Threats to Sea Turtles

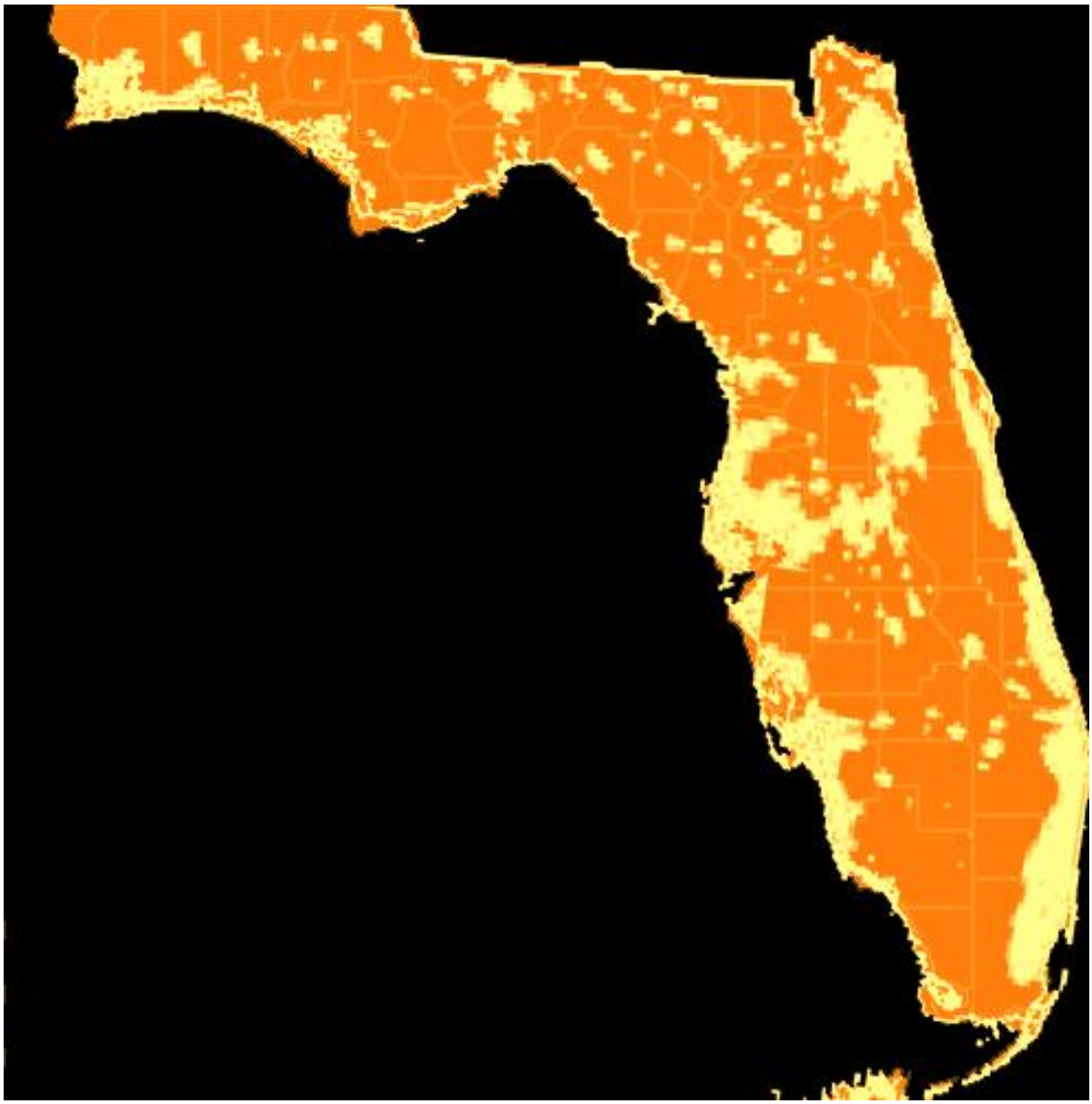
Artificial Lighting

Artificial lighting is a significant sea turtle conservation problem. Sea turtle **hatchlings** instinctively move towards the brightest light when they hatch – on a **natural beach**, this is the night sky over the ocean. The artificial lighting causes the hatchlings to become **disoriented**, and ultimately leads to their death.

Below are two maps. The **"Artificial Lighting" map** is a satellite image of the lights that are visible at night in Florida from space. The **"Florida County" map** will be used for reference. You will also need your **"Sea Turtle Nesting Data"** from an earlier lesson.

Directions: Using the data provided identify areas where artificial lighting has the greatest impact on sea turtle hatchlings.

Artificial Lighting Map



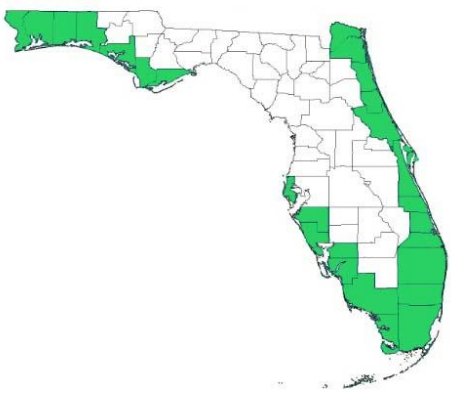
Lightly shaded areas (yellow) - Lights visible at night from space

Compare the “Artificial Lighting” map with the blank county map below. **Color in** the counties which have the most visible night lights from space.

County Map

Compare this data with data you collected earlier of the nesting sites of Green, Leatherback and Loggerhead turtles.

Green Nesting Map



Leatherback Nesting Map

Loggerhead Nesting Map

Questions

1. **Describe** the relationship between the nesting data and the artificial lighting data.

   Important nesting areas along the coast are also the areas with greatest artificial lighting.

2. Which counties are responsible for the some of the ***largest*** *areas* of artificial lighting?

   Answers should mention: Escambia, Santa Rosa, Okaloosa, Hernando, Pasco, Pinellas, Hillsboro, Manatee, Sarasota, Charlotte, Lee, Miami-Dade, Broward, Palm Beach, Martin, Saint Lucie, Indian River, Brevard, Volusia, Duval, Nassau, Orange and Polk counties.

   Which of these counties are ***important nesting sites*** of the three species of sea turtles?

   Escambia, Okaloosa, Bay, Gulf, Sarasota, Monroe, Miami-Dade, Broward, Palm Beach, Martin, Saint Lucie, Indian River, Brevard, Volusia, Flagler, Saint Johns, Duval and Nassau counties.

3. (**Refer to your Sea Turtle Nesting Data**) Which sea turtle's hatchlings are ***most affected*** by artificial lighting? **Explain** your decision (**site specific data to support your decision**).

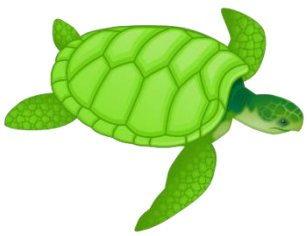
   Leatherback – least number of nesting sites in smallest number of counties; nesting data should be sited for full credit.

4. What might be some possible ***sources*** of artificial lighting?

   Answers will vary, accept all reasonable answers.

5. Provide some possible ***solutions*** to this problem – specifically targeting the sources you mentioned in Question 4.

   Answers will vary, accept all reasonable answers.



Bycatch

Sea turtles are often caught as bycatch by shrimp fishers. **Bycatch** is any species of animal which is caught during fishing that is not the targeted species. Turtles need to breathe air using their **lungs**. When they get caught in a shrimp nets they **drown**. A **TED** is a specialized device which allows sea turtles captured by shrimp nets to escape.

Directions: You will model the effects of bycatch on turtle populations.

- Count out __# of pieces_____ "turtle" pieces and add them to the "shrimp-filled water."
- Use the net to trawl for shrimp – make one pass through the container (you may want to look away to keep results fair).
- Record your data in the table below.
- Do not return your shrimp or fish to the water.
- Continue trawling for shrimp and recording your results.

Turtles are represented by: _____larger object of your choice_____

Shrimp are represented by: _____smaller object of your choice_____

Bycatch Data Table				
Trial #	**Current Sea Turtle Population**	**Number of Shrimp caught**	**Number of Turtles caught**	**% of Original population Remaining**
1				
2				
3				
4				
5				
6				
7				

Questions

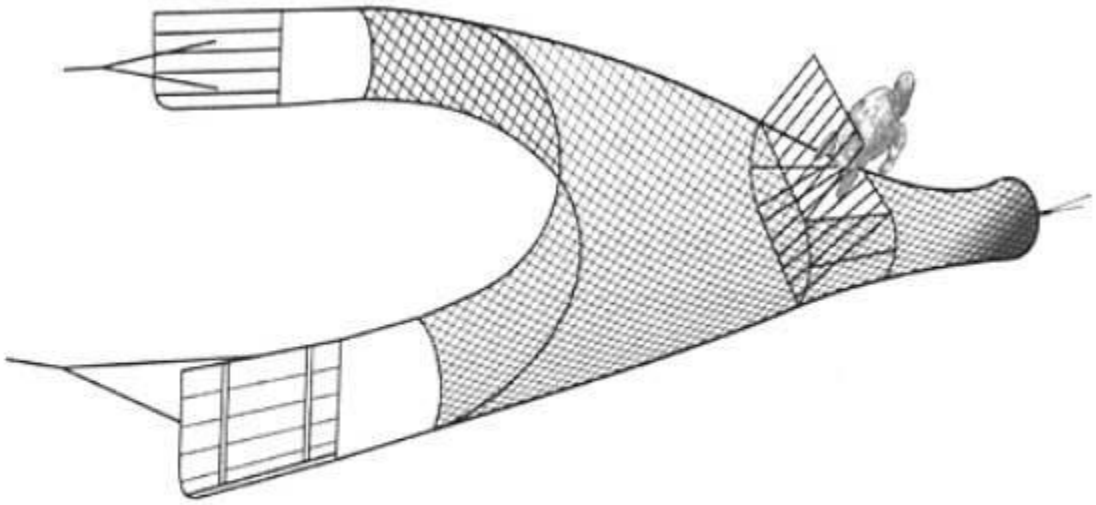
1. Describe how shrimp fishing effects sea turtle populations – site specific data in your answer.

   Quickly decreases population – should site percentage or actual numbers collected in answer.

2. Explain why sea turtles and other animals are caught as bycatch.

   Students should note size of organisms as main problem, also lack of control of catch.

3. Below is a picture of a TED – turtle excluder device. Explain how this device helps protect sea turtles.



   Creates an escape route, based on size elimination – smaller organisms stay in net, large can not fit through grate and escape.

4. Discuss other possible solutions that can help keep sea turtles from becoming bycatch.

   Answers will vary. Accept reasonable answers.