



臺灣稀有貝類  
彩色圖鑑

RARE SHELLS OF TAIWAN  
IN COLOR



T. C. LAN

藍心雄 著



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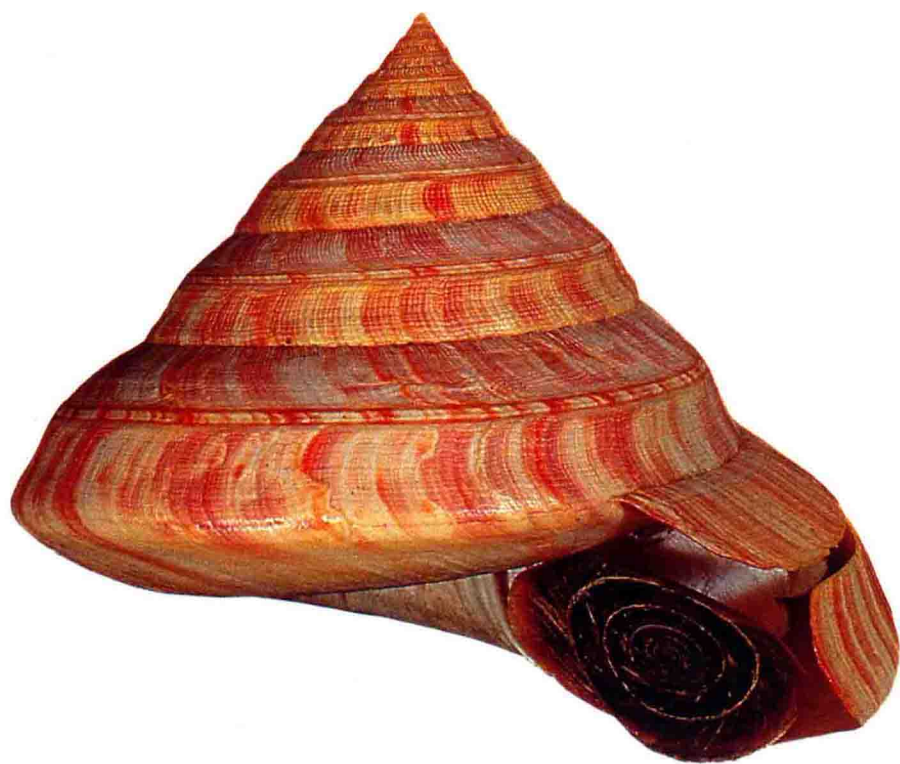
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## 序

臺灣的貝類研究肇始於1865年英國駐臺領事羅拔·司因何氏(Robert Swinhoe)，但多偏重於陸貝的採集研究，四十年後的1905年日本平瀨與一郎氏曾派人來臺作更積極的標本收集，再轉寄給美國貝類學報(Nautilus)的比爾斯普利博士(H. A. Pilsbry 1862 ~ 1957)共同研究，其合作研究成果屢見於臺灣產的貝類學名中，接着於1924年日人山崎，鳥羽，松田氏等人根據平瀨氏與比氏的貝類目錄，再加以整理，也作另一套目錄刊登在於臺灣博物學會會誌。其後在1928年臺北帝國大學(即國立臺灣大學前身)創校，該校地質系主任早坂一郎教授及丹桂之助副教授積極蒐集臺灣及近海貝類，至1936年日本現生貝類分類權威黑田德米先生來臺作更有系統的採集分類研究，終於完成由大學理農學部在1941年出版的臺灣貝類目錄(包括新種記載)，厚達二百多頁，共1492種。二次世界大戰後，日本從臺灣撤退，三十多年來雖然有極少數人研究貝類，但一直未見有人寫出學術性的臺灣貝類圖鑑，現在由藍子樵先生挺身出來彌補這一段的空白。著者積數十年之經驗匯集中外貝類及研究資料，尤其注重臺灣珊瑚船撈獲的深海貝類以及稀有貝類的研究，或有其命名者，或將研究心得發表於國內外刊物，為臺灣貝類界增光。本圖鑑中，其內容有不少為任何圖鑑均未記載者，著者為了大家易於了解，增列二幅海圖，標示臺灣近海深度，除外尚搜羅歷史博物館，故宮博物院以及省立博物館的國寶貝殼藝術品，宣揚我國固有文化，以喚起中外人士再度認識中國藝術之精華。近年來由於臺灣珊瑚事業的發展，著者還特別介紹一些珊瑚化的貝殼以及畸型貝殼，配以幽默說明，雋永動人，妙趣橫生，這些內容都未見於中外貝類圖鑑，是著者的創舉，更以英譯出版，必有裨益於貝類界，飲譽國際，為國爭光。謹綴數語，聊充序言，為大家推崇共享。

臺灣大學 理學博士

林朝棨

民國68年10月30日

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臺灣省立博物館

國立歷史博物館

國立故宮博物院

林朝榮博士

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T. C. Lan



## 前言

近年來臺灣漁業的蓬勃發展，遠洋近海的漁船不僅在漁獲量頗豐，連“副產品”的貝類也撈獲不少，其中不乏珍貴種類可供學術研究，或成為收藏家的珍玩。我國在這一方面的研究，經多年來學者專家的不斷努力，在世界軟體動物學及貝殼學界，已佔有一席之地。著者將數十年所搜集的貝類，就其中少數較珍貴稀少者滙集於此，以供同好者參考與研究。

本圖鑑中稀有貝類產地的主要海域為澎湖七美嶼的臺灣海峽南端，基隆東北部的彭佳嶼，釣魚臺，龜山島附近以及南中國海。了解貝類的棲息地點為學術研究不可或缺的重要工作之一，然而由於漁船的流動性及其活動範圍的變化，很難獲知貝類的實際撈獲地點，因此本圖鑑所註明的貝類產地僅能以概略範圍，如臺灣海峽南端，臺灣西南部海域，鰲鑾鼻或臺灣東北部海域等表示。

臺灣周圍的海域，以澎湖一帶較淺，珊瑚礁少，其東南方有一深溝叫澎湖港道，深約一百多公尺，其東側有一「西淺」，藏有豐富的貝類，此海域可能因為海底下陷成溝，如同日本四國的土佐灣有一特別下陷的海底叫“桶底”，也盛產名貝。澎湖七美嶼的南方較深，有珊瑚採集場，也是名貴貝類的出產地，臺灣東北部的彭佳嶼，花瓶嶼，棉花嶼附近深約百來公尺，釣魚臺，赤尾嶼，黃尾嶼的東方深約二千公尺，其西側的大陸棚邊緣只有百公尺左右，此海域乃係我國的大漁場，也正是深海稀有貝類的寶庫，蘇澳外海的龜山島，海深約百公尺，也產珍貝，東部的花蓮及臺東近海，深達千公尺，因漁船作業性質的關係，未曾撈獲貝類，但是這東部沿岸有一股黑潮（暖流），從菲律賓西側向北流到釣魚臺，因其地理環境，陸棲動植物，部份有菲律賓色彩，有關貝類方面，著者認為臺灣東北部的貝類相，與菲律賓有明顯的類似點，龜山島的岩石芭蕉螺，釣魚臺的臺灣渦螺以及最近發現的藍氏芋螺等熱帶貝類，均一一在菲律賓發現，這一股黑潮在巴士海峽分道，一股向臺灣海峽，同時在深秋入冬到初春前也有另一股親潮（寒流）向海峽南端流入而在香港外海臺灣海峽南端滙合，造成特別適合於冷熱帶名貴貝類棲息的場所，同時也可能造成珊瑚的良好生長環境。地質學上有一動植物及地理相共同的華萊士線從印尼通過菲律賓

西側往北偏向蘭嶼，綠島與臺灣本島之間而消失，但地質學者林朝棨博士認為有種種跡象顯示，華萊士線應修改稍向西移到花蓮臺東縱谷，再向恆春半島之西緣。著者按臺灣東北部的貝類相觀察，此華萊士線因黑潮的關係，似也可以延伸到釣魚臺，不過必須進一步的研究其他陸海動植物的相關資料配合作綜合研判方能確定。綠島及蘭嶼的珊瑚礁，應有不少類似菲律賓產的貝類尚待開發。恆春半島鰲鑾鼻的珊瑚礁有少數稀有芋螺，此地的漁船活動範圍遠達東沙群島，也曾帶回臺灣近海不出產的種類。琉球嶼珊瑚礁有熱帶產大型艷麗的貝類，其外海亦盛產深海珍貝。

臺灣的貝類產地，如果以海港來說，有北部的基隆港，南方澳漁港，中南部的安平港，茄荳港，南部的高雄港，屏東的東港以及澎湖的馬公，這些港口都有大量的漁船出入，但澎湖籍的漁船也遠征到北部撈珊瑚，東港漁船也到馬公靠岸，而各自携回捕魚的副產品——貝類，有時為了保密漁獲量較多的位置，尤其盛產珊瑚的海域，均不願據實以告，以圖保密，因此無法獲悉其正確的採集位置，而只知其靠岸港口，雖然尚有航海日記可資查對，但資料入手不易，我們僅能探詢是否來自釣魚臺，西淺或南中國海等概略位置，然後自行參考海圖，貝類書籍，漁船的作業性質，所捕獲的魚類或查看貝類之附着物以及其他同時撈得的貝類來研判其產地資料，尚可判斷產地的海底狀況，進而推算該種貝類棲息之可能性，如此一來，大體上可了解其產地。舉例來說，世界第四個龍宮貝的發現係在臺灣的東北部海域，而由於該船在高雄靠岸，結果傳出撈獲位置在東沙群島，其後接二連三為數三百多個龍宮貝均由基隆港東北部的海域彭佳嶼與釣魚臺撈獲，那引起爭論的“第四個龍宮貝”是唯一在同一時期產自東沙群島而在高雄港登陸的，又是三十多年來的第一次，據說漁船的報表亦如此記載！這就是貝類研究者的工作之一，應該追根究底，查出正確的資料，由於漁撈技術的不斷改進，深海貝類已漸漸露面，我們更須要在產地方面多研究。臺灣貝類的產地資料，一向在國際貝類界極不被重視，曾經發生過不少笑話，譬如澳洲產的某骨螺當臺灣海峽產而大登在國外貝類刊物當新聞，我國漁船在南非撈回的寶螺送



到某國頗負盛名的貝類學者後，亦當臺灣產而作了新種命名，如此實例不勝枚舉，造成錯誤的原因，除了發表者一時失察之外，供應者爲了達到商業目的，隱瞞原始資料爲主因。高雄港爲臺灣最大的貝類集散地，遠洋近海，大小漁船均多多少少帶回貝類，高雄縣的茄萣漁港小，漁船多數都停泊在砂灘的外海，時有自西淺撈獲的稀有寶螺及芋螺，臺南安平港也是另一貝類重要集散地，其他凡是使用單曳或雙曳漁網的船，多少都採集貝類，北部的野柳及南部鵞鑾鼻風景區，出售給觀光客的貝殼，除了少數當地貝類外，還有不少外國貝殼，而大多經過化學藥品清洗或塗上光面漆，偶而可發現珍貴種，也失去原有品相，僅可供研究而已。

“稀有”在本圖鑑中有兩種意義，一是自然界本來就稀少的，二是收藏品中很少看到的，自然界中有少數的貝類並不以美麗吸引人，這種稀少貝類却爲科學家或研究者爭先收集、研究，而一般收藏家則不太感興趣，不過如果那是熱門的寶螺科，芋螺科，骨螺科或渦螺科，收藏家則興趣較濃厚，尤其是深海種，牠可能是一尚未被發現過的新種類，因棲息地點未被發現或漁撈方式不適于貝類，自然少見，但是近年來捕魚技術的進步，很多以往要碰運氣才撈得的種類，現在比比皆是，如著者五年來列入爲臺灣珍貝刊登在中國貝類學會會誌者——有岩石芭蕉螺，巴克來芭蕉螺，寺町翁戎螺，高腰翁戎螺，木下芋螺，玉米螺或臺灣渦螺等，因產量的增加，均予以刪除，但也許明年或以後再也撈不到亦爲可知，故本圖鑑中的稀有貝類，說不定是來日極普通的種類，相反地，從此絕跡再過二三十年猶未重見，或是目前在臺灣是稀有，在外國的某海域也許會發現新產地。民國五十七年，龍宮貝的產量在半年內產量如此之多，是否算稀有種類呢？如果從命名之年即1878年算起到現在，已經過百年，一世紀中才出現三百多個，平均年產三、四個，應該算是稀有了，何況目前世界上收集及研究貝類的人數不下於十萬人，雖然非人人非收集龍宮貝不可，但產量少，而且曾經一度被認爲已絕種的品種，名氣又大，自然物以稀爲貴了。東沙群島的西方，深約三百八十公尺的泥沙海底裏，美國漁業局的一艘研究船，曾於一九〇八年發現二個活的渦螺，於一九六七年命名爲

東沙渦螺，應該列爲極端稀有種類，遺憾的是臺灣漁船從未有過發現或撈獲的記錄。

貝類能否以價格來決定其稀有程度呢？並不盡然，名氣很大的棋盤寶螺在過去十年中，於釣魚臺海域發現者僅只三個，應列入爲萬金難求的稀有種類，但是此貝爲美國夏威夷產的名寶螺，產量極多，當然不能以價格來衡量其稀有程度，又如菲律賓產而曾經是稀有的黃金寶螺，雖然年產多達二、三百個，因貝殼大又光滑如瓷器，色呈金黃色，人見人愛，這種貝類，在興趣方面而言，尚有觀賞的實質價值，因此能保持一定的價格，不大受產量多寡的影響，但就學術研究方面而言，其價值則略遜一籌了。

本圖鑑所列入的種類，以臺灣產的一百多種稀有者爲限，著者積二十多年的經驗，集知名度高，討人喜歡又經過長期觀察爲稀有者，在外國海域或臺灣特有種類的罕見者爲基礎而精選的，與貝殼售價完全無關，一般而言，多爲珊瑚船在採撈珊瑚時，附着於網上或附着於珊瑚礁石隙縫內與其他海底雜物一起上網的貝類爲主，由於珊瑚網的末端繫有很多大卵石，在海底拖曳，使珊瑚樹折斷而勾在網上撈起，因此一起撈上來的貝類也常受到損壞，完整標本的難求理由在此，又隱居在礁石縫內的深海小型寶螺，如不與珊瑚樹一起連根拔掉，撈獲機會更少，更加稀罕了，另外死殼多的原因是原先棲息在石縫間的貝類，一旦死了，容易隨同海流一起沖激出來，被撈上的機會亦較多，但畢竟也是罕見的。本圖鑑又以天然彩色從各角度攝影，大幅放大貝殼作圖片，除了有利於培養對貝殼的鑑定能力以及補助文字的說明，亦可作爲藝術欣賞。

在臺灣研究貝類有得天獨厚的環境，四面臨海，遠洋近海的漁業以及採撈珊瑚技術的發達，加之政府對於漁業技術的改進和研究不遺餘力，我們應該善用目前的環境，向國際貝類界再跨出一步，世界人口之不斷膨脹，糧食問題爲各國所面臨的挑戰，有遠見的國家早已在探討地球上最大的資源——海洋，尋求人類維持生命的食物，貝類便是其中之一種，因此我們在欣賞貝殼之餘，更不忘研究其生態、養殖等發揮其經濟價值，則意義更深遠了，願與研究貝類的先進共勉之。



# Introduction

In recent years Taiwan's fishing industry has been flourishing. Both the pelagic and inshore fleets have been successful in their annual catches of fish and the industry's by-product,—seashells. There are many precious specimens which are of interest to both scholars of academic studies and the collectors of cherished objects. Through years of constant effort our country has taken an important part in the fields of malacology and conchology. The specimens in this book represent a few of the rare shells which I, the author, have collected over a number of years. I am pleased to be able to display them here for those who enjoy the hobby of shell collecting.

The collection areas of the rare shells contained herein ranges from the southern end of the Taiwan Strait; Pon-chia-yu off the north-eastern coast of Keelung harbor; Tiao-yu-tai and Kue-shan Island; and the South China Sea, all within the range of Taiwan's coral-trawling boats. The exact source of these rare species is quite indispensable in scientific research; however, due to the varied itinerary of the boats and frequent changes in the range of their activity, it is almost impossible to determine the specific collection sites. Therefore the collection areas indicated in the accompanying bathygraphic charts represent only general locations such as: the southern part of Pescadores Islands; offshore along Taiwan's south-western coast; O-lan-pi facing the Bashi Channel or off the coastal water areas of north-eastern Taiwan.

Although the waters around the Pescadores Islands are relatively shallow, the fringing coral reef is quite narrow. There is a 100 meter deep trench situated in its south-eastern part. It is Pong-hu Kan-tao (Pong-hu Trench), and east of this Trench there is one shallower—Saichen that resembles a great depression in the sea floor where it is similar to the one located in the Tosa Bay, Shikoku, Japan and is abundant in many classic species of rare sea shells. The southern deeper part of the Seven Beauty Isle (Chi-mei-yu), Pong-hu is the collection center for obtaining red coral and is also the source of many rare cowries. There is a relatively large area about 100 meters in depth near the north-eastern coast of Taiwan. Farther to the east of Tiao-yu-tai the sea bottom reaches nearly 2,000 meters. The western continental shelf averages approximately 100 meters in depth. Taiwan's broad coastal area with its exceedingly great depths remains a treasury of many native rare abyssal shells. Kue-shan

Island which lies off Suao Port is surrounded by waters several hundred meters in depth and is also a source of many rare shells. Waters off Hualien and Taitong which reach a depth of 1,000 meters or more have never been dredged for seashells due to the trawling methods employed by the fishing fleets which operate in this area. The coral reefs of Liu-tao and Lan-yu which contain many shells are also awaiting further exploration. Another reef containing rare species of conidae is located off O-lan-pi. Local fishing boats operating near Pratas Island (Reef) have brought back specimens never before collected around the Formosan Sea. Most of the fishing boats of Tongkang and Kaoshiong sail southward toward the Bashi Channel or Tawu (Taitong) or northward to Chiatin (Kaoshiong). The outer reef off Liu-chu-yu has long been known as the home of many large showy tropical deep sea shells. The harbors of Taiwan which produce seashells consist of Keelung, in northern Taiwan, Nan-fang-ao (Su-ao), An-ping, Chiatin (near Tainan) in south-central Taiwan, and Kaoshiong, Tongkang (Pingtung) in the south, and Makong in the Pescadores Islands. The fishing boats transit these harbors in large numbers. The vessels from the Pescadores Islands also proceed far to the north to collect the precious red coral so there are many fishing boats which are home-ported at Makong in the Pescadores Islands. The boats often bring back precious seashells as a by-product of their fishing activities. The fishermen often keep the exact location of their voyages secret, especially when their trip has been quite successful. This is particularly true of the coral trawling vessels. The information they do provide regarding their course is frequently unreliable and is purposely calculated to deceive the innocent. Therefore, the actual location from which many of the shells are collected cannot be authenticated, except for the name of the home port of the vessel involved. Although one may check the vessels' logs, the actual location of their catches is difficult to obtain. We can only determine that the vessel was from Tiao-yu-tai, Saichen or the South China Sea. However, by keeping in mind the general area in which the vessel has been operating and using marine charts, shell books, operating procedures, and observing the attachments to the shells, and the other species of shells and fish collected on the same voyage it is possible to determine the probable area in which they were collected. This is often the only way in which we can determine the population

center for many shell species. The fourth-known specimen of *Pleurotomaria rumphii* ever collected was found off the north eastern coast of Taiwan. The vessel was ported at Kaoshiong and it was rumored that the shell was obtained from the Pratas Island. However, over 300 specimens of this rare shell were later collected off the north-eastern coast of Taiwan, near Keelung Harbor by vessels from that area. The argument aroused by the collection of the fourth-known specimen of *P. rumphii* which appears to be the only one ever collected in the waters off Pratas Island has never been settled. It was the first time in the duration of thirty years covered by the ship's travels in that area that this species had been collected in southern waters. The primary responsibilities of malacologists include asking one question after another until the true data is obtained. Due to the improvement of fishing skills many more deep sea species are gradually appearing. In this respect, much additional study is needed to determine the accurate shell producing centers. The collection data supplied by Taiwan fishing vessels are so unreliable that it is often subject to ridicule among world shell collectors. For example one species of murex which is native to Australia was published in a well-known foreign shell journal indicating that it was a Taiwan species. A specimen of a cowry collected from South Africa by Taiwanese fishing boats was sent to a noted foreign malacologist who mistook it for a new species. Also other instances of this sort have been commonplace. The cause of these errors is frequently the eagerness of authors to publish new species without adequate research, or a case of the supplier wanting to protect the actual source of the specimens for commercial purposes.

Among the Taiwanese ports which are the most frequent source of seashells, Kaoshiong is probably the most productive. Most of the fishing boats in pursuit of the pelagic species of fish are also successful in the collection of shells. Chia-tin port (near Tainan), another source of shells, is rather small and the fishing skiffs are moored offshore. Sometimes the specimens of the rare conus and cowry species are collected from the Saichen. The fishing boats of An-ping near Tainan operate in the Taiwan Straits. The variety of shells collected makes it second in significance to Kaoshiong. Almost all of the modern trawlers using single or paired towing nets operating out of other ports also collect seashells.

Many of the shells sold to tourists in the northern Yehliu (near Keelung) and the southern O-lan-pi scenic spots are obtained from foreign waters. However, some rare local specimens may occasionally be offered. Since many of these specimens are cleaned with acid or painted with lacquer it is difficult to find good collectors' specimens. Even rare shells are frequently ruined by this procedure. The result is a specimen which is only good for scientific study.

The standards by which the rarity of shells are gauged in this book is divided into two categories. The first category represents the scarcity of the specimens in their natural habitat. Next is the scarcity of the same specimens in private collections. Some of these rare species are not well known since they lack the beauty and color of the more popular families and therefore are of little interest to most collectors. However, they are often the favorite subjects of malacologists who like to collect and study without regard to these characteristics. In contrast, the rare species which are quite popular, such as cowries, cones, murex and volutes elicit much enthusiasm among collectors who are especially anxious to obtain the deep sea varieties which have not yet been identified and may as yet be unnamed. Due to the fishing methods which are not ideal for the collection of shells and the inaccessible habitat of many species, the supply is severely limited in many cases and these species rarely seen in collections. Although a collector may seek a specimen of one of these exceedingly rare species, he will never be sure when the shell will be available. The Chinese phrase "to fish a needle from the ocean" is quite appropriate in describing the chances of obtaining a specimen of these rare species. Due to significant changes in fishing technology, many of the species which were obtained only by sheer luck in the past are now quite commonplace. For example, during the past five years many of those species which I have listed in the Bulletin of Malacology of the Republic of China as rare shells have been collected in rather large numbers in areas such as the Philippines. Such species are *Murex alabaster* Reeve, *Murex barclayi* Reeve and *Conus kinoshitai* Kuroda which are not included in this book. However, no one can predict the continued availability of such species. Therefore many of the rare species contained herein may someday become quite common, or may never reappear. For example, in the case of *Pleurotomaria rumphii* Schep-



man, 1879 which is now quite rare in Taiwan it may someday be discovered in greater numbers in other areas. At one time there were over three hundred specimens of this rare shell collected in less than half a year. However, at present only very limited numbers of specimens have been obtained since after that productive year of 1968. Therefore it may be more realistic to say that even though three hundred specimens were once collected in less than a year it is still a very rare shell in the total period in which this species has been known for 100 years, the average annual catch has been less than 4 specimens and at present the shell is quite difficult to obtain. By conservative estimates there are over 100,000 shell collectors in the world. Although many collectors cannot afford to purchase such an expensive shell, it is still greatly desired and is a classic among rare shells. A species even rarer than *Pleurotomaria rumphii* Schepman is *Voluta pratasensis* Rehder, 1967 of which only two specimens have ever been collected. They were dredged in 1908 by U.S. Fishery research vessel in terrigenous sand deposits at a depth of 380 meters off the Pratas Island. It is unfortunate that this rare species has never been collected by Taiwanese fishing boats.

Can shell rarity be determined by commercial value? The answer is No. Definitely NOT. In the past ten years three specimens of *Cypraea tessellata* Swainson were collected in waters off Taio-yu-tai. Locally these specimens are literally worth their weight in gold. However, *Cypraea tessellata* obtained from Hawaii is relatively inexpensive, since it is much more common from that area. Therefore scarcity cannot be judged solely by commercial value. *Cypraea aurantium* Gmelin which is collected primarily from the southern Philippines was once exceedingly rare, however, in recent years it has been collected in fairly large numbers. Though it is no longer a rare shell, the value is still quite high due to its membership in a popular family and its large size and eye-catching color. Also some shallow water species are both rare and beautiful, but do not command a high price since they are members of less popular families. One such species is *Cantharus melanostomus* Sowerby which is brightly colored in contrasting orange and black and has an exquisite design, but is not well known.

Since I have been a collector more than twenty-five years, I have carefully chosen species which for the most part are also rarely collected in other waters

and are found primarily in Taiwan. My personal ratings of rarity do not necessarily have anything to do with the selling price. The specimens are generally obtained by trawling the ocean bottom for red coral. Since the shells are often attached to the coral they are frequently damaged in the trawling process which employs the use of tangle nets weighted with large stones to break the coral branches from the bottom. For this reason perfect specimens are difficult to obtain. However, many of the deep water species are found only in this manner. The majority of shells obtained by the trawlers are dead specimens which formerly lived in the fissures of the coral brought up by the nets.

Because of Taiwan's subtropical climate, the island is surrounded by coral reef teeming with marine life, and the study of conchology is quite favorable. Consistent with our government's policy of improvement in fishery skills we hope to discover many new species of shells and greatly advance the science of malacology. It is only through our cooperation in this area that the achievement of our scientific goals can be fulfilled. For example, the study of shell life-cycles may contribute to aquaculture research and the production of oysters, mussels, and scallops and a variety of other marine life which will be necessary to feed the increasing populations of the future. The achievement of enjoying the beauty of seashells and also understanding their ecological importance is a goal all of us should strive for. I sincerely hope to encourage other collectors and researchers to contribute to this goal, both at home and abroad.

## 星標代表說明：

“\*” 星標數目表示貝類在臺灣海域之可獲性，唯不分標本之死殼，活殼或完整與否，且世界各地的產量亦估計在內。

\*\*\* 獲得機會渺茫，但不絕望。

\*\* 偶而可獲得，但可遇不可求。

\* 尚可獲得，但產量極少。

## 產地範圍

臺灣東北部海域—包括臺灣島東北部海域，花瓶嶼，棉花嶼，彭佳嶼，釣魚臺，黃尾嶼，赤尾嶼以及龜山島附近。

臺灣西南部海域—包括澎湖群島東南方，澎湖港道，臺南，高雄，東港，恒春以及琉球嶼。

臺灣海峽南端—包括澎湖群島南方，香港東南方，東沙群島，巴士海峽以及南中國海。

## Explanation of asterisks on species:

Asterisk “\*” represents availability of shells from Taiwan waters in any condition regardless of whether live taken, dead or imperfect shells and worldwide availability is also considered.

\*\*\* Triple star stands for extremely rare.

\*\* Double star stands for shells rarely available.

\* Single star stands for rare, but occasionally available.

## Ranges of locality data:

NE off Taiwan — including north-east off Taiwan, Hua-pin-yu, Mien-hua-yu, Pon-chia-yu, Tiao-yu-tai, Huan-wei-yu, Tsu-wei-yu and Kue-shan Island.

SW off Taiwan — including south-east off Pescadores Island, Pong-hu Kan-tao (Trench), Tainan, Kao-shiong, Tong-kang and Liu-chu-yu.

South Taiwan Strait — South of the Pescadores Island, south-east off Hong-kong, Pratas Island, Bashi Channel and South China Sea.



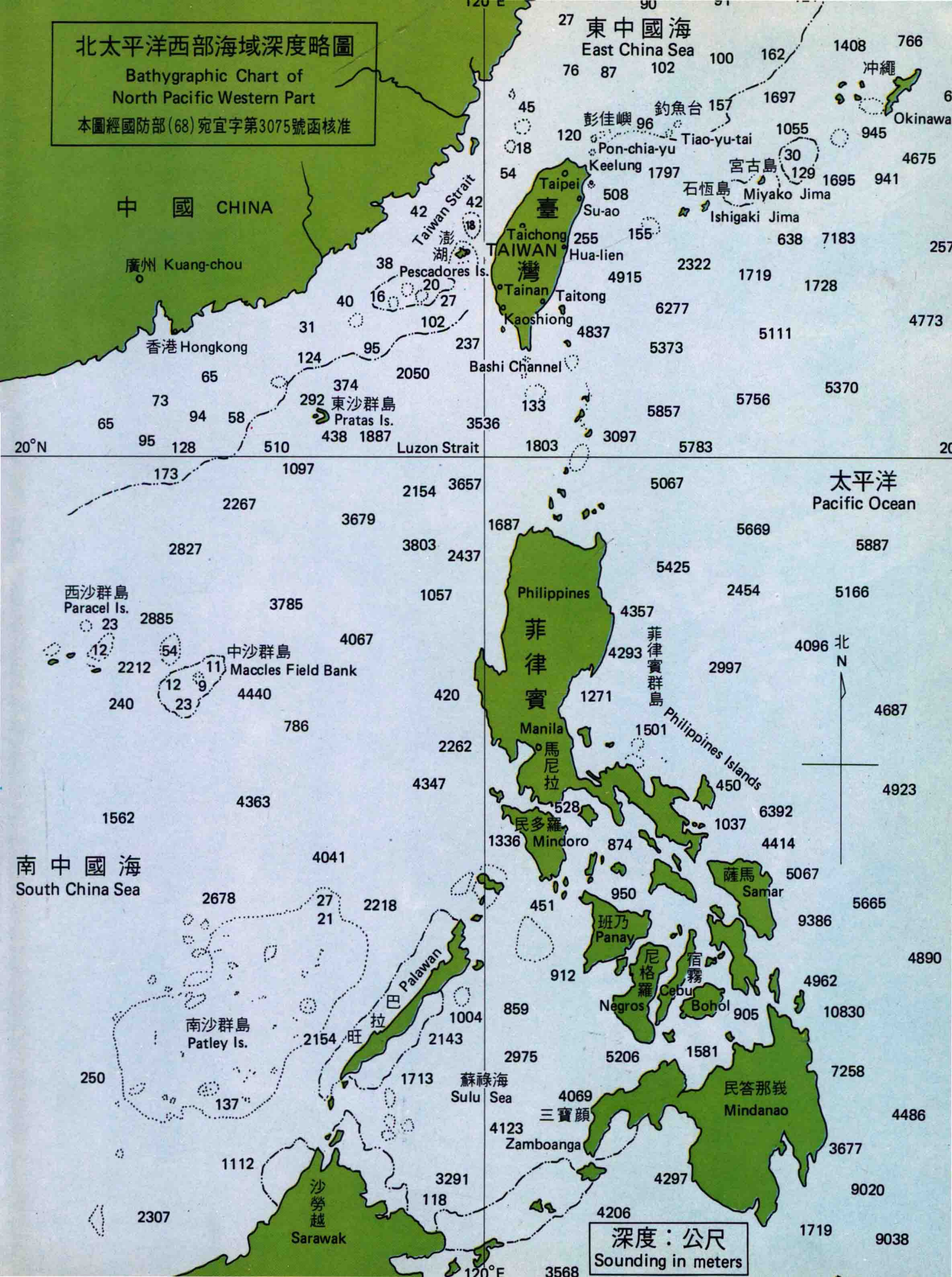
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Bathymorphic Chart of  
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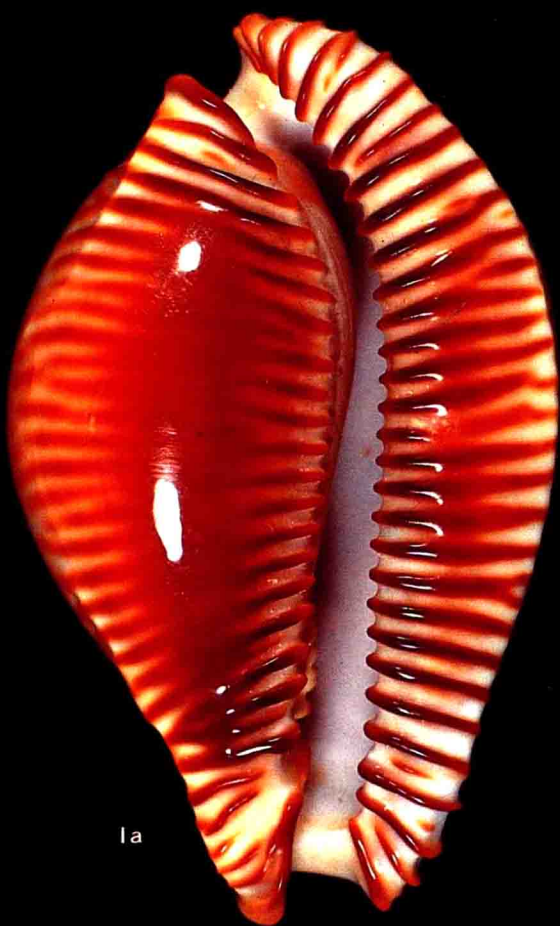


# Bathymographic Chart of North Pacific Western Part

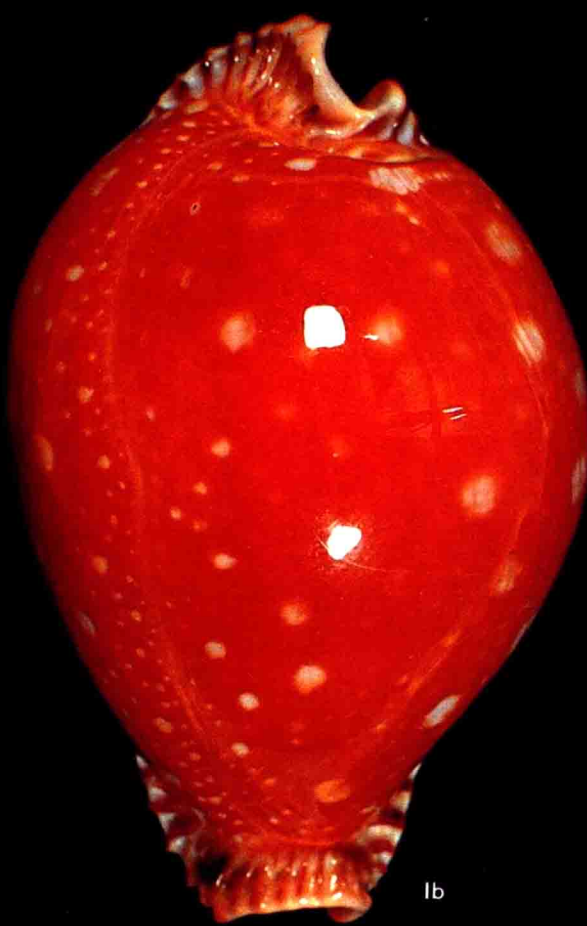
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