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SCIENTISTS IN THE FIELD

实地科学探索

SYLVIA EARLE

# Protecting the Seas

## 保护海洋

REBECCA L. JOHNSON (美) 著



外语教学与研究出版社

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实地科学探索

保护海洋

REBECCA L. JOHNSON (美) 著

朱燕燕 注

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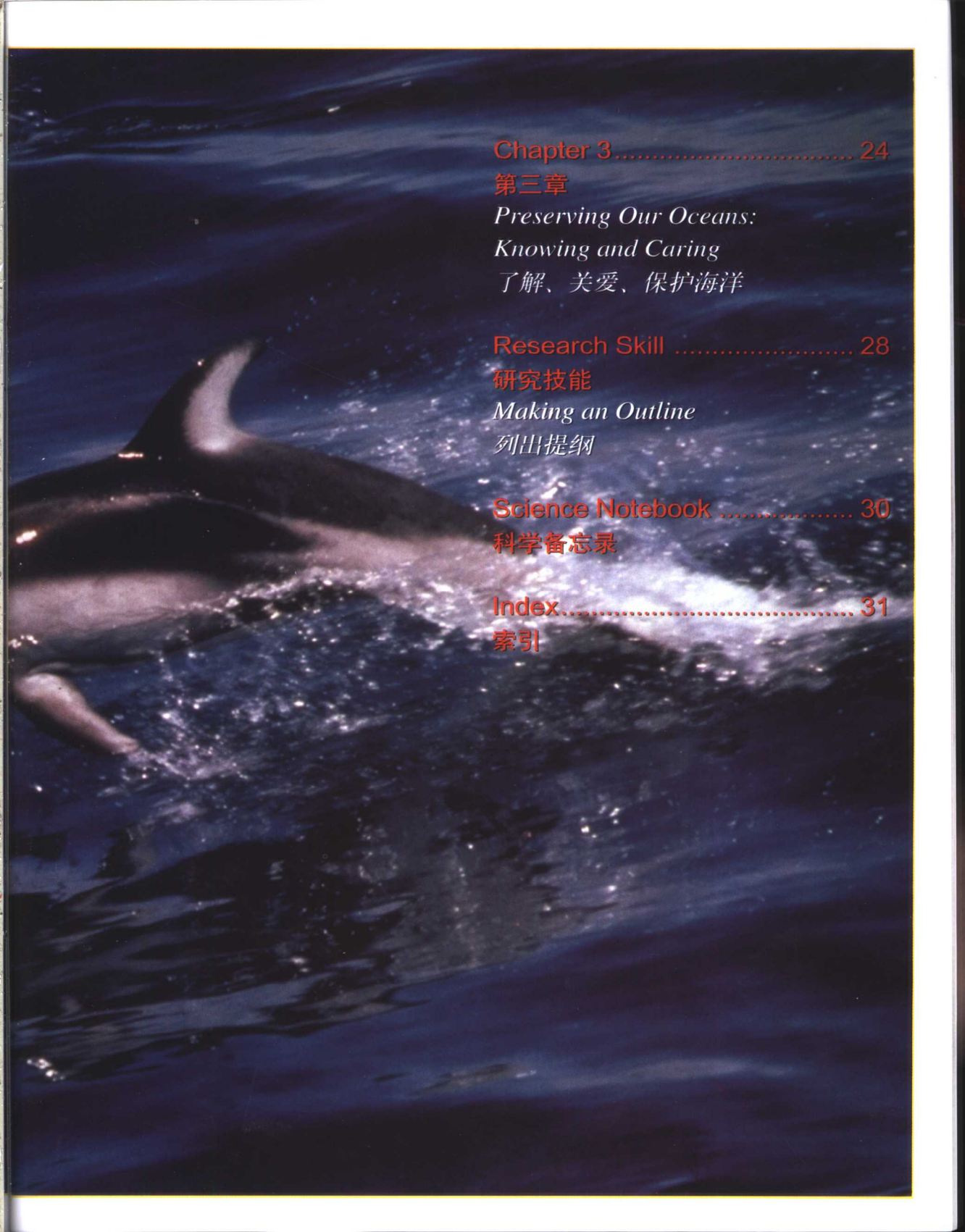
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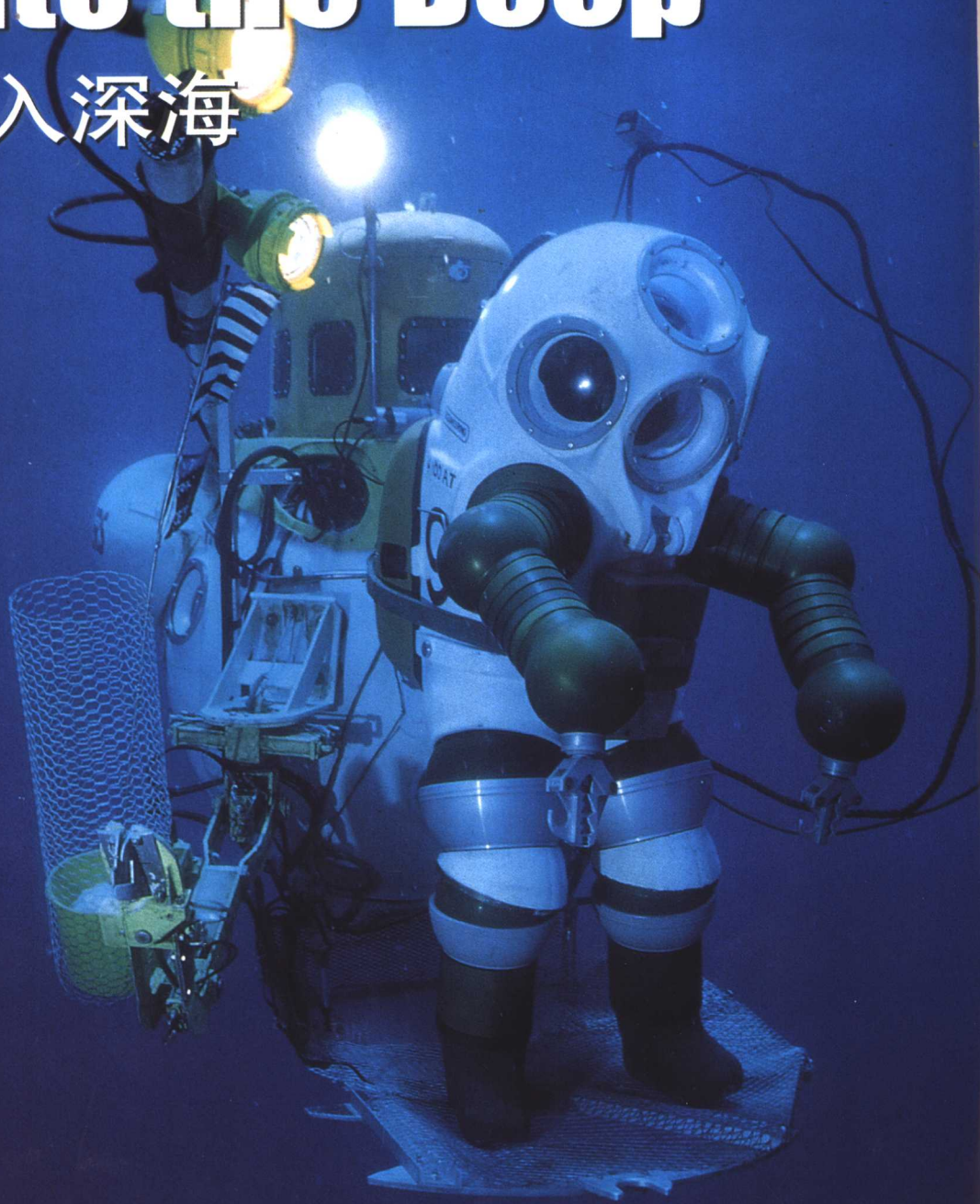
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INTRODUCTION

引言

# Into the Deep

涉入深海



The tiny<sup>1</sup> submarine<sup>2</sup> drifted<sup>3</sup> down, down, down. Sylvia Earle sat strapped<sup>4</sup> to the nose<sup>5</sup> of the sub. But she was safe and dry inside her diving suit<sup>6</sup>. Through the porthole<sup>7</sup> windows, Sylvia watched the light fade<sup>8</sup>. The color of the seawater changed from turquoise<sup>9</sup> to dark blue to black.



Sylvia Earle, oceanographer<sup>32</sup>

Minutes later, the sub came to rest on the floor of the Pacific Ocean<sup>10</sup>. The strap connecting the special diving suit to the sub was released<sup>11</sup>. Sylvia stepped down. It was October 1979, and she was walking alone on the seafloor<sup>12</sup> off the coast<sup>13</sup> of the Hawaiian island of Oahu<sup>14</sup>—at a record depth<sup>15</sup> of 379 meters (1,250 feet). Today she still holds the record for the deepest dive by any person using such a suit without a connection to the surface<sup>16</sup>.

For the next two-and-a-half hours, Sylvia explored<sup>17</sup> the mysterious<sup>18</sup> world of the deep sea. She saw bright red crabs<sup>19</sup> with long, spindly<sup>20</sup> legs and a gray eel<sup>21</sup> with skin<sup>22</sup> as smooth<sup>23</sup> as silk. She saw thin, twisting<sup>24</sup> corals<sup>25</sup> that lit up<sup>26</sup> with an eerie<sup>27</sup> blue light every time she touched them.

That record-setting dive to the seafloor earned<sup>28</sup> Sylvia the nickname<sup>29</sup> Her Royal Deepness<sup>30</sup>. It's a fitting title for someone who has led more than 50 diving expeditions<sup>31</sup> and spent more than 6,000 hours underwater. This is a book about ocean scientist Sylvia Earle, who has spent most of her life exploring the seas and working to protect them. Get set to follow Sylvia into the deep.

1. tiny	adj.	极小的	17. explore	v.	探索
2. submarine	n.	潜艇(口语称 sub)	18. mysterious	adj.	神秘的
3. drift	v.	漂流	19. crab	n.	螃蟹
4. strap	v.	用带缚住	20. spindly	adj.	细长的
5. nose	n.	突出部分(船头)	21. eel	n.	鳗鲡; 鳗
6. diving suit		潜水服	22. skin	n.	皮肤
7. porthole	n.	舷窗	23. smooth	adj.	光滑的
8. fade	v.	变暗	24. twist	v.	扭曲; 弯曲
9. turquoise	n.	青绿色	25. coral	n.	珊瑚
10. Pacific Ocean		太平洋	26. light up		发光; 发亮
11. release	v.	松开; 放开	27. eerie	adj.	怪诞的; 奇异的
12. seafloor	n.	海底	28. earn	v.	使得到
13. coast	n.	海岸	29. nickname	n.	绰号
14. Hawaiian island of Oahu		夏威夷群岛的瓦胡岛	30. Her Royal Deepness		深海皇后
15. record depth		保持纪录的深度	31. expedition	n.	探险
16. surface	n.	水面	32. oceanographer	n.	海洋学家



# Sylvia Earle: Explorer of Wonders

西尔维亚·厄尔：奇迹探索者

*Are you a nature lover? Do you like to go exploring in wild places? Sylvia Earle has been fascinated<sup>1</sup> by nature and wild critters<sup>2</sup> for as long as she can remember.*

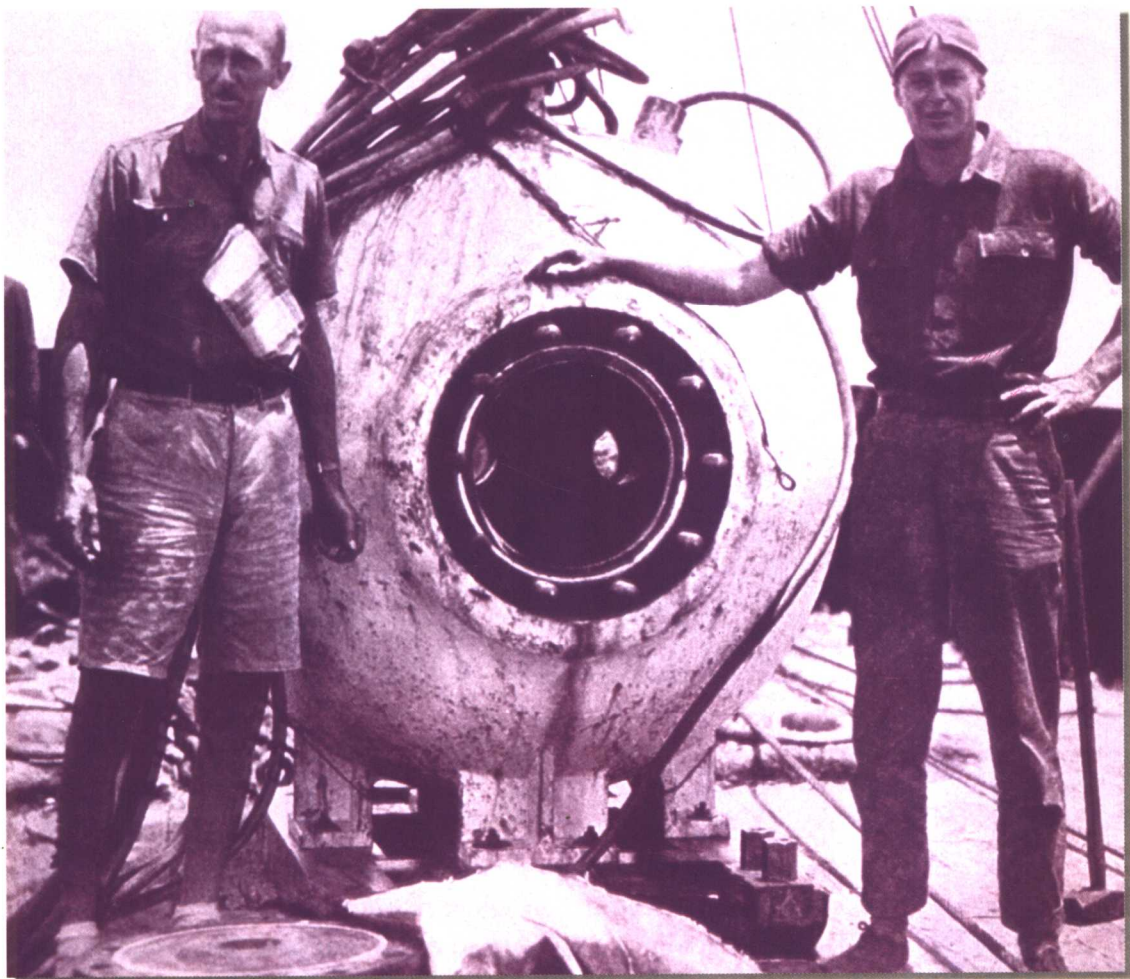
For the first 12 years of her life, Sylvia lived on a small farm near Camden<sup>3</sup>, New Jersey<sup>4</sup>. Her parents encouraged her and her two brothers to explore nature—especially the woods near the farm. The woods were a place of wonder. Among the branches and leaves were beetles<sup>5</sup>, birds, frogs, caterpillars<sup>6</sup>, and lots of other creatures<sup>7</sup>. Sylvia wanted to get to know them all. She wasn't afraid of anything, no matter how slimy<sup>8</sup> or scaly<sup>9</sup> or slithery<sup>10</sup>.

The farm wasn't far from the ocean. A trip to the ocean was always a special treat<sup>11</sup> for Sylvia. Like the woods, the seashore was home to amazing<sup>12</sup> animals. Sylvia could sit for hours and watch big horseshoe crabs<sup>13</sup> bulldoze<sup>14</sup> through the sand or seagulls<sup>15</sup> soar<sup>16</sup> above the water. What lay beyond the shore, she wondered? What lived beneath the waves?

- |                    |      |        |
|--------------------|------|--------|
| 1. fascinate       | v.   | 使着迷    |
| 2. wild critter    |      | 野生动物   |
| 3. Camden          |      | 卡姆登市   |
| 4. New Jersey      |      | 新泽西州   |
| 5. beetle          | n.   | 甲虫     |
| 6. caterpillar     | n.   | 毛虫     |
| 7. creature        | n.   | 动物     |
| 8. slimy           | adj. | 黏糊糊的   |
| 9. scaly           | adj. | 多鳞的    |
| 10. slithery       | adj. | 滑溜的    |
| 11. special treat  |      | 特别的乐事  |
| 12. amazing        | adj. | 令人惊奇的  |
| 13. horseshoe crab |      | 蟹      |
| 14. bulldoze       | v.   | 拱      |
| 15. seagull        | n.   | 海鸥     |
| 16. soar           | v.   | 高飞, 翱翔 |

Sylvia Earle at  
age 10





Some of Sylvia's questions were answered in school. There was *always* something new to learn. When she read for pleasure, she chose the encyclopedia<sup>1</sup>. Every time she turned a page, she felt like she was making a discovery. Sylvia also read books about the sea and the people who explored it. One of her favorite<sup>2</sup> authors<sup>3</sup> was William Beebe. He was one of the first scientists to go several hundred meters below the ocean's surface. Beebe's descriptions<sup>4</sup> of strange, deep-sea creatures made Sylvia long to<sup>5</sup> do what Beebe had done.

**William Beebe, left, Otis Barton, and the diving sphere<sup>6</sup> they invented for deep-sea exploration**

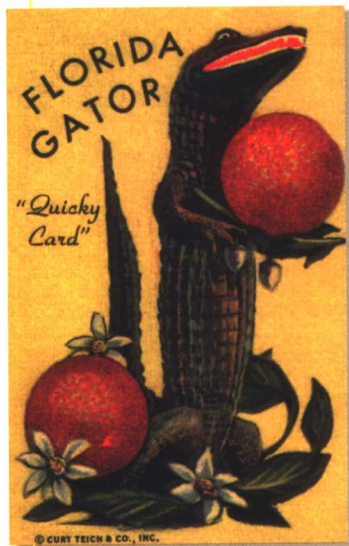
- |                 |             |       |                |           |      |
|-----------------|-------------|-------|----------------|-----------|------|
| 1. encyclopedia | <i>n.</i>   | 百科全书  | 4. description | <i>n.</i> | 描绘   |
| 2. favorite     | <i>adj.</i> | 特别喜爱的 | 5. long'to     |           | 渴望   |
| 3. author       | <i>n.</i>   | 作家    | 6. sphere      | <i>n.</i> | 球(体) |

## The Urge<sup>1</sup> to Submerge<sup>2</sup>



▲ Copper diving helmet

This Florida postcard pictures one of Sylvia's favorite critters.

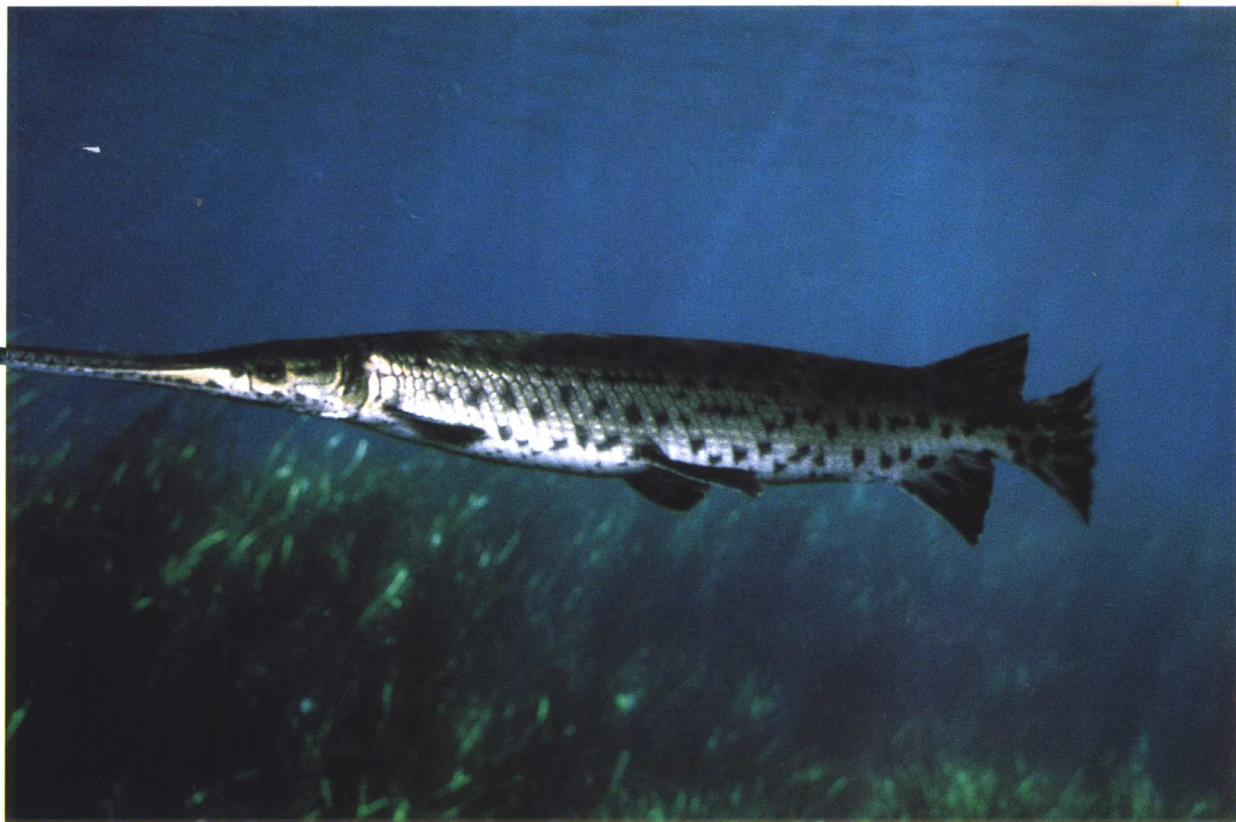


When Sylvia was 12 years old, her family moved to Florida<sup>3</sup>. They lived right by the ocean. Suddenly the Gulf of Mexico<sup>4</sup> became Sylvia's backyard<sup>5</sup>. She explored beaches, salt marshes<sup>6</sup>, and mudflats<sup>7</sup> where she met new kinds of shallow-water<sup>8</sup> ocean creatures. But what lived in deeper water was still out of reach.

A few years later, Sylvia was able to experience<sup>9</sup> the underwater world in a new way. With a borrowed copper diving helmet<sup>10</sup> and an air compressor<sup>11</sup>, Sylvia could explore underwater. She put on the helmet and stepped into the Weeki Wachee River<sup>12</sup>. The water swirled<sup>13</sup> over her head. Inside the helmet, which was being pumped<sup>14</sup> full of air, she could breathe<sup>15</sup> and she could see. There were fish all around her. Some of them were watching her as closely as she was watching them!

Sylvia was 16 years old when she went on this first dive. That same year she finished high school. She graduated<sup>16</sup> from Florida State University<sup>17</sup> three years later with a degree in botany<sup>18</sup>. Botany is the study of plants. Sylvia focused on ocean plants. She decided to identify<sup>19</sup> all the ocean plants in the Gulf of Mexico. In fact, Sylvia Earle is still collecting and classifying<sup>20</sup>, or grouping, plants from Gulf waters. "I've always known what I wanted to do," Sylvia says. "I didn't always know what to call it, but later I discovered it was called a scientist, a biologist, and ultimately<sup>21</sup> an oceanographer."

1. urge	<i>n.</i>	强烈欲望	12. Weeki Wachee River	威基沃奇河
2. submerge	<i>v.</i>	潜水	13. swirl	<i>v.</i> 打漩
3. Florida		佛罗里达州	14. pump	<i>v.</i> 打气
4. Gulf of Mexico		墨西哥湾	15. breathe	<i>v.</i> 呼吸
5. backyard	<i>n.</i>	后院	16. graduate	<i>v.</i> 毕业
6. salt marsh		盐沼; 盐碱滩	17. Florida State University	佛罗里达州立大学
7. mudflat	<i>n.</i>	泥滩	18. botany	<i>n.</i> 植物学
8. shallow-water	<i>adj.</i>	浅水的	19. identify	<i>v.</i> 识别; 鉴别
9. experience	<i>v.</i>	经历	20. classify	<i>v.</i> 分类
10. copper diving helmet		铜制潜水头盔	21. ultimately	<i>adv.</i> 最终
11. air compressor		空气压缩机		



Later, Sylvia earned more advanced<sup>1</sup> science degrees at Duke University<sup>2</sup>. She became an oceanographer and went on ocean expeditions that took her all over the world. By this time, Sylvia did most of her underwater exploring wearing scuba gear<sup>3</sup>. She breathed through a mouthpiece<sup>4</sup> that was connected<sup>5</sup> to a tank of<sup>6</sup> air on her back. In order to be safe, scuba divers<sup>7</sup> cannot dive much below 45 meters (150 feet), and their air supply doesn't last very long. Sylvia wanted to go deeper and stay longer underwater. She dreamed of being able to live in the sea.

**Sylvia saw a gar<sup>8</sup> on her first dive.**

- |                    |             |          |
|--------------------|-------------|----------|
| 1. advanced        | <i>adj.</i> | 高级的      |
| 2. Duke University |             | 杜克大学     |
| 3. scuba gear      |             | 自携式水下呼吸器 |
| 4. mouthpiece      | <i>n.</i>   | (管子的)口   |
| 5. connect         | <i>v.</i>   | 连接       |
| 6. a tank of       |             | 一罐       |
| 7. scuba diver     |             | 戴水肺的潜水员  |
| 8. gar             | <i>n.</i>   | 雀鱮; 腾针鱼  |

## Living Underwater

The chance to do just that came in 1970. Sylvia was asked to lead the first team of women to live and work in an underwater laboratory. Called Tektite II, the lab sat on the seafloor in about 15 meters (50 feet) of water, off the Virgin Islands<sup>1</sup> in the Caribbean Sea<sup>2</sup>. Sylvia and four other scientists spent two weeks in this undersea home. Can you imagine<sup>3</sup> living on the ocean bottom<sup>4</sup> and having fish peer<sup>5</sup> in through your windows?

Every day—and at night, too—Sylvia and her fellow aquanauts<sup>6</sup> explored their underwater neighborhood outside Tektite II. Wearing scuba gear, they collected information and took samples<sup>7</sup>. They spent many hours watching the fish and other animals. Sylvia discovered that each fish is different, with its own personality<sup>8</sup>.

The Tektite II team made headlines<sup>9</sup> when they returned to the surface. Sylvia saw this publicity<sup>10</sup> as a chance to tell many people—not just other scientists—what she had seen beneath the waves. She gave interviews<sup>11</sup> and spoke to groups of people about her work. She wrote about her underwater experiences. Sylvia wanted everyone to understand the ocean world and why it was important. She also wanted them to know that pollution<sup>12</sup> and overfishing<sup>13</sup> were harming<sup>14</sup> it.

**Did you ever wonder...**

**...why the sea is so important?**

**Sylvia says the sea is basic<sup>15</sup> to life itself. Plants in the sea produce most of the world's oxygen<sup>16</sup>. Oceans affect<sup>17</sup> our climate<sup>18</sup> too. Sylvia thinks our planet<sup>19</sup>'s seas are so important that maybe Earth should be called Ocean instead!**

1. Virgin Islands	维尔京群岛	10. publicity	<i>n.</i>	宣传文字; 宣传	
2. Caribbean Sea	加勒比海	11. interview	<i>n.</i>	会见; 接见	
3. imagine	<i>v.</i>	想像	12. pollution	<i>n.</i>	污染
4. ocean bottom	海底	13. overfish	<i>n.</i>	过度捕捞	
5. peer	<i>v.</i>	窥视; 凝视	14. harm	<i>v.</i>	损害; 危害
6. aquanaut	<i>n.</i>	海底(实验室)工作人员	15. basic	<i>adj.</i>	基本的
7. sample	<i>n.</i>	样本	16. oxygen	<i>n.</i>	氧; 氧气
8. personality	<i>n.</i>	特点	17. affect	<i>v.</i>	影响
9. headline	<i>n.</i>	头版头条新闻	18. climate	<i>n.</i>	气候
		19. planet	<i>n.</i>	行星(此处指地球)	

Sylvia collects underwater plants for study in the Tektite II laboratory.





Sylvia sights a humpback tail disappearing<sup>14</sup> under the surface of Glacier Bay<sup>15</sup>, Alaska<sup>16</sup>.

## Protecting the Seas

Later, Sylvia's work took her to the Galápagos Islands<sup>1</sup>, to waters<sup>2</sup> off China, Panama<sup>3</sup>, and the Bahamas<sup>4</sup>, and to islands in the Pacific and Indian Oceans. During one study, she traveled across thousands of kilometers of ocean to observe humpback whales<sup>5</sup>. She wanted to learn<sup>6</sup> more about how whales communicate<sup>6</sup>, care for their young, and get the food they need.

With each dive, Sylvia's desire<sup>7</sup> to go deeper grew stronger. Scuba had its limits<sup>8</sup>. But what about a small submarine, or submersible<sup>9</sup>? A sub could safely carry a scientist into the deep for many hours at a time. So Sylvia and some friends started a company to design<sup>10</sup> and build submersibles. In 1985 Sylvia piloted<sup>11</sup> *Deep Rover*, a one-person submersible she helped create<sup>12</sup>, to about 1,000 meters (3,000 feet) beneath the waves.

1. Galápagos Islands		加拉帕戈斯群岛	9. submersible	<i>n.</i>	潜水器
2. waters	<i>n.</i>	领海; 水域	10. design	<i>v.</i>	设计
3. Panama		巴拿马	11. pilot	<i>v.</i>	驾驶
4. Bahamas		巴哈马	12. create	<i>v.</i>	制造
5. humpback whale		座头鲸	13. prefix	<i>n.</i>	前缀
6. communicate	<i>v.</i>	沟通	14. disappear	<i>v.</i>	消失
7. desire	<i>n.</i>	愿望	15. Glacier Bay		冰川湾
8. limit	<i>n.</i>	限度	16. Alaska		阿拉斯加州

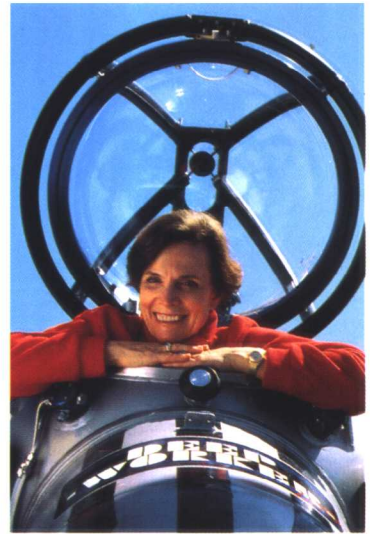
## Word Power

The word *submarine* is made up of the prefix<sup>13</sup> *sub* meaning "under or below" and the base word *marine* meaning "of the sea."

A few years later, Sylvia became the first woman to serve as chief scientist<sup>1</sup> at NOAA<sup>2</sup>, the National Oceanic and Atmospheric Administration. NOAA oversees<sup>3</sup> America's oceans and the National Marine Sanctuaries<sup>4</sup>. A marine sanctuary is like an underwater national park.

Today, Sylvia is back to being a full-time ocean explorer. She is in charge of<sup>5</sup> a program called the Sustainable<sup>6</sup> Seas Expeditions. Using the latest technology<sup>7</sup>, she and other scientists are exploring the deep waters of the National Marine Sanctuaries. The star of the show is *Deep Worker*, a new submersible Sylvia often pilots.

*Deep Worker*'s hatch<sup>8</sup> is open. Climb on in and join Sylvia Earle on one of her expeditions to explore the bottom of the sea.



**Sylvia in Deep Worker**

- |                                 |      |                  |
|---------------------------------|------|------------------|
| 1. chief scientist              |      | 首席科学家            |
| 2. NOAA                         |      | (美国)国家海洋和<br>大气局 |
| 3. oversee                      | v.   | 检查, 监督           |
| 4. National Marine<br>Sanctuary |      | 国家海洋生物<br>保护区    |
| 5. in charge of                 |      | 负责               |
| 6. sustainable                  | adj. | 可持续的             |
| 7. technology                   | n.   | 技术               |
| 8. hatch                        | n.   | 舱门               |





# In the Field: A Dive to the Seafloor

## 实地作业：潜至海底

*Have you ever dreamed you could explore the world deep beneath the waves? Imagine gliding<sup>1</sup> slowly along in a submersible, moving weightlessly<sup>2</sup> through a liquid world of deepest blue.*



Queen angelfish<sup>20</sup>

Thrusters<sup>3</sup> whirl<sup>4</sup> as *Deep Worker* moves over<sup>5</sup> corals that grow crowded together on top of the reef<sup>5</sup>. Hundreds of fish dressed in every imaginable shade<sup>6</sup> of red, orange, blue, and green dart<sup>7</sup> through the clear water. At the edge of the reef, you check your gauges<sup>8</sup> and signal<sup>9</sup> to the surface. Then you press down on one of the pedals<sup>10</sup> at your feet. The sub tilts<sup>11</sup> forward and heads down into the unknown.

*Deep Worker* descends<sup>12</sup> about 30 meters (100 feet) a minute. As moments tick by<sup>13</sup>, the water changes from blue to deep purple<sup>14</sup>. At 300 meters (1,000 feet) below the surface, the light has disappeared. The water is inky black. At 450 meters (1,480 feet) the on-board sonar system<sup>15</sup> shows that you're nearing the ocean floor. You let up<sup>16</sup> on the pedal to slow your descent. Moments later the bottom appears in the sub's lights. *Deep Worker* settles<sup>17</sup> gently down on a patch of<sup>18</sup> pale<sup>19</sup> sand.

- |                 |      |           |                     |      |                   |
|-----------------|------|-----------|---------------------|------|-------------------|
| 1. glide        | v.   | 滑行        | 12. descend         | v.   | 下降                |
| 2. weightlessly | adv. | 失重地       | 13. tick by         |      | 使(分、秒等)<br>滴答滴答过去 |
| 3. thruster     | n.   | 推进器       | 14. deep purple     |      | 深紫色               |
| 4. whirl        | v.   | 急速旋转      | 15. sonar system    |      | 声纳系统              |
| 5. reef         | n.   | 礁         | 16. let up          |      | 停止; 减缓            |
| 6. shade        | n.   | (色彩的)浓淡深浅 | 17. settle          | v.   | 停留                |
| 7. dart         | v.   | 猛冲        | 18. a patch of      |      | 一片                |
| 8. gauge        | n.   | 测量仪表      | 19. pale            | adj. | 灰白的               |
| 9. signal       | v.   | 发信号       | 20. queen angelfish |      | 皇后神仙鱼             |
| 10. pedal       | n.   | 脚蹬        |                     |      |                   |
| 11. tilt        | v.   | 倾斜        |                     |      |                   |