

Reading Guide – Lost at Sea
From Scientific American (June 2017)

1. Within which type of organism does a clown fish live in? _____

2. Why do the larva of clownfish have to swim out to sea during their development?

3. Identify to predators of the clown fish.

a. _____

b. _____

4. How is the sense of smell chemistry?

5. What molecule is causing the ocean waters to become more acidic? _____

6. Fill out the table below with the results of Dixon's experiment of adding various scents to the aquarium water.

Experiment's Variables	Behavior of the Clown Fish
With normal pH, added friendly fish scent	
With normal pH, added predator fish scent	
More acidic water, predator fish scent	
More acidic water, both predator and nonpredator scent	

7. All creatures 3 basic tasks are to find food, reproduce, and avoid being eaten. With a coral reef being densely packed with predators, what is a problem that clown fish may face if the chemistry of the water is changed?

8. Since the Industrial Revolution, how has the atmospheric concentration of CO₂ change?

9. As the amount of CO₂ increases in the water, describe what happens to the shells of various sea creatures.

10. Why do juvenile clown fish swim at night to find a sea anemone to live in? What sense do they use to navigate through the ocean?

11. a. In Dixson's new experiment examining how sound affects the clown fish, how did the clown fish react when water was pumped into the tank?

b. How did clown fish behavior change when Dixson made the water in the tank 60% more acidic?

12. Describe the results of Dixson's experiment when she examined how dogfish sharks hunted for squid in waters that would be the predicted acidity in 2050 and 2100.

13. What trait did Dixson examine in Damselfishes? _____

14. How did increasing the acidity in the lagoon waters affect the damselfishes boldness or reaction to predators?

15. Why do scientists use reef fishes for their experiments?

16. How have increased water acidity affected the Chilean abalone and their ability to reattach to rocks?

17. a. What is the job or function of the neurotransmitter GABA_A?

b. How elevated levels of CO₂ altered the function of GABA_A?

18. In examining the question "can fish adapt?" where or what habitat have scientists gone to? What did they observe?

19. Aside from acidification, what other stressors are marine organisms facing?