水产养殖英语

ENGLISH FOR AQUACULTURE

王吉桥 赵玉宝 著

外文出版社

责任编辑：陈国越　　封面设计：张光得

本书以水产养殖专业内容为载体的英语，涵盖分子生物学、细胞学、鱼类学、甲壳动物学、贝类学、生态学、营养学、水化学等内容，为科技交流和业务洽谈提供重要工具．

ISBN 7-119-02485-X

9 787119 024851 >

定价：38.00元

水 产 养 殖 英 语

English For Aquaculture

王吉桥　赵玉宝　著

外文出版社

图书在版编目(CIP)数据

水产养殖英语/王吉桥,赵玉宝编著. —北京:外文出版社,1999
ISBN 7-119-02485-X

Ⅰ.水… Ⅱ.①王… ②赵… Ⅲ.水产养殖-英语-高等学校-教材 Ⅳ.H31

中国版本图书馆 CIP 数据核字(1999)第 40557 号

外文出版社网址:
http://www.flp.com.cn
外文出版社电子信箱:
info@flp.com.cn
sales@flp.com.cn

水产养殖英语

编　　著　王吉桥　赵玉宝

责任编辑　陈国越
封面设计　张光得
出版发行　外文出版社
社　　址　北京市百万庄大街 24 号　　**邮政编码**　100037
电　　话　(010)68326644-2412(编辑部)
(010)68329514/68327211(推广发行部)
印　　刷　中国建筑工业出版社印刷厂
经　　销　外文书店/新华书店
开　　本　大 32 开(140×203 毫米)　　**字　　数**　390 千字
印　　数　0001-5000 册　　**印　　张**　18.125
版　　次　1999 年 9 月第 1 版第 1 次印刷
装　　别　平
书　　号　ISBN 7-119-02485-X/H·852(外)
定　　价　38.00 元

序

大连水产学院养殖系王吉桥教授和北京水产技术开发服务中心主任赵玉宝合著的《水产养殖英语》一书即将出版前,我有幸先睹为快。起初,我只草草地翻了一下,后来却为书中的内容所吸引,觉得有几句话要说。

目前我们正处在世纪之交的知识经济时代,世界信息化、经济一体化和科技智能化的进程正在加快。能源、环境和人口三大压力迫使水产业必须走以养殖业为重点、以外向型经济为突破口的可持续发展之路。因此,急需基础知识宽厚、实践技能强的高素质复合型人才。这种人才不但要具有坚实的专业基础理论知识和实践技能,还要具有较为扎实的水产养殖英语知识和实际应用技能。《水产养殖英语》正好满足了这方面的需要。它是我国正式出版的一本适用于水产院校的教材。这本书以英语语言学和词汇学为基础,以水产养殖的主要内容为载体、以提高水产养殖英语的读、写、听的实践技能为重点,是一本理论联系实际的教材。

本书的两位作者都是曾在美国留学的博士。留学期间,他们就一直留意收集水产养殖英语听力和写作方面的文字和声像材料。本书所选用的材料,如听力材料就

是根据他们留学听课的录音整理而成的。因此本书的编撰完成是他们留学深造的成果,也是他们报效祖国的实际行动。

本书的两位作者均毕业于大连水产学院水产养殖专业,他们刻苦钻研、勤于思考、善于总结,归纳了许多水产养殖英语中易混淆词的用法、含意;探索了迅速扩大和记忆词汇的规律;深入研究了水产养殖英语论文写作和英汉技巧。这本书是作者学习英语的经验总结,对专业英语学习者很有启发,避免走弯路。在写作训练中,坚持先打好基础,再按照论文的几大组成部分,加以全面训练,重在两种语言对比的训练,强调用英语的逻辑来思考和写作,避免中国式的英语。

《水产养殖英语》的出版面世,是件十分有益的事。它为水产养殖科技和管理人员走向世界搭起了桥梁;为放眼世界水产养殖业提供了有用的工具。

郭大民

1998年8月于北京

目　录

绪　论 Introduction

“水产养殖英语”（English For Aquaculture）是以水产养殖专业的主要内容为载体的英语。它以英语语言学和词汇学的规律为基础，服务于水产养殖生产和科研的需要。它是水产养殖和英语两个学科相结合的交叉学科。

水产养殖英语是水产养殖专业的重要专业基础课之一，是水产养殖工作者获取科技信息，进行科技交流和业务洽谈的重要工具。它对收集国内外有关科研信息、拓宽学术思想、增强科研创造能力，适应社会主义市场经济对外向型、高素质复合型人材的需要具有重要意义。因此，我们对使用多年的讲义作了较大修改，编写了这本《水产养殖英语》。

本书共分五个单元二十五课：第一单元有四课，着重介绍细胞学的基础词汇；第二单元四课，介绍生物化学的基础词汇，主要是脂类和蛋白质词汇；第三单元只有两课，着重掌握器官和组织方面的基础词汇；第四单元十一课，分别介绍鱼类、虾蟹类、贝类和饵料生物方面的基础词汇，此单元为本书的重点；第五单元四课，着重介绍藻类和病害方面的基础词汇。有些专业必需的内容，如生态学、营养与饲料、遗传与育种、水化学等方面的词汇则以各种练习、听力和翻译例句的形式出现在本书中。

水产养殖英语主要研究在水产养殖专业中经常遇到的英语语言学、词汇学、语法结构方面的规律。为了加强语言的学习和训练，本书突出了实践性和培养学生实际应用语言的能力，介绍了词汇的记忆方法、实用英译汉技巧、科技英语写作和科技英语听力的基本方法。

通过本门课程的学习，要求本科生能掌握一定数量的基础专业词汇，较顺利地阅读专业文献，熟练掌握基本的英译汉技巧；本门课程系统介绍了英语科技论文的基本写作方法，为学生从事

英文摘要或论文的写作奠定基础，要求本科生和硕士研究生分别能较顺利和正确地写出 300 - 400 字的英文摘要和 1000 - 1500 字的英文短文。通过多种形式的听力训练，还要教给学生一些必要的听力技巧，使学生基本能够听懂 Special English 节目中的 Science Report，为自学能力的提高拓宽道路。

水产养殖英语是水产养殖学和英语两门学科的边缘科学。要学好这门课，首先要具有水产养殖专业知识，学好有关的基础课、专业基础课和专业课；其次要具有基础英语知识；此外，必要的语文修养也是学好专业英语，尤其是掌握英译汉技巧的基础条件。

学习语言的过程是一个信息贮存的过程。信息在头脑中的贮存量取决于刺激的强度和频率。所以，勤于思索，反复练习，持之以恒，是学好专业英语的有效途径；迅速扩大词汇量，熟练掌握常用句型，学会用英语的逻辑来思维，是学习专业英语的主攻方向。随着水产养殖技术的发展，对英语的要求愈来愈高，使用的范围也愈来愈广。可以说，英语已成为科学研究和学术交流中不可缺少的工具；随着对外开放政策的深入发展，我国水产界对外交往与日俱增，英语，尤其是专业英语的用途日渐广泛。对专业英语的要求，只满足于阅读已显不足，广大水产科技工作者的英语水平应向更高层次发展。

目前，在我国高等水产院校中开设水产养殖专业英语课的学校还不多，比较成熟和公开出版的教材尚未见到。本书虽经多年使用，听取多方面专家的意见，但是由于作者知识水平有限，缺点、错误和疏漏之处，诚望读者和有关专家斧正。

本书在出版过程中，得到外文出版社田辉、陈国越，北京水产技术开发中心王庆祥、张光得、陈慧英等同志的大力支持和帮助，在此一并致谢。

Unit 1

Lesson 1

An Introduction to Cell Structure

Units of Measurement Used in Cell Biology

Before giving a brief survey of cell structure, it is first necessary to review the units of measurement used in cell biology and cytology. The units of measurement most frequently used are the micron (μ), the millimicron (mμ), and the Angstrom (Å or A: see Table 1 - 1 for a comparison of these units). The micron, equivalent to 1/1000 millimeter, is probably already familiar to the reader. The lower limit of human visual acuity is about 200 microns: objects below this size are not discernible by the naked eye. In terms of a rigorous definition of resolution it is more accurate to state that small objects closer together than 200 microns cannot be distinguished as separate points by the human eye. Most cells range between 10 and 100 microns in size, although a few protozoa and the eggs of some animals are considerably larger.

The micron is used primarily to describe whole cells or multicellular aggregates. This unit is less useful in dealing with the subparts of cells because most organelles, with the exception of the nucleus, are smaller than one micron in dimensions. To avoid continual use of parts of a micron, smaller units have become widely employed in cell biology. The most convenient of these is the Angstrom, named for the Swedish physicist A. J. Angstrom. The Angstrom is equal to 1/10,000 microns. At first encounter it is difficult to relate the Angstrom to more familiar units of measurement, but after some experience a relative evaluation can be made. The Angstrom is a molecular level dimension. For example, lipid molecules are about 20 Å and amino acids approximately 10 Å in length, and proteins may be 100 Å or so in diameter. On the level of cell organelles, two structures have fairly regular dimensions that are repeated from cell to cell: the membrane, with a diameter from 75 – 100 Å, and the ribosome, with a diameter of 200 – 250 Å. Once these structures have become familiar they can be used as points of reference for the estimation of the magnitude dimensions given for other structures.

Another unit of measurement used by cell biologists is the millimicron (mμ), equivalent to 10 Å. This unit, also called the nanometer in recent years, has not been as widely employed as the Angstrom and is encountered less frequently in the biological literature. For this reason, the Angstrom rather than the millimicron will be used throughout this book. The Å has the added advantage that all cellular dimensions, no matter how minute, can be given in whole Angstroms; no significant measurements can be made with the electron microscope in parts of an Angstrom. Further, as noted, the Å is also useful as a unit of measurement at the molecular level.

Table 1 – 1 A Comparison of the Units of Measurement Used in Cell Bioligy

Millimeter	Micron	Millimicron	Angstrom
1	1,000	1,000,000	10,000,000
0.001 (1×10^{-3})	1	1,000	10,000
0.000001 (1×10^{-6})	0.001 (1×10^{-3})	1	10
0.0000001 (1×10^{-7})	0.0001 (1×10^{-4})	0.1	1

Cellular Organization

The cytological investigations of the nineteenth century established that cells are the structural and functional units of all living organisms. In essence, the cell is a highly organized collection of molecules capable of all of the activities associated with the quality of life: it can grow, respond to stimuli, move, and reproduce. In accomplishing these tasks, the cell expends energy derived from light or the metabolism of fuel substances. Each cell is maintained as a distinct environment and collection of matter by a surface membrane, a layer of lipid and protein only a few molecules thick. If this membrane, called the plasma membrane, is ruptured, death of the cell quickly follows.

Cells can be classified into one of two major categories, depending on the complexity of internal organization. The most simple cells are the bacteria and blue-green algae. In these forms, there is only one major system of membranes, the plasma membane and its derivatives: any additional internal membranes are either directly connected to or are derived from the plasma membranes. The chromosomal material of the bacteria and the blue-green algae is not separated from the rest of the cell by a continuous system of membranes as in all other organisms. Because this level of organization is believed to be much like the primitive cells that first arose in evolution, Hans Ris of the University of Wisconsin has suggested that these organisms be called the prokaryotes (pro = before, karyon = nucleus).

The cells of all other organisms contain internal membrane systems that divide the cell interior into separate compartments, each with distinctive concentrations and organization of internal substances. The most conspicuous division separates the cell interior into nucleus and cytoplasm; other continuous membranes surround internal organelles such as mitochondria, chloroplasts, and the vesicular components of the cytoplasm. Other differences from the prokaryotes are found in the degree of complex-