

## America's Underwater Treasures Viewing Questions With Answers

Note: timing listed below is approximate and is based on the PBS broadcast; home video versions may differ slightly.

### PART 1

#### Introduction (Beginning-4:40)

1. What fraction of America's borders is water? *more than half*
2. In what year did Congress create the first National Marine Sanctuary? *1975*
3. "I think its time for us to explore and discover America's Underwater \_\_\_\_\_." *Treasures*
4. To whom does Jean-Michel delegate certain expeditions? *his son and daughter -- Fabien and Celine*
5. Where does the adventure begin? *in a remote part of the National Marine Sanctuary in the Florida Keys*

#### Florida keys NMS/Goliath Grouper (4:40-10:20)

1. How many pounds do goliath groupers usually weigh, and how old are some of them? *800 pounds, 50 years old*
2. Why are they vulnerable to overfishing? *come together at predictable times and places and are territorial, making them easy to hunt*
3. Why can smaller fish use groupers as a habitat? *because the grouper is so huge*
4. What kept the groupers from being exterminated? *legislation was passed*
5. What do we know about this species? *complicated life cycle*
6. What did the researchers find that was the bottleneck for the grouper? *the mangroves*
7. What is a "no-take" area? *a place where fish are not bothered, and juveniles can grow*

#### Channel Islands NMS (10:20-15:20)

1. What makes this a multiuse sanctuary? *rich enough for both wildlife and people*
2. Why are these islands a unique sanctuary? *lots of "no-take" and monitoring areas*
3. What is the "best piece of equipment in all of marine ecology"? *the 1-square-meter quadrat*
4. How many times a year do the scientists survey this sanctuary? *once a year -- six months of diving*
5. Why do the researchers count each individual stipe in a kelp plant? *there is a good relation between the size of the plant and the density of fish*
6. What impairs the natural cycle of the kelp's recovery? *overfishing of the large fish*
7. How many feet do the kelp grow in a day? *2 feet a day*

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### Channel Islands NMS/Tagging (17:00-19:08)

1. What do the researchers do to track certain fish coming in and out of the "no-take" zone? *place an acoustic tag inside certain fish*
2. What is placed on the ocean floor that can collect data on the fish carrying acoustic tags? *an acoustic receiver or listening station*
3. How many fish have been tagged? *more than 200 fish*
4. What have the researchers found out about the sheephead fish? *no movement of sheephead out of the reserve*
5. What differences do the researchers expect to see between the fish that are in the "no-take" zone versus the fish that are outside the "no-take" zone? *larger fish, higher abundance of fish and more fish spilling over into Channel Island fishing areas*

### Channel Islands NMS/Squid Fishery (19:08-21:08)

1. What are the squid doing under the light boats? *mating*
2. How many metric tons of squid were caught in one recent season? *70,000*
3. What made the squid catch go down to nearly zero for another season? *El Niño, rising water temperatures*
4. How has the squid survived overfishing and natural Earth cycles? *because of their life cycle -- they live for one breeding season and lay hundreds of eggs*
5. What happens to the females when they lay their eggs? *the females die*
6. How have the fishermen figured out when to fish the squid? *pay attention to the mating and birthing cycle -- catch the squid after they have laid their eggs*

### Flower Garden Banks MNS/Coral (21:09 -26:12)

1. What have the researchers found out about the coral reef through their long-term monitoring of the health of the reef? *the coral reef is healthy and thriving*
2. How is a balance created between the coral reef and the oil-drilling platform? *following safe work practices, operating oil platform correctly*
3. How long has the oil rig been at the MNS? *since 1981*
4. Oil rigs are like shipwrecks, offering new habitat for sea life, which is always competing for \_\_\_\_\_. *space*
5. What do certain coral reef species do at the exact same time every year? *release their eggs and sperm into the water*
6. When does this happen at the Flower Garden Banks MNS? *between the seventh and the 10th night after the full moon in August*
7. Why do these species release their eggs and sperm into the water? *so that the eggs can be fertilized and carried away to start another colony*

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### Florida Keys NMS/Coral and Sea Turtles (26:12-32:40)

1. What happens nearby at another coral reef in parts of the Florida Keys where this release of sperm and eggs has failed? *single genetic individuals are found, don't have other reefs that are close enough for the eggs and sperm to mate with, isolated from others*
2. What does Dr. Miller do to help increase the population of coral reef species? *allows baby corals to develop on tiles in the laboratory and then transplants them to help increase the number of coral colonies in the sanctuary*
3. What is causing a lot of the coral reefs to disappear? *disease, algae takeovers and coral bleaching caused by increase in water temperature*
4. Why is it hard to teach people the importance of the oceans? *because they can't see it*
5. "People protect what they \_\_\_\_\_." *love*
6. What virus is causing the green turtles to become infected? *viral Pamplona, caused by herpes virus*
7. What actually causes the turtle to die? *effects of the tumors on its skin and eyes*

### Gray's Reef (32:41-40:40)

1. Why is this area called a "crossroads"? *because you see a lot of temperate- and cold-water species as well as their warm-water cousins*
2. What is a "turtle garage"? *an area carved out in the rock where the turtles hide*
3. Why do the turtles want to go toward the green vegetation? *these areas do not get washed out very often, safer to lay eggs*
4. Why do the researchers use only red light? *It has the shortest wave length in the color spectrum and allows them to see, but not disturb, the turtles*
5. What does the loggerhead turtle do after it has laid its eggs? *goes back out to sea*
6. What do the loggerheads face outside the sanctuary? *threats from the nets and long lines of the commercial fishing industry*
7. What do commercial fishermen use to avoid accidentally catching turtles in their nets? *Turtle Exclusion Devices, or TEDs*
8. What does the small net of fish help to tell fishermen? *if they are taking too many fish per catch*

### Olympic Coast NMS (40:32-45:58)

1. What is it called when lost fishing gear continues to trap and kill animals? *ghost fishing*
2. How many coastal tribes does this sanctuary support? *four*
3. What program did the Makah and the Olympic Coast NMS develop? *removing lost fishing gear*
4. What are modern nets made of? *synthetic materials, plastic*
5. "Because it's underwater and nobody sees it, it's out of sight out of \_\_\_\_\_." *mind*

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6. What do wolf eels eat? *sea urchins*
7. Who are the ocean's "soft intelligence"? *octopuses*

### Hawaiian Islands Humpback Whale NMS (45:59-53:04)

1. Humpback whales are \_\_\_\_\_. *endangered*
2. What is the population worldwide? *20,000-25,000*
3. What are the males competing for? *the position closest to the female*
4. What are the major threats to the whales? *becoming entangled in nets and crashing into ships*
5. In what areas of the world are the whales not protected? *Russia and Japan*
6. "The health of the humpback whale population is at least an \_\_\_\_\_ of what the health of the ocean is." *indicator*
7. Why is it important to learn about each piece of the ecosystem? *improves our ability to manage the ecosystem in a sustainable way*

### PART 2

#### Monitor NMS/Shipwrecks (53:32-59:10)

1. What is one of America's underwater cultural treasures? *the Civil War battleship USS Monitor*
2. How many feet below the surface is this ship? *more than 240 feet*
3. How many crewmen died when the USS Monitor sank? *16*
4. What kind of samples did the team collect when they reached the USS Monitor and why? *samples of wood and iron, to be used in ongoing studies of saltwater deterioration and to aid in restoration efforts*
5. Where will the piece that was taken from the ocean be on display? *Mariners' Museum in Newport News*
6. How many shipwrecks can be found in the North American waters? *100,000*

#### Thunder Bay NMS/Shipwrecks (59:11-1:04:49)

1. How many shipwrecks are found at the bottom of this sanctuary? *160*
2. What is another major use for this NMS? *training ground for next generation of underwater explorers*
3. What do the U.S. Naval Sea Cadets study? *how to dive, how to use diving gear, how to explore*
4. The capsizing of the Audubon is only a \_\_\_\_\_. *theory*
5. What is threatening the shipwreck research that is going on in the Great Lakes? *two species of mussels that had invaded the Great Lakes*
6. How did the invasive mussels get to Thunder Bay? *in the ballast water of ships*

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### Stellwagen Bank NMS/Lobster (1:04:50-1:10:13)

1. What happened when cod was overfished in the mid-1990s?  
*the lobster population flourished*
2. What is the key factor in careful management of the lobster?  
*understanding its breeding cycle*
3. What kind of equipment do the researchers use to track lobster during their breeding cycle?  
*attach a tag to a lobster and use a hydrophone to pick up the specific frequency and tone of the tag*
4. Why is it important to have large, older lobsters in the population?  
*because the females will produce more and larger offspring*

### Monterey Bay NMS (1:10:14-1:17:56)

1. The Monterey Bay NMS is the \_\_\_\_\_ of all sanctuaries.  
*deepest*
2. With whom does the ecosystem of Monterey Bay have to be in delicate balance?  
*industry, agriculture, recreation and fisheries*
3. What type of fish was over-harvested in Monterey?  
*sardines*
4. What is the difference between a protected area like Point Lobos and an unprotected area like Macabee Reef?  
*less sea life, diminished diversity, pollution from old cannery equipment*
5. What do fishermen need to understand?  
*if we do not protect and renew the resource, then there will be nothing for future generations to fish -- fishermen will benefit more than anyone*
6. What do the species that are tagged by the TOPPs project provide researchers?  
*collection of data, how species use the ocean, where they are located from season to season, sending back data on the ocean*

### Gulf of the Farallones NMS (1:17:59-1:27:18)

1. What species of seal is studied at this NMS?  
*the elephant seal*
2. What must the male elephant seal do before he can get a harem?  
*he must dethrone the alpha male/beach master*
3. Why is life also difficult for the female seals?  
*have to give birth on a crowded beach, pups weigh 60-80 pounds, have to protect pup from predation and other females, have to stay with pup at all times*
4. How many breeding sea birds mate in the Farallone Islands?  
*300,000*
5. "The oceans provide the \_\_\_\_\_, and the islands provide the safe haven."  
*food*
6. What kind of shark congregates on the Farallones each fall?  
*the great white shark*
7. Why is the water at the Farallone Islands green?  
*because it is nutrient rich, sunlit and full of phytoplankton, or marine plants*
8. What was dumped off the coast of San Francisco Bay that is cause for concern?  
*47,500 barrels of nuclear waste*
9. Why is the radioactive material dangerous?  
*could produce cancer and/or bioaccumulate in the food chain and be found in species of fish that people eat*
10. "The ocean is the life of the \_\_\_\_\_."  
*world*

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### Monterey NMS/Water Quality and Canyon (1:27:19-1:30:45)

1. What have the farmers introduced to improve the way they do things? *less-toxic pesticides, drip irrigation*
2. What do volunteers do after a major storm? *take samples to measure water quality*
3. What are the samples of urban runoff helping us to do for sea otters? *found parasite from household cats that is killing sea otters, disposable kitty litter might carry the parasite*
4. How many weeks at a time can the Western Flyer be at sea? *three*
5. After 16 years of research, about how much of the Monterey Bay Canyon has been covered? *5 percent*

### Cordell Bank NMS (1:30:45-1:35:49)

1. What was found when Cordell Bank was first explored? *lush community of organisms, support of small to large organisms in the food chain*
2. What makes Cordell Bank so rich with life? *California current, upwelling, geologic structure*
3. How long does it take to get the team back in the boat? *40 minutes*
4. "Competition for \_\_\_\_\_ is what Cordell Bank is all about." *space*

### Fagatele Bay NMS (1:35:50-1:42:35)

1. "There is probably no place else in America with a higher \_\_\_\_\_ of marine life than here." *concentration*
2. Of all the ecosystems on Earth, coral reefs are the most \_\_\_\_\_ and the most \_\_\_\_\_. *resilient, diverse*
3. Corals are animals; what lives in their tissues and gives them their color? *tiny plants*
4. What happened when outsiders came into Samoa? *everything changed, overfishing, new ideas and destructive methods of fishing*
5. What causes coral bleaching? *sea surface temperatures becoming too warm*
6. What job does a coral have in a reef ecosystem? *food, protection*
7. What is the job of a sponge? *filters the water*
8. What is the Samoan culture based on? *respect*

### Northwest Hawaiian Islands National Monument and Closing (1:42:36-end)

1. Will fishing be allowed in this area? *no*
2. What is carried to these remote islands by the currents? *marine debris*
3. "What we can do is to continue to learn and take \_\_\_\_\_." *action*