



大学外语系列丛书
DAXUE WAIYU XILIE CONGSHU

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综合 海洋科技英语



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综合海洋科技英语

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内 容 简 介

本书依据海洋技术理论所包含的最前沿领域如海洋生物资源、海水资源利用、海洋矿产开发、海洋能源开发、海洋环境保护等方面编写,同时选取近年来国外海洋科技领域权威杂志上发表的文献以及一些近期在网上出现的海洋科技文章为语料。本书编排科学系统,并将科技英语文体特征有机地融为一体,精、泛、读、写、译安排合理,因此有利于提高学生综合海洋科技英语的水平。

本书可供高等学校科技英语专业、非英语专业大学英语选修课教材使用。

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前言



PREFACE

为了适应我国大力振兴和快速发展海洋科技的需要,特别是满足我校“三海一核”办学特色,提高学生海洋科技英语水平的需求,我们编写了这本《综合海洋科技英语》。

本书的宗旨在于帮助大学生了解当今海洋科技英语的新概念,提高掌握和运用该领域英语的综合能力水平。在本书的编写过程中,我们在着重夯实英语语言基本功的同时,全力突显最新海洋科技英语知识的重要性和趣味性,并将科技英语文体特征有机地融为一体。这不仅体现了当今最新的海洋科技动态,而且也体现了海洋科技英语纯正和地道的特征,因此极有利于提高学生海洋科技英语的水平。本书体现了如下特点:

一、语料新颖实用。书中选取的语料皆来自于近些年在 *Maritime Journal*、*Shipping World & Shipbuilder*、*Sea Technology*、*Journal of Marine Science and Technology*、*International Ocean Systems*、*Scientific American* 等国外海洋科技领域权威英文杂志上发表的文章,以及一些近期在网上出现的海洋科技文章,因此本书的选材新颖,反映出了当前世界海洋科技的最新发展,具有很强的实用性。

二、内容科学系统。教材依据海洋技术理论所包含的最前沿领域进行语料收集和编写,涵盖了海洋科技备受关注的以下方面,如海洋生物资源、海水资源利用、海洋矿产开发、海洋能源开发、海洋环境保护、海洋工程、海洋装备制造、海洋服务和海洋高新技术。

三、精泛合理安排。本书共十个单元,每个单元有两篇文章,文后都附有词汇注释、相关短语和主要语言点讲解。各单元都配以相关题材的两篇短文作为补充阅读材料,并配有阅读理解练习,主要用于快读阅读训练。

四、读写译相结合。这是本书的一大特色。每单元后面都附有主要科技英语文体特征介绍,围绕科技英语词汇、科技英语句式和篇章特征进行有效讲解,并配有相应的练习以供学习者使用,以此来提高学生科技英语写作和翻译的综合能力。

五、练习种类多样。本书练习主要围绕第一篇文章展开,包括阅读理解部分(回答问题和语篇分析为主的填写大意题)、词汇部分(词义理解、多项选择、完形填空和选词填空)、句子翻译及写作部分。第二篇文章的练习形式包括阅读理解的判断对错和根据课文填空、词汇填空、根据句义汉译英以及



摘要写作。练习的编排设计均以各单元内容为主题,使课文和练习有机地融为一体。

此外,书后附有大部分练习答案,以便于学生更好地理解所学内容。全书最后还列出了总词汇表以供查阅。

编写本书的目的主要是为了提高学生海洋科技英语阅读、翻译和写作水平。该书适用于高等学校英语专业科技英语研究方向的三、四年级学生使用,也可作为非英语专业大学英语选修课教材使用。

由于本书涉猎海洋科技领域的知识较多,在编写过程中专业知识方面的疏漏在所难免,敬请该学科领域的专家学者和师生不吝赐教,对此我们表示由衷的感谢。

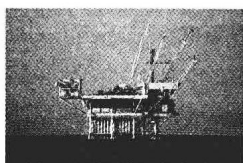
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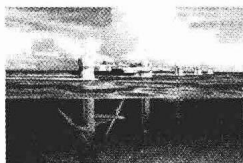
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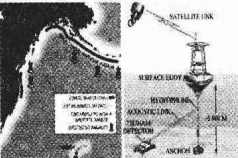


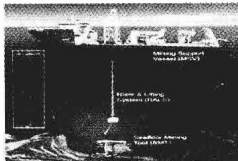
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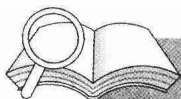
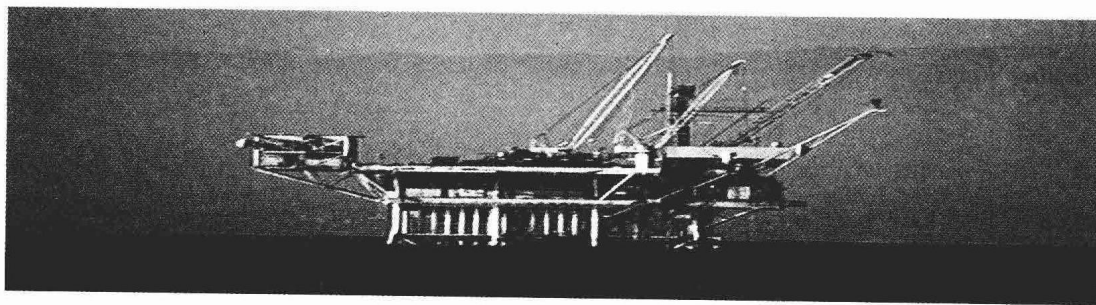
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Unit 1 Man and Ocean



Section A



Warm-up Questions

1. How many kinds of ocean resources are mentioned in this text?
2. In what form does the ocean provide food?
3. What kind of minerals can be mined from the ocean?
4. How can you define fishery?
5. What are the two main questions facing fishery management?

Ocean Resources

1 The ocean is one of Earth's most valuable natural resources. It provides food in the form of fish and shellfish—about 200 billion pounds are caught each year. It's used for transportation—both travel and shipping. It provides a treasured source of recreation for humans. It is mined for minerals (salt, sand, gravel, and some **manganese, copper,**



nickel, iron, and **cobalt** can be found in the deep sea) and drilled for crude oil.

2 The ocean plays a critical role in removing carbon from the atmosphere and providing oxygen. It regulates Earth's climate. The ocean is an increasingly important source of **biomedical** organisms with enormous potential for fighting disease. These are just a few examples of the importance of the ocean to life on land. Explore them in greater detail to understand why we must keep the ocean healthy for future generations.

Fishing Facts

3 The oceans have been fished for thousands of years and are an integral part of human society. Fish have been important to the world economy for all of these years, **starting with** the Viking trade of cod and then continuing with fisheries like those found in **Lofoten**, Europe, Italy, Portugal, Spain and India. Fisheries of today provide about 16% of the total world's protein with higher percentages occurring in developing nations. Fisheries are still enormously important to the economy and **wellbeing** of communities.

4 The word fisheries **refers to** all of the fishing activities in the ocean, whether they are to obtain fish for the commercial fishing industry, for recreation or to obtain ornamental fish or fish oil. Fishing activities resulting in fish not used for consumption are called industrial fisheries. Fisheries are usually designated to certain **ecoregions** like the salmon fishery in **Alaska**, the Eastern Pacific **tuna** fishery or the **Lofoten** island cod fishery. **Due to** the relative abundance of fish on the continental shelf, fisheries are usually marine and not freshwater.

5 Although a world total of 86 million tons of fish were captured in 2000, China's fisheries were the most productive, capturing a whopping one third of the total. Other countries producing the most fish were **Peru**, Japan, the United States, **Chile**, **Indonesia**, Russia, India, Thailand, Norway and Iceland—with Peru being the most and Iceland being the least. The number of fish caught varies with the years, but appears to have leveled off at around 88 million tons per year possibly due to overfishing, economics and management practices.

6 Fish are caught in a variety of ways, including one-man casting nets, huge **trawlers**, seining, driftnetting, handlining, longlining, gillnetting and diving. The most common species making up the global fisheries are herring, cod, **anchovy**, **flounder**, tuna, shrimp,



mullet, squid, crab, salmon, lobster, **scallops** and oyster. **Mollusks** and **crustaceans** are also widely sought. The fish that are caught are not always used for food. In fact, about 40% of fish are used for other purposes such as fishmeal to feed fish grown in captivity. For example cod, is used for consumption, but is also frozen for later use. Atlantic herring is used for canning, fishmeal and fish oil. The Atlantic menhaden is used for fishmeal and fish oil and Alaska **pollock** is consumed, but also used for fish paste to simulate crab. The Pacific cod has recently been used as a substitute for Atlantic cod which has been overfished.

7 The amount of fish available in the oceans is an ever-changing number due to the effects of both natural causes and human developments. It will be necessary to manage ocean fisheries in the coming years to make sure the number of fish caught never makes it to zero. A lack of fish greatly impacts the economy of communities dependent on the resource, as can be seen in Japan, eastern Canada, New England, Indonesia and Alaska. The anchovy fisheries off the coast of western South America have already collapsed and with numbers dropping violently from 20 million tons to 4 million tons—they may never fully recover. Other collapses include the California sardine industry, the Alaskan king crab industry and the Canadian northern cod industry. In Massachusetts alone, the cod, haddock and yellowtail flounder industries collapsed, causing an economic disaster for the area.

8 Due to the importance of fishing to the worldwide economy and the need for humans to understand human impacts on the environment, the academic division of fisheries science was developed. Fisheries science includes all aspects of marine biology, in addition to economics and management skills and information. Marine conservation issues like overfishing, sustainable fisheries and management of fisheries are also examined through fisheries science.

9 In order for there to be plenty of fish in the years ahead, fisheries will have to develop sustainable fisheries and some will have to close. Due to the constant increase in the human population, the oceans have been overfished with a resulting decline of fish crucial to the economy and communities of the world. The control of the world's fisheries is a controversial subject, as they cannot produce enough to satisfy the demand, especially when there aren't enough fish left to breed in healthy ecosystems. Scientists are often in the role of fisheries managers and must regulate the amount of fishing in the oceans, a position not popular with those who have to make a living fishing ever decreasing populations.

10 The two main questions facing fisheries management are:

1) What is the carrying capacity of the ocean? How many fish are there and how many of



which type of fish should be caught to make fisheries sustainable?

2) How should fisheries resources be divided among people?

11 Fish populate the ocean in patches instead of being **spread out** throughout the enormous expanse. The photic zone is only 10 ~ 30 m deep near the coastline, a place where phytoplankton have enough solar energy to grow in abundance and fish have enough to eat. Most commercial fishing takes place in these coastal waters, as well as estuaries and the slope of the Continental Shelf. High nutrient contents from **upwelling**, **runoff**, the regeneration of nutrients and other ecological processes supply fish in these areas with the necessary requirements for life. The blue color of the water near the coastlines is the result of **chlorophyll** contained in aquatic plant life.

12 Most fish are only found in very specific habitats. Shrimp are fished in river **deltas** that bring large amounts of freshwater into the ocean. The areas of highest productivity known as banks are actually where the Continental Shelf extends outward towards the ocean. These include the Georges Bank near **Cape Cod**, the **Grand Banks** near **Newfoundland** and Browns Bank. Areas where the ocean is very shallow also contain many fish and include the middle and southern regions of the North Sea. Coastal upwelling areas can be found off of southwest Africa and off South America's western coast. In the open ocean, tuna and other mobile species like yellowfin can be found in large amounts.

13 The question of how many fish there are in the ocean is a complicated one but can be simplified using populations of fish instead of individuals. The word "**cohort**" refers to the year the fish was born and is used to gather population statistics. Cohorts **start off** as eggs with an extremely high rate of mortality, which declines as the fish gets older. Juvenile fish close to the age where they can be fished are called "recruits". Cohort mortality is tied in with the species of fish due to variances in natural mortality. The biomass of a particular cohort is greatest when fish are rapidly growing and decreases as the fish get older and start to die.

14 Scientists use theories and models to help determine the number and size of fish populations in the ocean. Production theory is the theory that production will be highest when the number of fish does not overwhelm the environment and there are not too few for genetic diversity of populations. The maximum sustainable yield is produced when the population is of intermediate size. Yield-per-recruit theory is the quest to determine the optimum age for harvesting fish. The theory of recruitment and stock allows scientists to make a guess about



the optimum population size to encourage a larger population of recruits. All of the above theories must be flexible enough to allow natural fluctuations in the fish population to occur and still gather significant data; however, the theories are limited when taking into account the effect of humans on the environment and misinformation could result in overfishing of the ocean's resources.

15 Other factors that must be taken into account are the ecological requirements of individual fish species like predation and nutrition and why fish will often migrate to different areas. Water temperatures also influence the behavior of ecosystems, causing an increase in metabolism and **predation** or a sort of **hibernation**. Even the amount of turbulence in the water can affect predator-prey relationships, with more meetings between the two when waters are stirred up. Global warming could have a huge economic impact on the fisheries when fish stocks are forced to move to waters with more tolerable temperatures.

16 In many countries, commercial fishing has found more temporarily economical ways of catching fish, including gill nets, purse seines, and drift nets. Although fish are trapped efficiently in one day using these fishing practices, the number of fish that are wasted this way has reached 27 million tons per year, not to mention the crucial habitats destroyed that are essential for the regeneration of fish stocks. In addition, marine mammals and birds are also caught in these nets. The wasted fish and marine life is referred to as by-catch, an unfortunate side-effect of unsustainable fishing practices that can turn the ecosystem upside-down and leave huge amounts of dead matter in the water. Other human activities like trawling and dredging of the ocean floor have bulldozed over entire underwater habitats. The oyster **habitat** has been completely destroyed in many areas from the use of the oyster patent tong and sediment buildup draining from farm runoff.

Shipping

17 The word "shipping" refers to the activity of moving cargo with ships in between seaports. Wind-powered ships exist, but more often ships are powered by steam turbine plants or diesel engines. Naval ships are usually responsible for transporting most of trade from one country to another and are called merchant navies. The various types of ships include container ships, tankers, crude oil ships, product ships, chemical ships, bulk carriers, cable layers, general cargo ships, offshore supply vessels, dynamically-positioned ships, ferries, gas and car carriers, **tugboats**, **barges** and **dredgers**.



18 In theory, shipping can have a low impact on the environment. It is safe and profitable for economies around the world. However, serious problems occur with the shipping of oil, dumping of waste water into the ocean, chemical accidents at sea, and the inevitable air and water pollution occurring when modern day engines are used. Ships release air pollutants in the form of sulphur dioxide, nitrogen oxides, carbon dioxide, hydrocarbons and carbon monoxide. Chemicals dumped in the ocean from ships include chemicals from the ship itself, cleaning chemicals for machine parts, and cleaning supplies for living quarters. Large amounts of chemicals are often spilled into the ocean and sewage is not always treated properly or treated at all. Alien species riding in the ballast water of ships arrive in great numbers to crash native ecosystems and garbage is dumped over the side of many vessels. Dangerous industrial waste and harmful substances like halogenated hydrocarbons, water treatment chemicals, and antifouling paints are also dumped frequently. Ships and other watercraft with engines disturb the natural environment with loud noises, large waves, frequently striking and killing animals like manatees and dolphins.

(1,956 words)

—The text is based on Ocean Resources, <http://marinebio.org/Oceans/ocean-resources.asp>,



Word List

- | | |
|-------------------------------|---|
| 1. manganese /'mæŋɡəˌniːz/ | <i>n.</i> a brittle greyish-white metallic element
[化] 锰 |
| 2. copper /'kɒpə/ | <i>n.</i> a malleable ductile reddish metallic element
[化] 铜 |
| 3. nickel /'nikəl/ | <i>n.</i> a malleable ductile silvery-white metallic element
[化] 镍 |
| 4. cobalt /kə'bɔːlt/ | <i>n.</i> a brittle hard silvery-white element [化] 钴 |
| 5. biomedical /baɪəu'medɪkəl/ | <i>adj.</i> of or relating to biology and medicine or
biomedicine (有关) 生物医学的 |
| 6. wellbeing /'wel'biːɪŋ/ | <i>n.</i> the condition of being contented, healthy, or
successful 健康; 幸福 |
| 7. ecoregion /'iːkəʊriːdʒən/ | <i>n.</i> an area defined by its environmental conditions, |



- esp. climate, landforms, and soil characteristics
生态区域
8. tuna /'tu:nə/ *n.* any of various large marine spiny-finned fishes of the genus *Thunnus* 金枪鱼(肉)
9. trawler /'trɔ:lə/ *n.* a vessel used for trawling; a person who trawls 拖网渔船; 拖网捕鱼者; 拖网渔民
10. anchovy /'æntʃəvi/ *n.* any of various small marine food fishes of the genus *Engraulis* and related genera 凤尾鱼
11. flounder /'flaʊndə/ *n.* any of various European and non-European marine flatfish 比目鱼
12. mullet /'mʌlɪt/ *n.* any of various teleost food fishes belonging to the families *Mugilidae* 胭脂鱼, 鲮鱼
13. squid/ skwid/ *n.* any of various fast-moving pelagic cephalopod molluscs of the genera *Loligo*, *Ommastrephes*, etc., of most seas, having a torpedo-shaped body ranging from about 10 centimetres to 16.5 metres long and a pair of triangular tail fins 乌贼, 墨鱼; 鱿鱼
14. scallop /'skɒləp/ *n.* one of a series of rounded projections (or the notches between them) formed by curves along an edge (as the edge of a leaf or piece of cloth or the margin of a shell or a shriveled red blood cell observed in a hypertonic solution etc.) 扇贝, 干贝蛤
15. mollusk /'mɒləsk/ *n.* invertebrate having a soft unsegmented body usually enclosed in a shell [动] 软体动物
16. crustacean /krʌs'teɪʃjən/ *n.* any arthropod of the mainly aquatic class *Crustacea*, typically having a carapace hardened with lime and including the lobsters, crabs, shrimps, woodlice, barnacles, copepods, and water fleas 甲壳纲动物
17. pollock /'pɒlək/ *n.* lean white flesh of North Atlantic fish; similar to codfish 鳕鱼类
18. upwelling /ʌp'welɪŋ/ *n.* the process or an instance of rising or appearing to



19. runoff /'rʌnɒ:f/

rise to the surface and flowing outward 上涌; 上升流(指海水由较深层上升到较浅层的过程)

20. chlorophyll /'klɒrəfil/

n. the occurrence of surplus liquid (as water) exceeding the limit or capacity 径流量(流出, 流放口)

21. delta /'delta/

n. the green pigment of plants and photosynthetic algae and bacteria that traps the energy of sunlight for photosynthesis and exists in several forms 叶绿素

22. cohort /'kəʊhɔ:t/

n. the flat alluvial area at the mouth of some rivers where the mainstream splits up into several distributaries (河口的)三角洲

23. predation /pri'deɪʃən/

n. a taxonomic group that is a subdivision of a subclass (usually of mammals) or subfamily (of plants) (有共同特点或举止类同的)一群人, 一批人

24. hibernation /haɪbə'neɪʃən/

n. a relationship between two species of animal in a community, in which one (the predator) hunts, kills, and eats the other (the prey) 掠夺行为

25. habitat /'hæbi,tæt/

n. cessation from or slowing of activity during the winter, especially slowing of metabolism in some animals 过冬, 冬眠

26. tugboat /'tʌgɪbəʊt/

n. the environment in which an animal or plant normally lives or grows (动物的) 栖息地, 住处

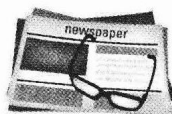
27. barge /bɑ:dʒ/

n. a powerful small boat designed to pull or push larger ships (拖、推其他船只进出港口和码头的大马力) 拖船

28. dredger /'dredʒə/

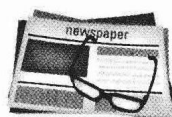
n. a vessel, usually flat-bottomed and with or without its own power, used for transporting freight, esp. on canals 驳船(运河、河流上运载客货的大型平底船)

n. a vessel used for dredging, often bargelike and sometimes equipped with retractable steel piles that are driven into the bottom for stability 挖泥船



Idioms and Expressions

- | | |
|---------------|--|
| 1. start with | begin with 以……开始 |
| 2. refer to | to mention or speak about 提到 |
| 3. due to | caused by ; because of 由于 |
| 4. spread out | to arrange objects so that they cover a larger area and can be seen easily 展开 |
| 5. start off | to begin, or to begin sth. such as a career, in a particular way that changed later 开始 |
| 6. in theory | theoretically 理论上的 |



Proper Nouns

- | | |
|-----------------|-------------------|
| 1. Alaska | 阿拉斯加州(美国) |
| 2. Lofoten | 罗弗敦群岛(挪威) |
| 3. Peru | 秘鲁 |
| 4. Chile | 智利 |
| 5. Indonesia | 印尼(东南亚岛国) |
| 6. Cape Cod | 科德角(美国地名) |
| 7. Grand Banks | 大浅滩(纽芬兰岛东南的大西洋浅滩) |
| 8. Newfoundland | 纽芬兰(加拿大东海岸的岛屿) |



Notes to the Text

1. It provides food in the form of fish and shellfish—about 200 billion pounds are caught each year. (Para. 1)

Paraphrase: The ocean supplies about 200 billion pounds of food, for example, fish and shellfish, to human beings every year.

2. The ocean plays a critical role in removing carbon from the atmosphere and providing oxygen. (Para. 2)



Paraphrase: The ocean is extremely important for our living environment because it can take carbon away and give us sufficient oxygen.

3. Due to the relative abundance of fish on the continental shelf, fisheries are usually marine and not freshwater. (Para. 4)

Paraphrase: Because the continental shelf is rich in fish, fish are caught mainly from the ocean instead of from the freshwater.

4. The amount of fish available in the oceans is an ever-changing number due to the effects of both natural causes and human developments. (Para. 7)

Paraphrase: The amount of fish in the oceans is not steady. It changes due to two factors: one is the natural causes, the other is human developments.

5. Fisheries science includes all aspects of marine biology, in addition to economics and management skills and information. (Para. 8)

Paraphrase: Besides economics and management and information, fisheries also includes all the studies related to marine biology.

6. Due to the constant increase in the human population, the oceans have been overfished with a resulting decline of fish crucial to the economy and communities of the world. (Para. 9)

Paraphrase: Because of the continuous increase in the human population, there is an increasing demand for fish. The high demand for fish caused the decline of fish which is important to the economy and communities of the world.



Comprehension

I. Work in pairs and answer the following questions according to Text A.

1. How many pounds of fish can we get from the ocean every year?
2. In what aspects can we take advantage of the ocean resources?
3. In what aspect does the ocean play a critical role?
4. What is the percentage of the total world's protein with higher percentages occurring in developing nations?
5. What does the world fishery refer to?
6. Why are fisheries usually marine?
7. How are fish caught?
8. What factors can affect the amount of fish in the oceans?