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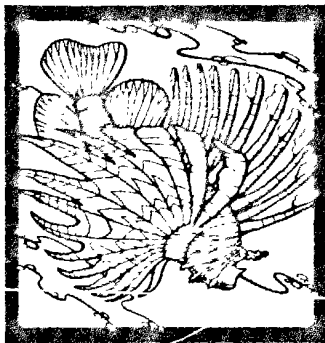
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中国有毒及药用鱼类新志

及药用鱼类新志

● 伍汉霖 主编 ● 中国农业出版社

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ZHONGGOU YOU DU JI
YAOYONG YULEI XINZHI

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伍汉霖 教授 民族 汉 男 1934年4月出生,广东省肇庆市人。1956年毕业于上海水产学院水生生物专业。1992年10月获国务院特殊津贴。长期从事鱼类分类学和形态学的研究工作,尤以研究虾虎鱼类、有毒鱼类和药用鱼类著称。现正主编《中国动物志硬骨鱼纲鲈形目(五)(虾虎鱼亚目)》、《中国有毒和药用鱼类图鉴》、《中国有毒和药用水生动物图鉴》和《拉汉英脊椎动物(鱼类)名称》。至2000年12月止,单独或与他人合作共发表专著12册,辞书9册,论文50篇。发现鱼类新种32种,新属6个,新亚科4个。

伍汉霖同志是日本明仁天皇的挚友,1989、1995、1999、2001年先后四次应邀访问日本,在宫内厅生物学御研究所进行短期虾虎鱼类的研究,先后受到天皇陛下的10次接见,合影留念,讨论虾虎鱼类的学术问题。

主要业绩:《拉汉世界鱼类名典》(第一作者),1999年台湾水产出版社出版,堪称当代海峡两岸三地规模最大的一部鱼类名典,共收录全球截至1999年5月的所有有效鱼类26000多种鱼名,为全球华人鱼类中文名称的统一迈出重要的一步。《中国有毒鱼类和药用鱼类》(第一作者),1978年,上海科技出版社,中国第一本全面系统介绍250余种有毒和药用鱼类的专著,水产、医药、卫生部门重要参考文献,1999年该书由日本恒星社厚生阁出版日文版。《中国石首鱼类分类系统的研究和新属新种的叙述》(合著),1963年,上海科技出版社,获福建省1979年科技成果三等奖。《南海诸岛海域鱼类志》(合著),1979年,科学出版社,获国家水产总局1981年技术改进成果一等奖。《福建鱼类志》(合著),1984—1985年,福建科技出版社,获1988年全国优秀科技图书二等奖。《中国鱼类系统检索》(合著),1987年,科学出版社,获1990年中国科学院自然科学进步二等奖。《海南岛淡水及河口鱼类志》(合著),1986年,广东科技出版社。《广东淡水鱼类志》(合著),1991年,广东科技出版社。《辞海(全部鱼类条目)》,1999年,上海辞书出版社。《中国脊椎动物大全》(合著),2000年,辽宁大学出版社。

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我国地处温带、亚热带和热带，有着辽阔的海洋和内陆水域，蕴藏着丰富的水产资源。2000年我国水产生产的总产量高达4 270万t，水产品产量中鱼类占了很大的比重。我国鱼类资源十分丰富，经过鱼类学家数十年来的调查研究，已知我国现有海洋及淡水鱼类4 621种^[伍汉霖等, 1999]，占世界鱼类24 618种^[Nelson, 1994]中的18.7%。鱼类和人类的生活和健康密切相关，大部分鱼类供人们食用，称为食用鱼类。但并非所有的鱼类均可食用，有的种类体内含有不同的毒素或具有毒棘，对人们的健康造成较大的威胁，这类鱼称为有毒鱼类。还有不少种类是珍贵的药用品种，称为药用鱼类。

有毒鱼类是有毒生物中的一大类群，大部分生活于海洋，少数栖息于淡水河川中。近年来随着渔业生产的持续发展，远洋渔业和新渔场的开拓，新的鱼类资源的发现，各种鱼类的不断增加，经常会遇到一些有毒鱼类，造成食鱼中毒，严重者导致死亡；水产养殖、海洋捕捞及潜水作业人员、岛礁部队训练及游泳人员经常受到刺毒鱼类的螫伤，严重危害他们的生命和健康，还会造成一定的经济损失。据不完全统计，全球每年因摄食珊瑚礁毒鱼而中毒的逾2万人，1997—2001年在我国香港特区因食含珊瑚礁鱼毒素的石斑鱼而中毒的就有834人。我国每年因误食河鲀而中毒的估计当在150~200人左右，死亡率却高达20%。而近35年来据不完全统计，吞服有毒鱼胆而中毒的人数就有451人，并夺去了83条生命。每年在海滨被刺毒鱼类刺伤者更是不计其数。究其原因在于人们对有毒鱼类之认识不足所致。

药用鱼类有着广阔的应用前景，医疗和科研单位近年来除根据民间验方主治一些常见病、多发病外，从药用鱼类中还发现许多活性物质，它们具有较高的药用价值，还是制药工业生产各种成药的原料。在有毒鱼类和药用鱼类中蕴藏着大量极有价值的生物毒素和生物活性物质。它们有的作用机理特异、毒性强烈、分子量较小，令人注目；有的已成为合成新化合物的导向物、药物

来源和开展生命科学研究的重要工具，许多毒素及生物活性物质可作为癌症、疑难杂症的有效治疗药物，并可作为抗菌、抗病毒药及农业杀虫剂。为了防止这类因不知而引起的各种食鱼中毒和被刺伤，以及充分利用鱼类的药用成分防病治病，增进人们的身体健康，编著本志甚为必要。

我国对有毒鱼类及药用鱼类的研究，长期以来乏人问津，直到1978年伍汉霖等出版了我国第一部比较系统和全面的《中国有毒鱼类和药用鱼类》专著。自那时至今已经过去23年了，在这期间我们继续在全国各地广泛开展有毒鱼类和药用鱼类的标本采集、种类鉴定、动物实验、民间验方征集。经过长期的调查研究，又有了许多新的发现。

本书收集了近30年来我国有毒及药用鱼类的大量资料，经过综合分析，结合当前国内外有关有毒鱼类和药用鱼类的研究进展及最新成果，并在动物实验的基础上进行总结。有毒及药用鱼类的种类鉴定十分重要，长期以来，坊间出版的各种医药大辞典、药用动物志中对有毒鱼类和药用鱼类的种类鉴定存在诸多错误或继续使用无效学名，以讹传讹，影响科学研究的正确性。例如香港石斑鱼中毒，致使许多外形与有毒种类相似的无毒石斑鱼被大量销毁，造成不应有的损失。因此，我们将本书以鱼类志的形式进行编著，本志分为有毒鱼类和药用鱼类两大部分。有毒鱼类又分为毒鱼类（包括珊瑚礁毒鱼类、鲑毒鱼类、卵毒鱼类、胆毒鱼类、血清毒鱼类、肝毒鱼类、易生成组胺毒鱼类、蛇鲭毒鱼类和含真鲨毒素鱼类），刺毒鱼类和皮肤黏液毒鱼类。对各种类型的毒鱼重点进行概述、中毒症状、治疗、预防方面的讲解。每一种鱼则着重其种类鉴定、形态特征、毒性或毒器结构的介绍，对每种鱼的异名、分布、生态、经济利用均有较为详细的叙述；在药用鱼类编著上，本志除叙述各种药用鱼类的药用部位、性味功效和主治外，还重点介绍近年国内外关于角鲨烯、鲨鱼软骨粉、鱼油（DHA、EPA）、河鲀毒素等方面的药用功效和制药情况。因而本志具有较高的科学意义和实用价值。

本志创新之处有下列各点：①在鱼类鉴定方面，我们依据国内外分类学最新研究成果纠正了不少过去被错误鉴定的鱼种；②血清毒鱼类研究方面，早在20世纪70年代，笔者之一经动物实验首次发现黄鳍血清有毒，能使小鼠致死，在80年代还发现我国首例饮鳍血中毒的病例；③胆毒鱼类研究方面，有了新的突破，我们经动物实验，又新发现6种淡水鱼类的鱼胆有毒，从理论上阐明胆毒鱼类源自鲤科鱼类，鲤科鱼类的鱼胆均有毒，吞服任何鲤科鱼类的鱼胆都是危险的。从而修正了自1578年以来李

时珍在《本草纲目》一书中所述青鱼和鲤鱼胆无毒，可以治病的说法，对防治鱼胆中毒这一社会公害作出贡献；④皮肤黏液毒鱼类研究方面，首次叙述五线叶虾虎鱼的动物实验情况，从而证实该鱼分泌的黏液有毒；⑤卵毒鱼类研究方面，70年代，笔者之一首次对条纹光唇鱼进行鱼卵毒素的动物实验，从而证实光唇鱼鱼卵有毒；⑥在鲑毒鱼类研究方面，我们先后曾对产于我国的19种鲑毒鱼类的毒性进行动物实验，为今后对鲑毒鱼类的研究提供有用的参考资料；⑦纠正了以往一些医药书籍所记述的某些药用鱼类用以入药的药用部位存在明显错误，例如一些医药书籍认为鲛鲨白是白斑星鲨的鳔，可以入药，我们经解剖，鲨类根本无鳔，鱼白者应为精巢。又如一些医药书籍认为云斑栉虾虎鱼（即云斑裸颊虾虎鱼）可作药用，这是一种误导，云斑裸颊虾虎鱼为有毒鱼类，体内含有河鲀毒素，误食后可使人中毒，严重者可导致死亡。

本志在调查研究和编著过程中承北京中医研究院中医研究所秋农；中国科学院昆明动物研究所杨君兴、陈银瑞，海洋研究所王存信；青岛医药研究所关美君、丁源；海军药学专科中心张吉德；第二军医大学宋杰军；中国药物滥用防治协会潘心富；福建省水产研究所陈朴贤；贵州毕节师范专科学校陈永祥；山东鸿洋神集团许振国；上海水产大学骆肇菟、孟庆闻、苏锦祥、钟俊生、唐文乔、金鑫波、陈舜胜；中山大学许实波；浙江海洋学院赵盛龙；中国水产科学研究院东海水产研究所张庆藩、邓思明、倪勇；台湾省水产试验所杨鸿嘉；台湾水产出版社赖春福；台湾海洋大学欧庆贤、黄登福；中国科学院动物研究所邵广昭；台湾大学沈世杰；香港渔农处陈国权；日本东京大学总合研究博物馆阿部宗明、新井良一；三重大学木村清志；京都大学中坊彻次；日本东京都食品卫生调查会海沼胜；长崎大学多部田修、野口玉雄为我们提供技术资料、研究报告、标本或审阅文稿。日本明仁天皇陛下对本书的编著给以很大的关注，为我们提供日本有关鲨鱼肝油及角鲨烯的利用之著作，对我们在珊瑚礁毒鱼、鲑毒鱼类、胆毒鱼类的研究进展给予更多的鼓励和关心；余之挚友美国 World Life Research Institute 的 Dr. B.W. Halstead 20 多年来一直为我们提供许多海洋有毒鱼类的最新研究资料；长崎大学野口玉雄、东京大学桥本周久经过多年的翻译，于1999年由日本恒星社厚生阁出版了《中国有毒鱼类和药用鱼类》的日文版，给我们很大的鼓励，作者在此一并表示衷心的感谢。

本书作者牟阳、庄棣华除参与本书的著述外，还分别承担鱼类外形图的绘制、彩图的摄影。

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由于生物毒素学及海洋药理学是新兴学科，内容涉及面广，作者知识面有限，难免有错误和不足之处，敬希读者批评指正。

伍汉霖

(上海水产大学)

2002年1月



Preface

China is situated in the temperate, sub-tropical and tropical regions. The wide areas of oceans and inland waters within the territory bear rich aquatic resources. In 2000, China's total aquatic production reached 42.70 million metric tons, among which a large proportion was fishery production. China has very rich fishery resources. After decades of investigation and research by ichthyologists, there are 4 621 known marine and freshwater fish species in China^[Wu et al., 1999], which amounts to 18.7% of the 24 618 species in the world^[Nelson, 1994]. Fish is closely related to the life and health of human beings. Most fishes serve as food for the human, and are termed edible fishes. However, not all fishes are edible. Some species possess various poisons or bear venomous spines. They pose greater threat to human health and are termed ichthyotoxic fishes. There are yet quite a few species which are of valuable medicinal use and are termed medicinal fishes.

Ichthyotoxic fishes are a large group amongst toxic organisms. The majority lives in the sea, and a few inhabit freshwater rivers and streams. In recent years, with the sustainable development of fishery production, exploitation of pelagic fishery and new fishing ground, discovery of new fishery resources, the number of fish species continues to increase. It is frequently the case that some ichthyotoxic fishes cause food-fishes poisoning and eventually results in death in severe case. Staff engaged in aquaculture, ocean-catching and diving, coral island trainees and swimmers often get stung by venomous fish which seriously threaten their lives and health, and results in certain economic loss. According to incomplete statistics, the number of people suffering poisoning from eating ciguatera-producing fish amounts to over 20 000 a year. Between 1997—2001, in the Hong Kong Special Administrative Region, 834 people suffered poisoning from eating ciguatera-producing Groupers. In China, it is estimated

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that about 150 – 200 people suffer poisoning from eating Puffer fish each year, but the percentage of deaths was as high as 20%. In the past 35 years, according to incomplete statistics, 451 people suffered poisoning from swallowing the gall-bladder of cyprinids, among which 83 resulted in deaths. Every year, a lot of people get stung by venomous fish by the seaside. All these attribute to the public's lack of knowledge in ichthyotoxic fishes.

There is a good prospect in the application of medicinal fishes. In recent years, in the process of adopting folk recipes in treating some common and frequent illnesses, some activated substances were found in medicinal fishes by the medical and research institutes. These fishes are of high value in producing various drugs and have been served as raw material for making finished medicines. There are large amount of high valuable bio-toxins and bio-activated substances in ichthyotoxic and medicinal fishes. Some of them have very special functions and attention has been aroused to their strong toxicity and low molecular weight and others have already become the origin of new chemical compounds and medicines, and as important tools for developing researches in life science. Many toxins and bio-activated substances are effective medicines for treating bacteria, viruses, cancers and various illnesses. They can also be used as anti-bacterial, anti-viral and agricultural pesticides. In order to prevent various poisoning from eating ichthyotoxic fishes or being stung by venomous fishes due to ignorance, and to allow full utilisation of the medicinal ingredients of fish in preventing and treating illnesses so as to ensure human health, thus the publication of this book is necessary.

In China, there has been a long time when no one is interested in the research of ichthyotoxic and medicinal fishes, until 1978 when Wu *et al.* published the first comprehensive and complete book "The Ichthyotoxic and Medicinal Fishes of China". During the recent 23 years, we have continuously investigated the ichthyotoxic and medicinal fishes all over the country through sample collection, species identification, animal experiments, and examination of folk recipes. Many new scientific discoveries have been made through long time surveys and researches.

This book has collected a large amount of information on ichthyotoxic and medicinal fishes of China in the past 30 years. Conclusions were made on the basis of practical animal experiments through com-

prehensive analysis and combined with latest research development and achievements made on ichthyotoxic and medicinal fishes both at home and abroad. The identification of ichthyotoxic and medicinal fish species is of prime importance. A lot of mistakes have been found either in published medical dictionaries or some books on medicinal animals in respect of identification of ichthyotoxic and medicinal fishes in particular. Owing to wrongly adopted the invalid scientific names, it greatly effected the accuracy of scientific research work. For example, because of Groupers' poisoning in Hong Kong, many non-poisonous Grouper species which look similar to the poisonous species were destroyed, it caused unnecessary loss. As such, this book has been edited in a new format of fish fauna which is divided into two parts, namely, ichthyotoxic fishes and medicinal fishes. And the ichthyotoxic fishes are sub-divided into poisonous fishes (including ciguatera-producing fishes, tetrodotoxic fishes, ichthyotoxic fishes, gall-bladder poisonous fishes, ichthyohemotoxic fishes, ichthyohepatotoxic fishes, histamine and saurine-producing fishes, gempylotoxic fishes and carchatoxin-producing fishes), venomous fishes and ichthyocrinotoxic fishes. For each type of ichthyotoxic fishes, emphasis has been placed on the description, symptoms of poisoning, treatment and prevention aspects. For each species, emphasis has been placed on its identification, morphological features and toxicity or structure of toxic organs. Detailed descriptions on its synonyms, distribution, ecology and economic uses are given. For the medicinal fishes, apart from describing the medicinal parts, function and effect, and cure of each species, emphasis has also been placed on providing information regarding the medical use and drug synthesis of squalene, shark cartilage powder, fish oils (DHA, EPA), puffer fish toxins etc. in China. Because of the above, this book has great scientific and practical value.

The major breakthroughs of this book are as follows: ① As to the identification of fishes, we have corrected a number of misidentified species according to the latest research results both at home and abroad. ② In regard to ichthyohemotoxic fishes, back to the 70's, one of the authors discovered from animal experiments that the serum of swamp eel (*Monopterus albus*) contain toxins that can kill mice. In the 80's, there was the first case of poisoning from drinking the blood of swamp eel. ③ Achievements in the research of gall-

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bladder poisonous fishes. From our animal experiments, 6 more freshwater fishes (cyprinids) have been found to contain toxins in their gall-bladders. Gall-bladder poisonous fishes have theoretically been proved to originate from cyprinid fishes. All cyprinid fishes possess toxins in their gall bladders. These results showed that it is dangerous to swallow the any bile juices of cyprinids fishes. This has thus contributed to the prevention of fish bile poisoning by correcting the information in the book on Chinese herbal medicine "Ben Cao Gang Mu" by Li Shi-zhen since 1578 which incorrectly mentioned that the gall-bladders of black carp (*Mylopharyngodon piceus*) and common carp were non-poisonous and could cure some illness. ④ Referencing to the ichthyocrinotoxic fishes, we have made consecutive experiments on Five - streaked coral goby (*Gobiodon quinquestrigatus*) are described for the first time, which proved that the excretion of this species contains toxins. ⑤ In respect of ichthyootoxic fishes, in late 70's, one of the authors experimented on the eggs of *Acrossocheilus fasciatus* for the first time and proved that they contained toxins. ⑥ For the sake of further study tetrodontoxic fishes, we conducted experiments on the toxicity of 19 species of tetrodontoxic fishes from China. The results of which serve as valuable reference for future research on tetrodontoxic fishes. ⑦ The editor has made every effort in making corrections of the mistakes that occurred in many medical books. For example, "shark white" was mistaken in many medical books as the bladder of the Whitespotted Smoothhound shark (*Mustelus manazo*) . Through dissection, we found that sharks in fact do not have bladders, and the "shark white" should be the spermary. It is also misleading for some medical books to regard *Ctenogobius criniger* (i. e. *Yongeichthys criniger*) as bearing medicinal properties. The species is in fact an ichthyotoxic species which possesses tetrodotoxin that could result in poisoning or even death if accidentally ingested.

The editor is happy to have this opportunity to acknowledge the help of everyone who shared in the preparation of this book. For this, the efforts of Qiu Nong of the China Academy of Traditional Chinese Medicine, Beijing ; Yang Jun-Xing and Chen Yin-Rui of the Kunming Institute of Zoology, Academia Sinica; Wang Cun-Xin of the Institute of Oceanology, Academia Sinica; Guan Mei-Jun and Ding Yuan of the Qingdao Institute of Materia Medica; Zhang Ji-De

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As Biotoxicology and Marine Pharmaceutics are new Sciences which cover a wide aspect, due to the limited knowledge of the authors, there may still be certain deficiencies which are open to criticism and comments.

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