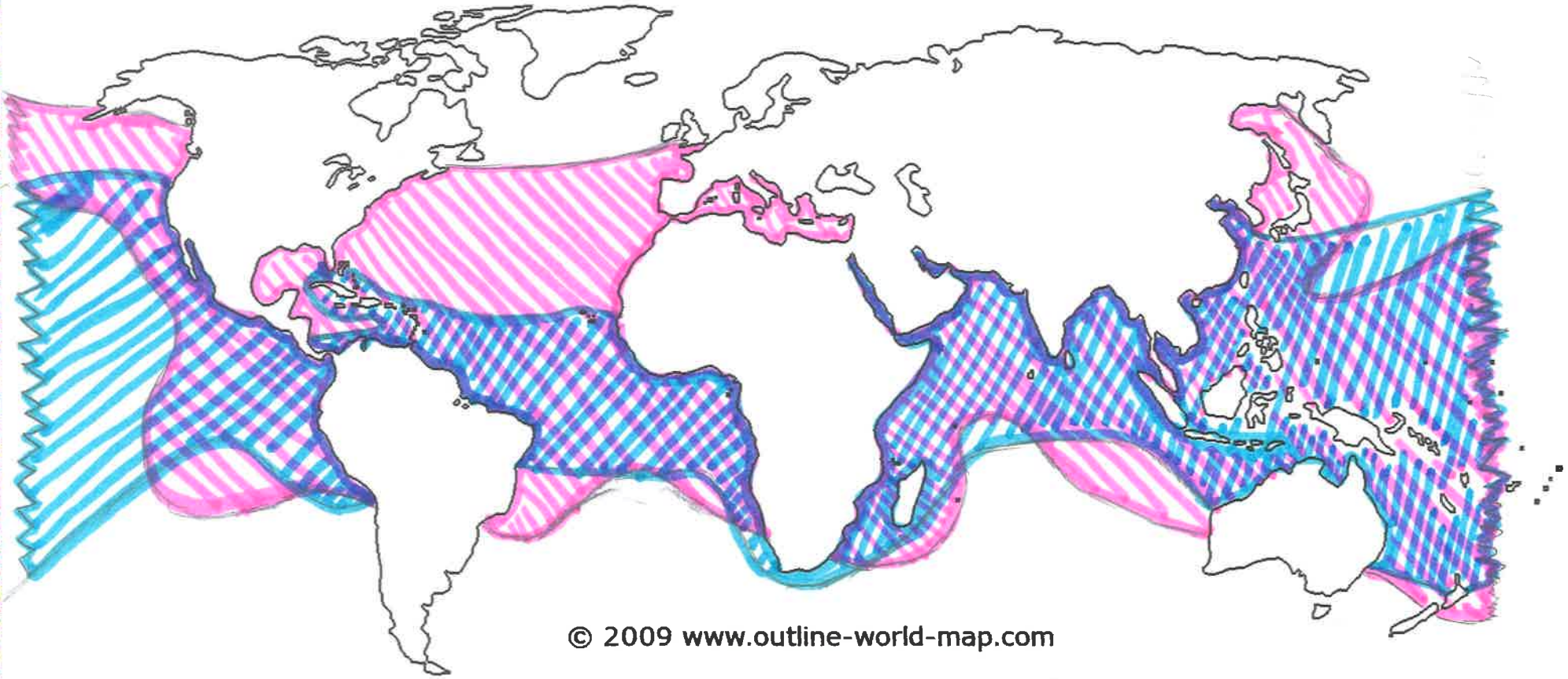
20/20 Beautiful map.

4. Genetics/Population Genetics

a) Past/Present Species Distribution: Although I found many maps of the present distribution of *Lepidochelys olivacea*, I could not find maps from far in the past (pre-1700), most likely due to the difficulty of tracking sea turtles in the past.

b) Remaining Population: Since sea turtles such as *Lepidochelys olivacea* have such a wide distribution, along with the fact that no reliable method of tagging newly hatched olive ridleys has yet been established, it is difficult to ascertain the current population of *L. olivacea*. However, the number of nests has been recorded recently as around one million nests per year, and the estimated nesting population is 800,000 nesting females ("Olive ridley," 2014). This species is currently surviving in the wild, and biologists consider their current estimated numbers high enough to survive in the future, but *L. olivacea* is still classified as vulnerable by the IUCN Red List of Threatened Species (Abreu-Grobois, A. & Plotkin, P, 2008) and as endangered in some countries ("Olive ridley," 2014). Olive ridley turtles in captivity are not currently relied upon for the survival of the species, especially since the population of *L. olivacea* in the wild is stabilizing ("Olive ridley," 2014).

c) Stochastic Event Endangerment: Stochastic events such as storms can be extremely detrimental to olive ridley turtle populations, and hurricanes or other storms could further endanger this species if they were to occur during or after *arribadas*. Although hurricanes and other storms have very low impact on adult turtles, usually only affecting turtles nesting at the time of the storm, they can be extremely dangerous for nests. Storms can either wash out or push more sand over hundreds of nests at a time, which can cause the



Beautiful map!

Figure 4.1

*National Oceanic and Atmospheric Administration

death of hatchling turtles or destruction of eggs ("Hurricanes: Science and society," 2015). Another unplanned event that could further endanger *L. olivacea* would be an oil spill. Oil spills cause an increase in the number of sea turtle strandings, while turtles can also become covered in oil or experience other effects detrimental to their health ("Oil spill impacts on sea turtles," 2016). Both oil spills and storms could further endanger the olive ridley sea turtle.

d) An understanding of the population range of olive ridleys is important so that management plans will consider cooperation between all countries included in the present and past range of *L. olivacea*. Since different governments around the world have different laws regarding sea turtles and these laws need to be taken into account, knowing the population range of the olive ridley allows a management plan to account for the laws and preferences of the countries within the zone.

5. Evolution

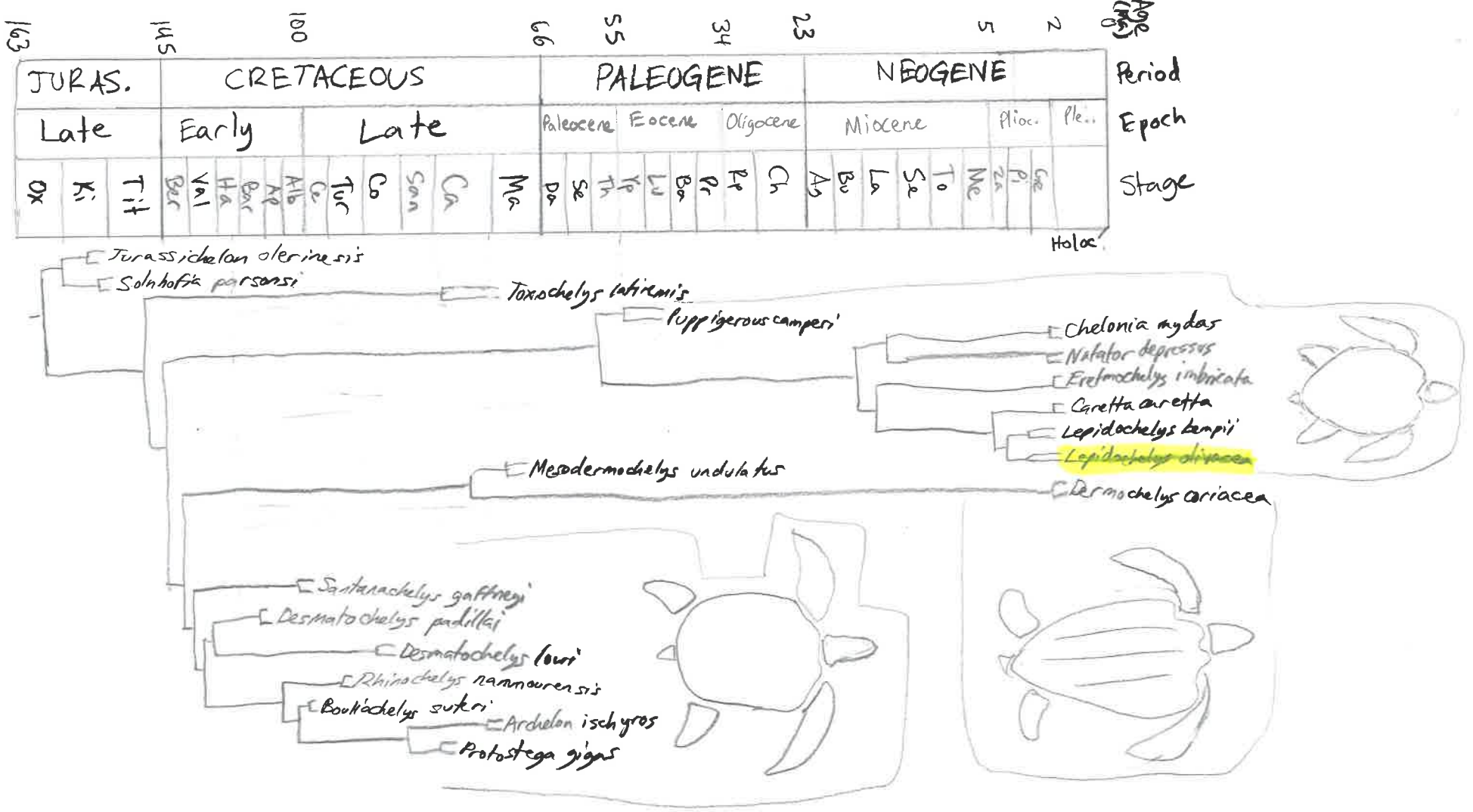
a) Phylogenetic Tree:

The drawing of the phylogenetic tree of *L. olivacea* is attached (Fig. 5.1).

b) Adaptations: *Lepidochelys olivacea* has many special adaptations to make it well suited to its ecological niche. For example, the blood of the olive ridley is particularly efficient. This allows *L. olivacea* to dive underwater for extended periods of time, since the blood of the olive ridley can very efficiently supply oxygen to its organs even under high pressure ("Olive ridley sea turtles," 2015). Another adaptation that assists the olive ridley to be well suited to its ecological niche is its *arribada* behavior. Since *arribada* activity results in a high density of eggs on one beach that will hatch very near to the same time, more turtles are likely to survive predators when hatched.

c) Present Form: *Lepidochelys olivacea* has existed in its present form for approximately three to four million years (Cadena & Parham, 2015). Although human pollution and other effects on the environment likely affected olive ridleys long before they were first widely studied, the population of *L. olivacea* has been in decline for decades (Abreu-Grobois & Plotkin, 2008), most likely due to human activity. After the first identification of the olive ridley under the name *Chelonia olivacea* by Eschscholtz in 1829 (Abreu-Grobois & Plotkin, 2008), it took a little more than 100 years for humans to threaten this species with extinction.

d) Evolution Management: An understanding of the evolution of the olive ridley to its current state is important to the proper management of the *L. olivacea* because any management plans created need to take into consideration how long it might take the



Beautiful!

Figure 5.1

Phylogenetic tree created by the University of California Museum of Paleontology

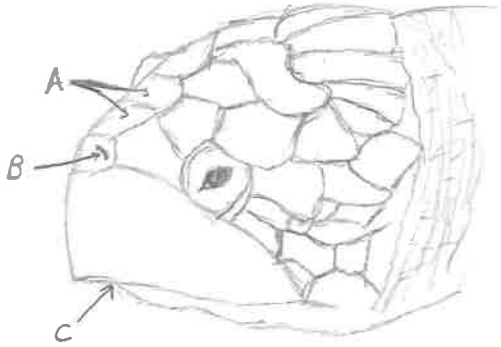
olive ridley to adapt to current conditions. Since the olive ridley has remained in its present form for three to four million years, management plans should take into account that *L. olivacea* will most likely not be able to quickly adapt to human actions. Therefore, plans should focus more on changing the environment of the olive ridleys and less on trying to change the form of the sea turtles themselves.

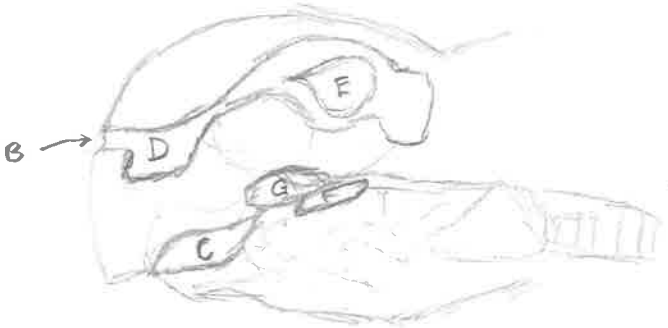
6. Physiology

a) Highly Developed Sense: The sense of smell is highly developed in the olive ridley sea turtle. *L. olivacea* can detect scents in the water by drawing it through their nares before then expelling the same water through their mouth ("Nature and environment education - sea turtle," 2011). This sense has evolved to allow the olive ridley to be well suited to its ecological niche because it makes it easier for *L. olivacea* to detect food in murky water ("Nature and environment education - sea turtle," 2011). Furthermore, the keen sense of smell of these turtles has been indicated as a possible imprinting device for beach fidelity ("Information about sea turtles," 2015). The nares and internal nares allow *L. olivacea* to intake water and use its olfactory receptors to detect scents before the water is expelled through the mouth (Fig. 6.1). This is comparable to the ability of humans to inhale air through the nostrils before exhaling through the mouth.

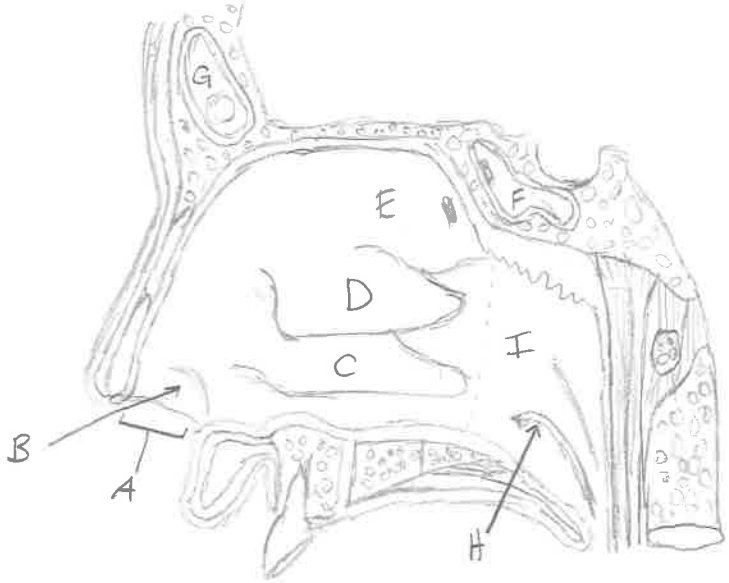
b) Respiratory/Circulatory System: One adaptation of the respiratory system of *L. olivacea* is the ability of the lungs to quickly process oxygen ("Olive ridley sea turtles," 2015). This aids *L. olivacea* in the ability to spend only moments at the surface of the ocean before diving once more. This adaptation allows the olive ridley to stay submerged for much of the time. Another specialty of the lungs stops gases from staying in the lungs during the dives of *L. olivacea* ("Olive ridley sea turtles," 2015). This adaptation makes it safer for the olive ridley to dive into the depths of the ocean without the dangers of extra pressure on their lungs. The circulatory system of the olive ridley is also very helpful within the ocean environment because the blood of *L. olivacea* can sufficiently supply

A: Prefrontal scales
B: Nares
C: Mouth
D: Olfactory sac
E: Brain
F: Tongue
G: Internal nares





A: Nostril
B: Nasal vestibule
C: Inferior turbinate
D: Middle turbinate
E: Superior turbinate
F: Sphenoid sinus
G: Frontal sinus
H: Eustachian tube orifice
I: Nasopharynx

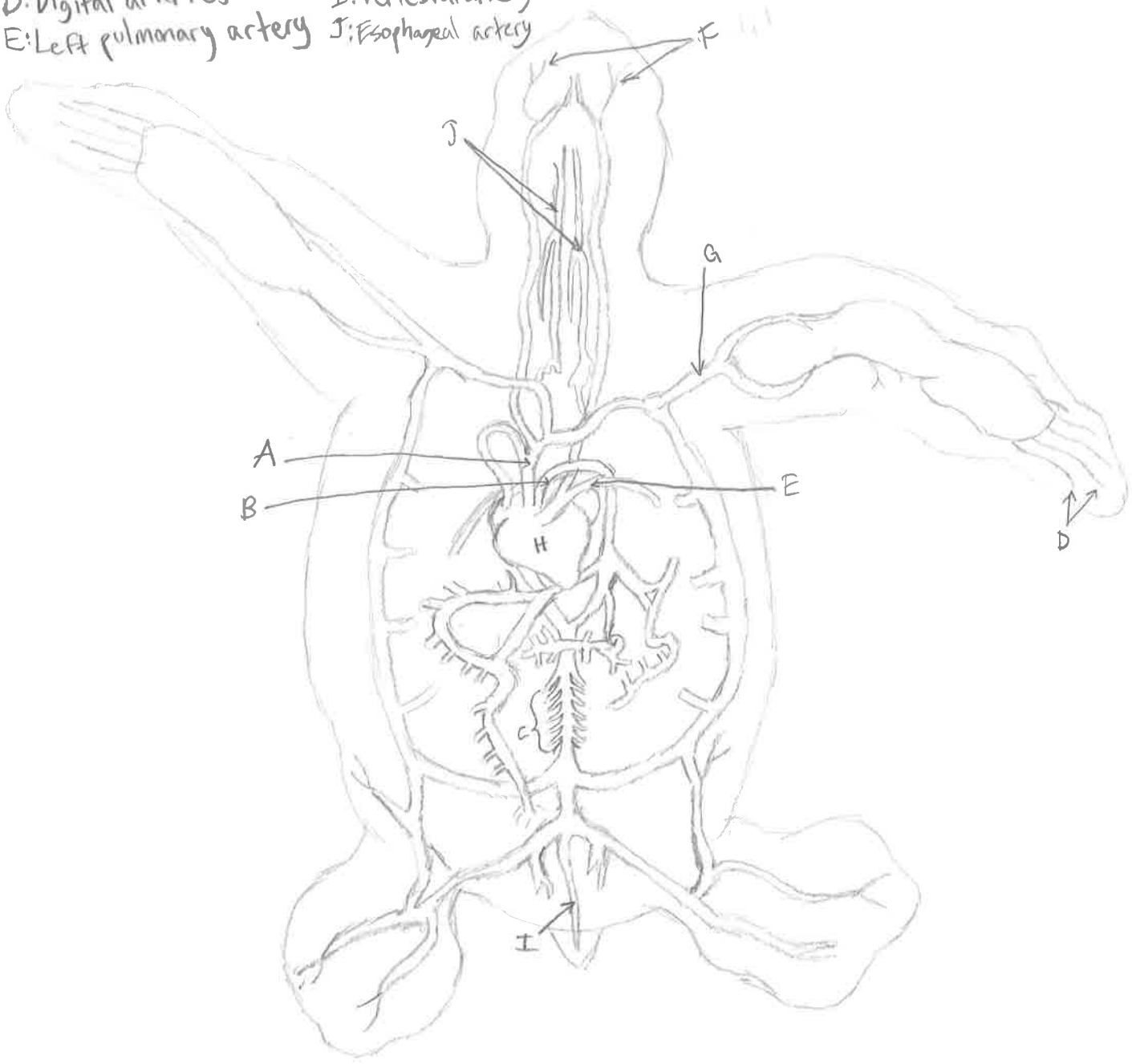


Nose/nares structures

Very good!

Figure 6.1

A: Right aorta
B: Left aorta
C: Renal arteries
D: Digital arteries
E: Left pulmonary artery
F: Carotid arteries
G: Brachial artery
H: Heart
I: Vertebral artery
J: Esophageal artery



Circulatory System

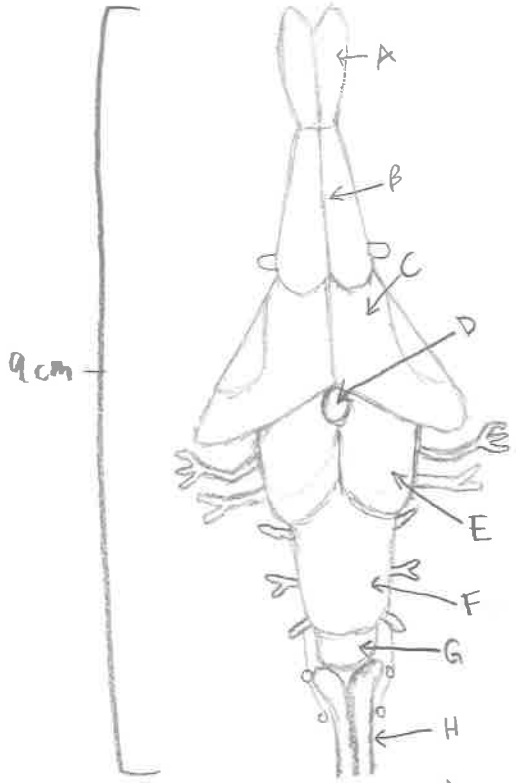
Figure 6.2 Oh, my!

A: Trachea
B: Right lung
C: Left lung
D: Right aorta
E: Left aorta
F: Heart

Respiratory System

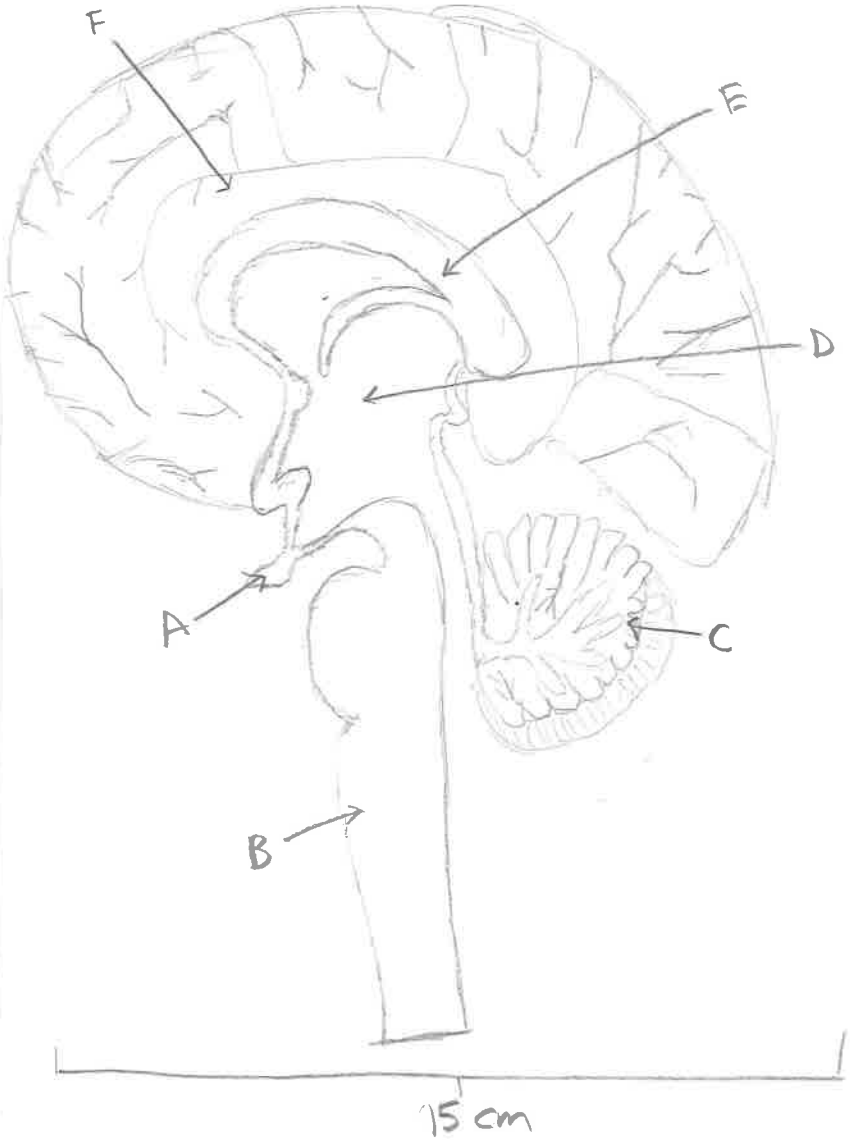
Figure 6.3 Wow!

A: Olfactory nerve
B: Olfactory lobe
C: Cerebral hemisphere
D: Pineal body
E: Optic lobe
F: Cerebellum
G: Chorid plexus
H: Medulla



(View from above)

A: Pituitary gland
B: Medulla
C: Cerebellum
D: Thalamus
E: Corpus callosum
F: Cerebrum



Brain Comparison

Figure 6.4 Very good! Their "primitive" brain seems to have worked well for 3 million years!

oxygen to its organs even under high pressure ("Olive ridley sea turtles," 2015). This allows deeper dives without physical danger for olive ridleys.

c) Brain Comparison: Compared to the brain of a human, the brain of *L. olivacea* is fairly primitive. However, both structures do share a few recognizable parts. For example, the brain of the olive ridley has a cerebellum, medulla, and pituitary gland (Dawson, 2001), just like the human brain. However, the two brains differ to the extreme in terms of shape and size (Fig. 6.4). The human brain also has a much more developed cerebrum than the olive ridley brain. In addition, humans have much more cognitive ability than *L. olivacea*.

d) It is important to understand how *Lepidochelys olivacea* intakes water to smell so that management plans can account for the possibility of strands of plastic or trash as issues for the health of turtles. Any small debris accidentally taken in through the nares could block the nares and cause difficulties for the turtle's future ability to smell. This could lead to a decrease in the the sea turtle's ability to find food and be detrimental to its health. Because of this, small pieces of trash should be prioritized just as much as other types of garbage to prevent harm they could cause to turtles.

Excellent!

9/10

Good!

7. Ecological Web

a) How Connected to Other Species:

Planes minutus, grapsoid crabs of the Kingdom *Animalia*, are epibionts of sea turtles including *Lepidochelys olivacea*, Kingdom *Animalia* (1). *Homo sapiens*, Kingdom *Animalia*, at times rely on the eggs of *L. olivacea* for sustenance (2). *L. olivacea* depends upon *Macrocystis pyrifera*, giant kelp of the Kingdom *Protista,* for kelp forests as part of the olive ridley habitat (3). *L. olivacea* also depends upon the *Penaeus duorarum* shrimp of the Kingdom *Animalia* for food (4). The main staple of the diet of *P. duorarum* is the seagrass shrimp *Thor floridanus* (Schwamborn & Criales, 2000) of the Kingdom *Animalia* (7). *Hypnea musciformis*, Kingdom *Plantae*, is a type of algae food source of *L. olivacea* that can, unfortunately, promote the disease fibropapillomatosis (5). *Fusarium solani*, Kingdom *Fungi*, has been found on many *L. olivacea* turtle eggs (Bezy et al. 2014), with almost correlation between abundance and nest success (6). *L. olivacea* depends on jellyfish like the *Aurelia aurita*, of the Kingdom *Animalia*, for food at times (8). *Ciona savignyi*, a tunicate of the Kingdom *Animalia*, is another food source of *L. olivacea* (10). *Oligodon formosanus*, Kingdom *Animalia*, are snakes that eat the eggs of *L. olivacea* and other sea turtles (9).

b) Ecological Web Management: An understanding of the ecological web of *Lepidochelys olivacea* is important so that the species that it depends on are taken into account in any management plan. The ecological web of the olive ridley needs to be integrated into whatever management plans are created so that its connections to other species are protected. In addition, losses of food sources for the olive ridley in some areas could be made up for in other areas with the help of its ecological web.

Good, but be specific
Give one specific example.

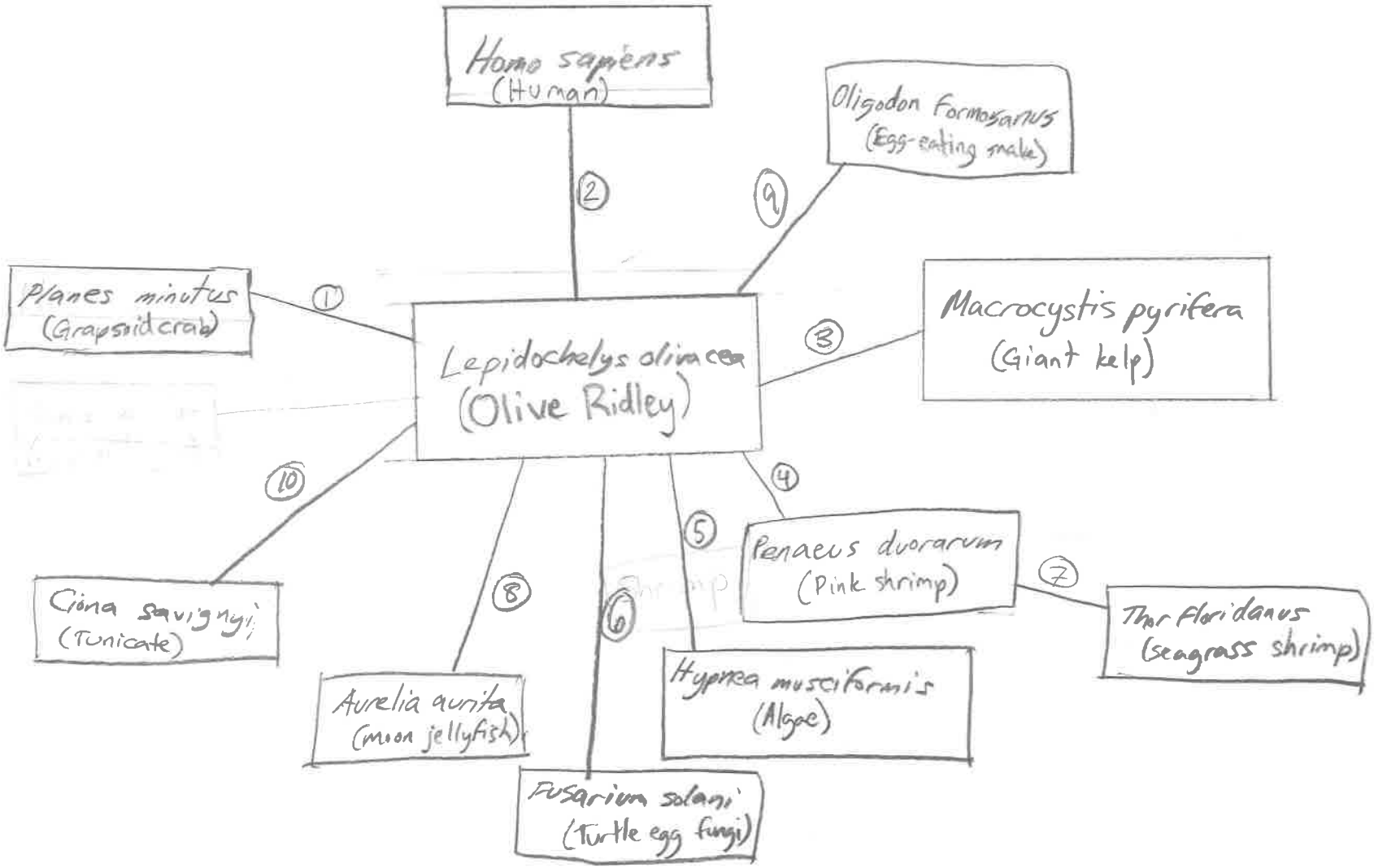

Homo sapiens
(Human)
Oligodon Formosanus
(Egg-eating snake)
Planes minutus
(Grapsoid crab)
Macrocystis pyrifera
(Giant kelp)
Lepidochelys olivacea
(Olive Ridley)
Penaeus duorarum
(Pink shrimp)
Thor floridanus
(seagrass shrimp)
Ciona savignyi
(Tunicate)
Aurelia aurita
(moon jellyfish)
Hypnea musciformis
(Algae)
Fusarium solani
(Turtle egg fungi)
1
2
3
4
5
6
7
8
9
10

Figure 7.1

8. Preventing Extinction

a) Problems and Extinction Prevention: Problems facing *Lepidochelys olivacea* are numerous, though the overwhelming majority of these problems are caused by humans. Even regular people can accidentally injure sea turtles. For example, sometimes sea turtles are caught by fishermen in tropical areas ("Fishing around sea turtles," 2011). In addition, commercial fishing can also cause olive ridleys and other turtles to be caught accidentally as by-catch. Although TEDs (turtle excluder devices) are available for use ("Turtle excluder devices," 2015), many commercial fishers are not able to buy the devices, leaving commercial fishing as a problem for sea turtles including *L. olivacea*. Another problem that can decimate the turtle population is the poaching that can occur on nesting beaches. With the value of sea turtle eggs somewhere between $100-$300 per egg (Castellanos, 2013), poaching is a financially attractive prospect for many people living near turtle nesting beaches. However, this poaching can negatively affect sea turtle populations. This is an especially bad problem for *L. olivacea*, since during *arribadas* they lay thousands of eggs on one beach, creating a poacher paradise.

Other, less direct problems still persist for sea turtles as well. Ocean pollution such as that which created the Northern Pacific Gyre can hurt olive ridleys if they accidentally consume or become entangled in the trash. Plastic in the ocean presents a danger for thousands of sea turtles a year. Aside from ocean pollution, light pollution is also dangerous for olive ridleys. Newly hatched sea turtles attempting to follow moonlight reflecting off of the water to the ocean can be lured inland by the lights of nearby cities or resorts. This danger can cause the death of many sea turtles in new generations of *L. olivacea*.

To prevent the extinction of this species, humans need to begin to use more TEDs while fishing commercially, reduce the amount of waste being directed into the ocean, and decrease the amount of light pollution surrounding nesting beaches. To allow for the use of more TEDs, federal action could be taken to allocate funds to the purchase of these devices. Since TEDs are a long-term solution for sea turtle bycatch during commercial fishing and the initial cost would be most expensive, the government funds for this endeavour would not have to be in use for very long. To reduce the amount of waste directed into the ocean, more cities around the world could integrate accessible recycling facilities. In the United States of America, for example, only 23% of plastic is recycled (Fishman, 2007). If this low percentage could be increased through more public awareness and access to recycling facilities, far less plastic would be directed to the ocean, and, hence, far fewer olive ridleys would be affected by ocean garbage. As for light pollution solutions, local government could impose some sort of blackout law during the night so that no human light would draw newly hatched turtles away from the water. Alternatively, governments could also prohibit the building of beach resorts and other brightly lit buildings near nesting beaches.

b) Impact on Humans: The measures discussed in "a" could have both positive and negative effects on humans. The measure suggested to allow for increased use of TEDs might cause slightly increased taxes for the people of participating countries. In addition, commercial fishermen and women who had already purchased TEDs might wish for compensation. The second measure discussed, which entailed increased access to recycling facilities, would most likely be beneficial for those involved. Recycling would not have negative impacts on those participating, while new facilities might actually add

* Ironically, it is often through plastic recycling programs that plastics make it into the ocean. Let's discuss this at lunch on Tuesday!

new jobs to communities. The third measure discussed, a blackout law for man made buildings near beaches, is probably the most problematic. It is a direct infringement of the landowner control of their own buildings, which could be seen as a negative action. This measure might be the hardest to implement.

c) My Impact: Although I do not have much of an impact on the fate of the olive ridley, I can do my best to be educated on the subject and to try ~~and~~ to teach others about what I have learned. I can raise awareness in my community about the negative impacts of pollution on *L. olivacea*. In addition, I can lessen my impact by recycling and encouraging others to recycle, instead of throwing their recyclables away. Although these steps would be small, they could help the situation of *L. olivacea* and other marine mammals at least a little bit.

d) Climate Change Impact: Predicted global climate change might have an enormous impact on *L. olivacea*. Since the sex of olive ridleys is determined during a temperature sensitive period before they hatch by the temperature of the sand around them (Laloë et al. 2015), global warming could significantly skew the sex ratio in the olive ridley population. Since higher temperatures during the temperature-sensitive period of olive ridleys generally lead to higher numbers of female sea turtles, (Esteban et al. 2016), global warming could cause a decrease in male sea turtles in the future. This sex ratio difference could significantly impact the *L. olivacea* population in terms of the number of mating partners available.

9. Use of Important Terminology

Observations of *Lepidochelys olivacea* have shown interesting behaviors known as *arribadas* by nesting females ("Lepidochelys olivacea," 2015). Since these *arribadas* recur at the same beaches year after year, inferences that *L. olivacea* experiences beach fidelity have been made. Although beach fidelity cannot be regarded as fact, the model of beach fidelity has been supported through the consideration of the recurring beaches in *arribada* behavior and the nesting of the same females at the same beaches even when nesting alone (Ripple, Jeff, 1996). However, behaviors supporting beach fidelity may instead stem from innate instinct of olive ridley sea turtles to return to the same previously successful beaches from which they themselves were hatched. The theory of evolution would support both of these models in that nesting turtles who returned to their own beaches, which had previously been successful in allowing the turtles to be hatched, would have more success with their own offspring than turtles who nested on any beach. If the beach fidelity of *L. olivacea* is derived from instinct and not from a memory of their hatching beach, and if I move *L. olivacea* eggs that have just been laid and eggs that were laid days before to a different beach, then most of the female sea turtles hatched from those eggs will return to the beach at which they were laid when nesting.

A testable hypothesis would be

But how will you know?

11. Poem

Lepidochelys olivacea Did you write this? Fun!

A quite fine reptile to see,

Is the sea turtle olive ridley,

With a keen sense of smell,

And a nice heart-shaped shell,

And a range from Perth to Hawaii,

Although they've been endangered for years,

Tech to help them has debuted to cheers,

As TEDs and more stuff,

Have helped sure enough,

To save some and assuage our fears.

But there's still quite a long way to go,

'Cause the human-caused problems all grow,

Like the trash that we toss,

Or the profit and loss,

Of the turtle/egg harvesting flow,

When a sea turtle hatches by night,

It's safer from a predator's bite,

But with our light pollution,

We need a solution,

So we won't lure away from moonlight.

And we need to remember to try,

To work hard so that fewer will die,

With many problems more,

Ocean surface to floor,

We cannot be allowed to stand by.

12. Translation

Las tortugas marinas son animales magníficos, y un tipo de tortugas marinas que es el más común en el mar es la *Lepidochelys olivacea*. *L. olivacea* participa en las arribadas, actividades cuando las tortugas marinas van a las playas para poner sus huevos solo en un dia. Aunque *L. olivacea* participa estas arribadas, en realidad no cuidan sus niños. Después de poniendo huevos, *L. olivacea* viajará en el mar otra vez. El alcance de *L. olivacea* es muy largo y se extiende a través de mucha del mar circundante del ecuador. *L. olivacea* es también interesante porque su cerebro es muy diferente que un de un humano. En adición, *L. olivacea* tiene un sentido de olfato muy preciso. Aunque *L. olivacea* es asombroso, las acciones de los humanos hace los circunstancias de las tortugas marinas dificil. Por ejemplo, la polución en el mar y la polución de los luces en las playas son malos para las tortugas. Cuando las tortugas marinas jóvenes incuban, a veces la luz de ciudades cerca de la playa atraerá ellos hacia el interior.

Sea turtles are magnificent animals, and a type of sea turtle which happens to be the most common in the sea is the Lepidochelys olivacea. L. olivacea participates in *arribadas*, events when sea turtles go to the beaches to lay their eggs all at one time. Although L. olivacea participates in these *arribadas*, they do not actually care for their offspring. After laying eggs, L. olivacea will travel into the sea again. The range of the L. olivacea is very long and extends through much of the sea surrounding the equator. L olivacea is also interesting because its brain is very different than that of a human. In addition, L. olivacea has a very accurate sense of smell. Although L. olivacea is amazing, the actions of humans are making the circumstances of the sea turtles difficult. For example, the ocean pollution and light pollution on the beaches are bad for

turtles. When young sea turtles hatch, sometimes light of cities near the beach will attract them inland.

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