Subject Review

NOAA National Ocean Service Corals Tutorial

Full tutorial available online at oceanservice.noaa.gov/education/tutorial_corals/

1. _______ organisms are composed of hundreds to hundreds of thousands of individual animals.
2. Individual coral animals are called ________.
3. The mouth of individual coral animals is surrounded by a circle of ____________.
4. After food is consumed by corals, waste products are expelled through the ____________.
5. Time of day when most corals feed: ____________.
6. To capture their food, corals use stinging cells called ____________.
7. Nematocysts are capable of delivering powerful, often lethal, ____________.
8. A coral’s prey ranges in size from nearly microscopic animals called ________________ to small fish.
9. Many corals collect fine organic particles in films and strands of ____________.
10. Most reef-building corals contain photosynthetic algae called ________________ which live in their tissues.
11. Corals and algae have a ____________ relationship.
12. Symbiotic algae supply corals with glucose, glycerol, and amino acids, which are the products of ____________.
13. Tropical ocean waters are generally [rich or poor] ____________ in nutrients.
14. The relationship between the algae and coral polyp facilitates a tight ____________ of nutrients, which is the driving force behind the growth and productivity of coral reefs.
15. The unique and beautiful colors of many stony corals are caused by ________________.
16. ____________ can cause coral polyps to expel their algal cells.
17. Coral ____________ occurs when coral polyps expel their algal cells, causing the colony to take on a stark white appearance.
18. Because of their intimate relationship with symbiotic algae, reef-building corals respond to the environment like ____________.
20. Although coral reefs require nutrient-poor water, they are among the most ____________ and diverse marine environments.
21. Reefs form when polyps secrete skeletons of ____________.
22. As they grow, coral reefs provide structural ____________ for hundreds to thousands of different vertebrate and invertebrate species.
23. The skeletons of stony corals are secreted by the lower portion of the polyp. This process produces a cup, or ________, in which the polyp sits.
24. The walls surrounding the corals’ skeletal cup are called the ____________.
25. The floor of the corals’ skeletal cup is called the ____________.
26. ____________ is a system of specially designed buoys that measure conditions that may cause bleaching on coral reefs.
27. When polyps are physically stressed, they contract into their calyx so that virtually no part is exposed above their skeleton. At other times, polyps extend out of the calyx. Most polyps extend the farthest when they ____________.
28. ____________ corals have primary and secondary branches.
29. ____________ corals look like fingers or clumps of cigars and have no secondary branches.
30. ____________ corals form table-like structures and often have fused branches.
31. ____________ coral has large, flattened branches.
32. ____________ corals have broad plate-like portions rising in whorl-like patterns.
33. ____________ corals grow as a thin layer against a substrate.
34. ____________ corals are ball-shaped or boulder-like and may be small as an egg or as large as a house.
35. __________ corals resemble the attached or unattached tops of mushrooms.
36. Coral reefs begin to form when free-swimming __________ attach to submerged rocks or other hard surfaces along the edges of islands or continents.
37. __________ reefs project seaward directly from the shore, forming borders along the shoreline and surrounding islands.
38. __________ reefs border shorelines, but are separated from their adjacent land mass by a lagoon of open, often deep water.
39. An __________ is formed when a reef has developed around a volcanic island that subsides completely below sea level while the coral continues to grow upward.
40. Massive corals have growth rates of 0.3 to 2 __________ per year.
41. Bottom topography, depth, wave and current strength, light, temperature, and suspended sediments act on coral reefs to create horizontal and vertical zones of living species. The reef __________ is usually the zone closest to shore, followed by the reef __________ or algal ridge, then the __________ zone, and finally the __________.
42. Reef-building corals cannot tolerate water temperatures [above or below] __________ 18° Celsius (C).
43. Most reef-building corals require very _________ water.
44. Reef-building corals’ requirement for high light explains why most reef-building species are restricted to the __________ zone, the region in the ocean where light penetrates to a depth of approximately 70 meters.
45. As adults, almost all corals are __________, which means that they remain on the same spot on the sea floor for their entire lives.
46. In __________ reproduction, new polyps bud off from parent polyps to expand or begin new colonies.
47. In sexual reproduction, coral eggs and sperm join to form free-floating, or planktonic, larvae called __________.
48. Species that release massive numbers of eggs and sperm into the water to distribute their offspring over a broad geographic area are called __________ spawners.
49. The time between planulae formation and settlement is a period of exceptionally high __________ among corals.
50. Along many reefs, spawning occurs as a __________ event, when all the coral species in an area release their eggs and sperm at about the same time.
51. The long-term control of spawning may be related to temperature, day length and/or rate of temperature change (either increasing or decreasing). The short-term (getting ready to spawn) control is usually based on __________ cues.
52. The final release of gametes during spawning is usually based on the time of __________.
53. Planulae exhibit positive __________.
54. Once planulae settle on the bottom, they _________ into polyps and form colonies that increase in size.
55. Coral reefs support more __________ per unit area than any other marine environment.
56. Scientists estimate that there may be ____________ of undiscovered species of organisms living in and around reefs. [how many?]
57. Coral reef biodiversity is considered key to finding new __________ for the 21st century.
58. Healthy reefs contribute to local economies through __________.
59. In developing countries, coral reefs provide critical __________ resources for tens of millions of people.
60. Coral reefs buffer adjacent shorelines from wave action and prevent __________, property damage and loss of life.
61. Natural damage to coral reefs frequently occurs because of __________.
62. Slow-growing corals that are damaged by storms may be overgrown by __________ before they can recover.
63. Reefs also are threatened by __________ that can cause shallow water coral heads to overheat and dry out.
64. Increased sea surface temperatures, decreased sea level and increased salinity from altered rainfall can all result from weather patterns such as __________.
65. Corals are vulnerable to __________ by fishes, marine worms, barnacles, crabs, snails and sea stars.
66. Human-caused, or __________ activities are major threats to coral reefs.
67. One of the most significant human-caused threats to reefs is __________.
68. When some contaminants enter the water, nutrient levels can increase, promoting the rapid growth of _________ and other organisms that can smother corals.

69. In many areas, coral reefs are destroyed when cyanide or dynamite are used for _________ activities.

70. Coral diseases generally occur in response to biological _________, such as bacteria, fungi and viruses, and nonbiological stresses, such as increased sea surface temperatures, ultraviolet radiation and pollutants.

71. Many scientists believe that the increased frequency of coral diseases over the last 10 years is related to deteriorating water quality and increased _________ that may allow for the proliferation and colonization of microbes.
Across

4. The mouth of individual coral animals is surrounded by a circle of _____.

6. Many corals collect fine organic particles in films and strands of ______.

8. The long-term control of spawning may be related to temperature, day length and/or rate of temperature change (either increasing or decreasing). The short-term (getting ready to spawn) control is usually based on __________ cues.

10. To capture their food, corals use stinging cells called __________.

11. Coral reefs begin to form when free-swimming __________ attach to submerged rocks or other hard surfaces along the edges of islands or continents.

12. __________ can cause coral polyps to expel their algal cells.

14. Coral reef biodiversity is considered key to finding new __________ for the 21st century.

16. Most reef-building corals contain photosynthetic algae called ________ which live in their tissues.

19. After the food is consumed by corals, waste products are expelled through the __________.

20. __________ corals have broad plate-like portions rising in whorl-like patterns.

21. The _________ is usually the zone farthest from shore.

24. The skeletons of stony corals are secreted by the lower portion of the polyp. This process produces a cup or ________ in which the coral sits.

25. As they grow, coral reefs provide structural __________ for hundreds to thousands of different vertebrate and invertebrate species.

26. Coral __________ occurs when coral polyps to expel their algal cells, causing the colony to take on a stark white appearance.

27. Once planulae settle on the bottom, they __________ into polyps and form colonies that increase in size.

30. Many scientists believe that the increased frequency of coral diseases over the last 10 years is related to deteriorating water quality and increased ________ that may allow for the proliferation and colonization of microbes.

32. __________ organisms are composed of hundreds to hundreds of thousands of individual animals.

33. Slow-growing corals that are damaged by storms may be overgrown by __________ before they can recover.

35. Increased sea surface temperatures, decreased sea level and increased salinity from altered rainfall can all result from weather patterns such as __________.

36. The unique and beautiful colors of many stony corals are caused by __________.

39. __________ corals form table-like structures and often have fused branches.

40. In many areas, coral reefs are destroyed when cyanide or dynamite are used for __________ activities.

41. Corals are vulnerable to __________ by fishes, marine worms, barnacles, crabs, snails and sea stars.
42. Most reef-building corals require very __________ water.

43. In __________ reproduction, new polyps bud off from parent polyps to expand or begin new colonies.

45. __________ corals look like fingers or clumps of cigars and have no secondary branches.

46. Time of day when most corals feed [__________]

47. Along many reefs, spawning occurs as a __________ event, when all the coral species in an area release their eggs and sperm at about the same time.

48. __________ corals resemble the attached or unattached tops of mushrooms.

51. Corals and algae have a __________ relationship.

53. __________ is a system of specially designed buoys that measure conditions that may cause bleaching on coral reefs.

54. The skeletons of stony corals are secreted by the lower portion of the polyp. This process produces a cup, or __________, in which the polyp sits.

55. When polyps are physically stressed, they contract into their calyx so that virtually no part is exposed above their skeleton. At other times, polyps extend out of the calyx. Most polyps extend the farthest when they __________.

57. Natural damage to coral reefs frequently occurs because of __________.

60. Although coral reefs require nutrient-poor water, they are among the most __________ and diverse marine environments.

61. Reefs also are threatened by __________ that can cause shallow water coral heads to overheat and dry out.

62. The relationship between the algae and coral polyp facilitates a tight __________ of nutrients, which is the driving force behind the growth and productivity of coral reefs.

63. As adults, almost all corals are __________, which means that they remain on the same spot on the sea floor for their entire lives.

64. An __________ is formed when a reef has developed around a volcanic island that subsides completely below sea level while the coral continues to grow upward.

65. Coral reefs buffer adjacent shorelines from wave action and prevent __________, property damage and loss of life.

66. The final release of gametes during spawning is usually based on the time of __________.

Down

1. Species that release massive numbers of eggs and sperm into the water to distribute their offspring over a broad geographic area are called __________ spawners.

2. __________ reefs border shorelines, but are separated from their adjacent land mass by a lagoon of open, often deep water.

3. Healthy reefs contribute to local economies through __________.
4. The walls surrounding the corals’ skeletal cup are called the __________.

5. Individual coral animals are called __________.

6. __________ are strips of grass located between a farm field and a body of water. (two words)

7. Human-caused, or __________ activities are major threats to coral reefs.

9. Reefs form when polyps secrete skeletons of __________.

13. Because of their intimate relationship with symbiotic algae, reef-building corals respond to the environment like __________.

15. Reef-building corals cannot tolerate water temperatures [above or below] 18° Celsius (C).

17. __________ corals are ball-shaped or boulder-like and may be small as an egg or as large as a house.

18. Tropical ocean waters are generally ________ [rich or poor] in nutrients.

20. __________ reefs project seaward directly from the shore, forming borders along the shoreline and surrounding islands.

22. __________ coral has large, flattened branches.

23. In sexual reproduction, coral eggs and sperm join to form ree-floating, or planktonic, larvae called __________.

28. __________ corals grow as a thin layer against a substrate.

29. Nematocysts are capable of delivering powerful, often lethal, __________.

31. A coral’s prey ranges in size from nearly microscopic animals called __________ to small fish.

32. Massive corals have growth rates of 0.3 to 2 __________ per year.

34. In developing countries, coral reefs provide critical _______resources for tens of millions of people.

37. Because their algal cells need light for photosynthesis, reef corals require __________ water.

38. One of the most significant human-caused threats to reefs is __________.

40. The reef __________ is usually the zone closest to shore.

41. Planulae exhibit positive __________.

44. Reef-building corals’ requirement for high light explains why most reef-building species are restricted to the _____ zone, the region in the ocean where light penetrates to a depth of approximately 70 meters.

49. Coral diseases generally occur in response to biological __________, such as bacteria, fungi and viruses, and non-biological stresses, such as increased sea surface temperatures, ultraviolet radiation and pollutants.

50. The time between planulae formation and settlement is a period of exceptionally high __________ among corals.

52. __________ corals have primary and secondary branches.
56. Symbiotic algae supply corals with glucose, glycerol, and amino acids, which are the products of ________.

58. Coral reefs support more _________ per unit area than any other marine environment.

59. Scientists estimate that there may be _________ of undiscovered species of organisms living in and around reefs.
• algae
• anthropogenic
• asexual
• atoll
• barrier
• basal plate
• below
• bleaching
• branching
• broadcast
• buttress
• calcium carbonate
• calyx
• clear
• cm
• colonial
• crest
• CREWS
• digitate
• El Niño
• elkhorn
• encrusting
• erosion
• euphotic

• feed
• fishing
• flat
• foliase
• food
• fringing
• habitats
• larvae
• lunar
• massive
• medicines
• metamorphose
• millions
• mortality
• mouth
• mucous
• mushroom
• mutualistic
• nematocysts
• night
• photosynthesis
• phototaxis
• physical stress
• plants

• planulae
• pollution
• polyps
• poor
• predation
• productive
• recycling
• saline
• seaward slope
• sessile
• species
• stresses
• sunset
• synchronized
• table
• temperatures
• tentacles
• theca
• tidal emersions
• tourism
• toxins
• weather
• zooplankton
• zooxanthellae