Indonesian Biodiversity Strategy and Action Plan **NATIONAL DOCUMENT**

The National Development Planning Agency (BAPPENAS) 2003

Acknowledgements

BAPPENAS would like to thank all those who participated in and contributed to the formulation of the IBSAP documents. Some of them are listed below:

Steering Committee: Dedi M. Masykur Riyadi (Deputy for Natural Resources and Environment, BAPPENAS), Aboejoewono Aboeprajitno (Ministerial Expert Staff for Global Environment, MoE), I Made Subadia (Director General of Forest Protection and Nature Conservation, MoF), Indroyono Soesilo (Head of Marine and Fishery Research Agency, MMF), Liana Bratasida (Deputy VI for Environmental Conservation, MoE), Endang Sukara (Deputy for Biological Sciences, LIPI), Ismid Hadad (Executive Director of KEHATI Foundation), Mubariq Ahmad (Executive Director of WWF Indonesia), Arief Wicaksono (Country Coordinator of International Marinelife Alliance-IP).

Technical Team: Agus Prabowo (Director of Natural Resources and Environmental Management, BAPPENAS), Utami Andayani (Deputy Assistant for Impacts on Biodiversity, MoE), Antung D. Radiansyah (Deputy Assistant for Terrestrial Ecosystem Management, MoE), Adi Susmianto (Director of Biodiversity Conservation, MoF), Widodo S. Ramono (Director for conservation areas, MoF), M. Farid Ma'ruf (Head of Research Agency for Product Processing & Social Economy, MMF), Arie Budiman (Head of Research Center on Biology LIPI), Ono Kurnaen Sumadiharga (Head of Research Center on Oceanology, LIPI), Ani Mardiastuti (Head of Forestry Resources Conservation School, Faculty of Forestry, Bogor Agricultural Institute), Suyanto Pawiroharsono (Head of Bioindustry Technology Unit, BPPT), David Allorerung (Head of Estate Crops Research Center, MoA) Anida Haryatmo (Program Director, KEHATI Foundation), Dibjo Sartono (Program Director, Wetland International-IP), Jatna Supriatna (Director of CI-IP), Sukianto Lusli (Director of BirdLife Indonesia), Jito Sugardjito (Director of Fauna & Flora International-IP).

Regional Coordinators: Warung Informasi Konservasi (WARSI) Foundation, Jambi; The Center for Biodiversity and Conservation Studies (PSBK) – University of Indonesia, Jakarta; Centre of Social Forestry (CSF) – Mulawarman University, Samarinda; Societies Commission on the Environment Foundation (SCEnt), Makassar; BirdLife Indonesia, Bogor; Conservation International -IP, Jayapura.

Project Implementation Unit: Sigit E. Pratignyo, Kresno Dwi Santosa, Yuli Adiwianto, Indra Darmawan, Sudhiani Pratiwi, Ersa Herwinda, Sutiman, Kardi, Rudi Alfian, Aditya Dharma, Bambang Suherman, Ferdi Rangkuti.

Writing Team: Hira Jhamtani (Lead writer), Sri Nurani Kartikasari (editor), Darmawan Triwibowo (Lead writer assistant), dan Meiske D. Tapilatu (editorial assistant).

Review Team: Indra Darmawan, Medrilzam, Slamet Soedarsono, Afwandi, Sudhiani Pratiwi, Ersa Herwinda, M. Showam, Sutiman, Kardi, Rudi Alfian.

Thematic consultants: Harry Suryadi (outreach specialist), Desi Fernanda (institutional development), Am Azbas Taurusman (coastal and marine), Bambang S. Purwoko (agriculture), Tri Heru Prihadi (wetlands), Dusanto Kristihono (forestry).

Photo contributors: BirdLife Indonesia, CIFOR, ICRAF, Wetland International-IP, CI-IP, SCEnt, Warsi, Ministry of Forestry (Alain Compost), Perhutani, Kerinci Seblat National Park (Alain Compost), PKT-LIPI/Bogor Botanic Garden, State Electricity Company, S.N. Kartikasari.

Resource Persons: Herman Haeruman Js, Setijati Sastrapradja, Effendi A. Sumardja, Wahyudi Wardoyo, Hariadi Kartodihardjo, Agus Purnomo, Ikhwanuddin Mawardi, Wahyuningsih Darajati, Ian Dutton, Medrilzam, Slamet Soedarsono, Afwandi, Anthony Whitten, Maria Triyani, Kusnaka Adimihardja, R.K.T. Ko, Yayuk Suhardjono, Ina Binari, Nurliani Bermawie.

And the facilitators as well as participants of the regional dan national workshops, and participants of the focus group discussions, and all those who had contributed to the IBSAP process.



Preface

he sustainability of a nation depends significantly on good management of its natural resources for the welfare of the people. One of the important resources that we have is biodiversity that can be used to improve the wealth of our nation for current and future generations. For that purpose, we need to have a sound strategy and concrete action plan on how to develop our stock of resources to meet development goals. This document (Indonesian Biodiversity Strategy and Action Plan-IBSAP) is an effort in that direction.

We often call ourselves with great pride as a megadiversity country richly endowed with so many species. But we could not confidently answer questions such as: how many species do we really own?; are they sustainable?; where are their locations?; or which species can be developed for the benefit of mankind?. We need to answer these questions, otherwise our 'pride' will be just a groundless exaggeration especially given the fact that we face an increasing threat of species extinction year after year.

The protection and 'wise' utilization of our biodiversity is imperative to our nation as we enter the 21st Century, an era that often be labeled as 'the age of biology'. In this fascinating century, biology-related industries will flourished such as pharmacy, health, food, agriculture, and cosmetics. These industries will rely heavily on biodiversity as a source of raw materials including the use of related knowledge and technology. The development of these industries can only be achieved if the sustainability of development is assured. The concept of sustainable development offer more than just an economic issue. It contains social and environmental aspect of development activity, too. The most important is to strike a balance among the 'three pillars' (economy, social, and environment) so that any increase in demand (as a result of economic activity) would not caused over-exploitation of natural resources and put environmental standards at risk. This would require our best effort and strong commitment toward achieving our development goals in a sustainable way. This will also determine what kind of future our children will have.

> Jakarta, April 2003 Minister of State for National Development Planning/ Chairman of National Development Planning Agency

Kwik Kian Gie



Foreword

I am very pleased with the completion of the Indonesian Biodiversity and Action Plan (IBSAP) document. This document is a product of a long collaborative process. For the last 20 months, thoughts, ideas, and suggestions from many parties are intensively discussed and incorporated into this strategic document. The involvement of so many parties in the process, government and non-governmental institutions, both in the central and regional level, shows a strong participation element in the process. With such process, I hope the document will broaden its 'ownership' so that all segments of society will be committed toward an effective implementation of the proposed action plan.

IBSAP is basically an effort to contribute to the improvement of the welfare of Indonesian people. Biodiversity is indeed special: it supports our life system. Besides, there are many people who still don't realise the vital role of biodiversity as a source of our foods, clothes, medicines, cosmetics etc. Biodiversity protection often seen and regarded as belonging only to scientists and people who lives around the forest or rural areas. While the urban people seems only interested in the 'final products' and thus a passive consumers with no interest to safeguard or conserve the resources for the benefit of future generations.

To have a legitimate and effective implementation of IBSAP, it is possible to make this document legally-binding in the form of law (*Undang-undang*) or other type of legal documents. That is one option to be explored further. But at this stage, it is more important to put our focus on how to increase public awareness about the facts and problems facing our biodiversity resources. People have to understand the social and environmental cost caused by destruction of the biodiversity. Priority should also be given to empower constituent at the local level since it is the local people, with its local wisdom, who know their resources better than others.

In addition, another important thing to be considered is to clarify the relationship between IBSAP and other planning documents i.e. how IBSAP can be integrated into and in line with the national development program (PROPENAS) and contribute to the ministries' or department strategic plan (RENSTRA), municipal development program (PROPEDA), and regional laws (PERDA). Given the high expectation placed upon IBSAP especially on its role as guidance for policy makers at various levels, effective socialisation, monitoring, and evaluation should be designed carefully to generate shared vision and understanding about the biodiversity problems and the proposed action plan.

I extend my sincere gratitude and appreciation to all parties for the help, contribution, hard work, and high dedication to finish this document. The network created along the process should be maintained and developed to support the implementation, monitoring, and evaluation of the action plans.

Ministry of State for National Development Planning/ National Development Planning Agency

Deputy of Natural Resources and Environment

Mohund

Dr. Ir. Dedi M. Masykur Riyadi



| PREFACE | iii | | | |
|-----------------------------------------------------------------------------------------------------|--------|--|--|--|
| FOREWORD | | | | |
| CONTENTS | | | | |
| LIST OF TABLES | | | | |
| LIST OF FIGURES | | | | |
| LIST OF BOXES | | | | |
| LIST OF ABBREVIATIONS & ACRONYMS | | | | |
| CHAPTER I Introduction | 1 | | | |
| Background | 1 | | | |
| BAPI 1993 and its implementation | 1 | | | |
| Objectives | 3 | | | |
| Approach and process | 3 | | | |
| IBSAP output | 5 | | | |
| illovit output |) | | | |
| CHAPTER 2 Biodiversity for the present and future generations | | | | |
| | 7 | | | |
| CHAPTER 2 Biodiversity for the present and future generations | 7 7 | | | |
| CHAPTER 2 Biodiversity for the present and future generations Understanding biological diversity | 7 7 | | | |

| CHAPTER 3 The state of biodiversity in Indonesia | 19 |
|---------------------------------------------------------------------|------------|
| Potentials | 20 |
| Forest ecosystem | 21 |
| Marine, coastal and small island ecosystems | 24 |
| Wetlands ecosystem | 35 |
| Agro-ecosystem | 39 |
| Karst ecosystem | 43 |
| State of species and genetic diversity | 44 |
| Cultural diversity and traditional wisdom | 45 |
| CHAPTER 4 Biodiversity crisis in Indonesia | 49 |
| An overview of biodiversity management | 49 |
| The flaws in biodiversity management | 59 |
| The present and future context | 67 |
| CHAPTER 5 Strategies for biodiversity management | 79 |
| Objectives and goals | 80 |
| Strategies for IBSAP implementation | 83 |
| CHAPTER 6 National biodiversity action plan, 2003-2020 | 87 |
| Policy direction for biodiversity management | 87 |
| Action plan for biodiversity management | 88 |
| 1 | .01 .01 |
| Minimum preconditions 10 | .04 |
| APPENDIX | |
| 1. Forest condition in Indonesia 10 | .07 |
| 2. Coastal, marine and small islands ecosystems 11 | 10 |
| 3. Important wetlands area in Indonesia 1 | 12 |
| 4. Agro-ecosystem 1 | 14 |
| 5. Threatened species based on taxonomic group class 1 | 17 |
| 6. Medicinal plants classified as rare in Indonesia 11 | 18 |
| 7. Selected policies related biodiversity management in Indonesia 1 | 19 |
| 8. IBSAP flowchart 12 | .22 |
| 9. Regional workshop process 12 | 23 |
| Sumatra 12 | 23 |
| Java-Bali 12 | 26 |
| Kalimantan 12 | 28 |
| Sulawesi 12 | 28 |
| Nusa Tenggara 11 | 31 |
| Papua 11 | .33 |
| BIBLIOGRAPHY 12 | .35 |

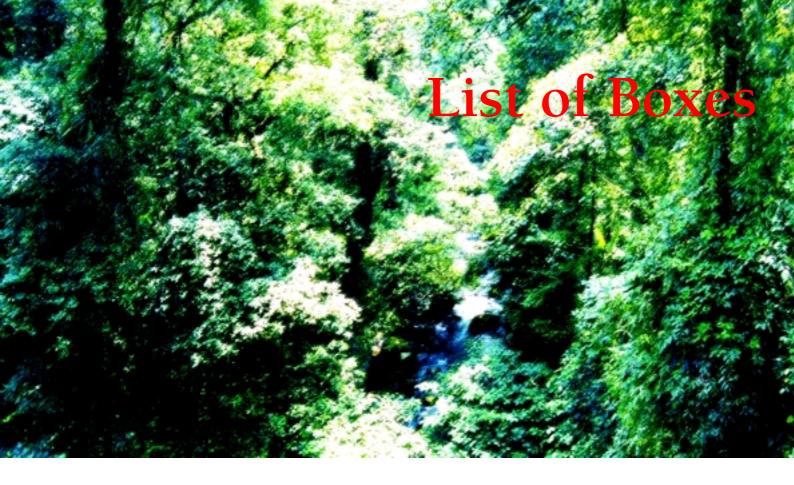


| 2.1. | Countries with the highest cultural diversity | 10 |
|-------|------------------------------------------------------------------------------|----|
| 2.2. | Differences between global and local value of biodiversity | 15 |
| 3.1. | Countries with highest diversity and endemism | 19 |
| 3.2. | Species diversity and endemism in each bioregion | 21 |
| 3.3. | Estimation of selected values of forest biological resources in Indonesia | 22 |
| 3.4. | Total value of hydrological services in Gunung Gede-Pangrango NP | 24 |
| 3.5. | Mangrove distribution in Indonesia | 26 |
| 3.6. | List of plant species reported in Indonesia's mangrove forests | 27 |
| 3.7. | Seagrass species in Indonesia | 30 |
| 3.8. | Some products from mangroves in Indonesia | 32 |
| 3.9. | Estimation of wetlands area in Indonesia, 2002 | 36 |
| 3.10. | Fish production and estimates of direct benefits in Lake Sentarum | 37 |
| 4.1. | Area and number of conservation areas, September 2002 | 53 |
| 6.1. | Action plan for capacity building in biodiversity management, 2003-2020 | 88 |
| 6.2. | Action plan for developing resources, technology and application for local | |
| | indigenous knowledge for biodiversity management, 2003-2020 | 90 |
| 6.3. | Action plan for improving biodiversity conservation and rehabilitation, | |
| | 2003-2020 | 92 |
| 6.4. | Action plan to enhance institutional capacity and policy instruments for | |
| | biodiversity management, 2003-2020 | 95 |
| 6.5. | Action plan for improving capacity in resolving conflicts over biodiversity, | |
| | 2003-2020 | 98 |
| | | |



| 2.1. | Tropical rainforests harbor rich natural resources and diversity but their existence are | е |
|-------|------------------------------------------------------------------------------------------|----|
| | increasingly threatened | 7 |
| 2.2. | Savannah grassland as a dominant landscape in Nusa Tenggara | 8 |
| 2.3. | Coral reefs is one of the marine and coastal ecosystems that are | |
| | vulnerable to human disturbance | 8 |
| 2.4. | Carapace patterns of five species of marine turtles which feed and nest | |
| | in Indonesian waters | 9 |
| 2.5. | Land clearing activities of other non-forest uses are not only change the | |
| | landscape but often become the causes of animal and plant species extinction | 9 |
| 2.6. | Land degradation resulting from economic activities that put strong emphasis on | |
| | short-term growth | 10 |
| 2.7. | Human and nature relationship is often expressed in the form of artwork that | |
| | display uniqueness of each local culture or region | 11 |
| 2.8. | Medicinal plants cultivation is one of the potentials for sustainable development | |
| | that need further exploration and development | 13 |
| 2.9. | Mangroves have high economic value for people and also as feeding and nursing | |
| | ground for many species of fish and bird. | 14 |
| 2.10. | National parks contain rich biodiversity that is crucial to support community | |
| | welfare and ecological integrity | 16 |
| 3.1. | Cave ecosystems are relatively little studied in Indonesia | 19 |
| 3.2. | The proboscis monkey (Nasalis larvatus) is an endemic primate in Kalimantan | 20 |
| 3.3. | Palms are one of the multi purposes plant species spread widely in the Indonesian | |
| | forests | 20 |
| 3.4. | Change in forest covers in Sumatra, Kalimantan, and Sulawesi, 1900-2010 | 23 |
| 3.5. | Forest fires often cause economic loss as well ecological damage | 24 |
| 3.6 | Fishing is an important economic activity for communities living near and around | |
| | estuaries | 25 |

| 3.7. | Propagules: (a) Rhizophora mucronata, showing the root and top of the seedling | |
|-------|---------------------------------------------------------------------------------------|----|
| | after it is detached from the parent tree, and (b) Fruit of Sonneratia alba | 28 |
| 3.8. | Irrawaddy dolphin, an endemic freshwater mammal in Kalimantan | 29 |
| 3.9. | Location of seagrass researches in Indonesia | 31 |
| 3.10. | Reefs at risk in western and eastern Indonesia | 34 |
| 3.11. | Dams, an example of human made wetland ecosystem | 36 |
| 3.12. | The poorly regulated spatial planning causes ineffective functions of many | |
| | rivers in Indonesia | 37 |
| 3.13. | Deforestation often leads to a prolonged draught | 38 |
| 3.14. | Settlements along riverbanks put higher pressures for rivers to provide their | |
| | ecological services | 39 |
| 3.15. | Agroforestry is one of the land use systems that support both economic activity | |
| | of rural population as well as preserving fauna and flora diversity | 40 |
| 3.16. | Land conversion is common to make way for rice fields expansion | 42 |
| 3.17. | Distribution of karst in Indonesia | 43 |
| 3.18. | The Komodo dragon is an endemic reptile and the largest lizard in the world that | |
| | can be found in the Komodo National Park | 45 |
| 4.1. | Illegal trade in wildlife is rampant in many places in Indonesia | 50 |
| 4.2. | Illegal logging is a major threat to many national parks in Indonesia | 51 |
| 4.3. | Millions hectares of mangrove forest have been converted into commercial fish | |
| | ponds in the last decade | 52 |
| 4.4. | Botanical gardens serve as conservation areas for plant species outside their natural | |
| | habitats | 53 |
| 4.5. | Degraded forest is often a result of excessive exploitation with little regards for | |
| | the overall integrity of the environment | 60 |
| 4.6. | Forest fires causing a change in local, regional and global climate | 63 |
| 4.7. | Environmental crisis leads to environmental disasters such as more frequent flood | |
| | and landslides | 68 |



| 2.1 | Biodiversity economic valuation methods | 11 |
|-----|----------------------------------------------------------------------|----|
| 2.2 | Conservation areas: Asset or liability? | 13 |
| 3.1 | Some economic benefits of wetlands | 38 |
| 3.2 | The water crisis | 39 |
| 3.3 | Traditional wisdom in marine biodiversity management | 47 |
| 4.1 | Convention on biological diversity: Benefits and obligations | 51 |
| 4.2 | The Jakarta Mandate: Conservation of marine and coastal biodiversity | 52 |
| 4.3 | ICDP: Challenges amidst hope | 54 |
| 4.3 | Initiatives on developing biodiversity information system | 56 |
| 4.5 | Illegal logging | 58 |
| 4.6 | The tragedy of one million hectares peat land | 61 |
| 4.7 | Mining in forest areas: Policy dualism | 65 |
| 4.8 | Initiatives on policy and institutional arrangements | 74 |

List of Abbrevations & Acronyms

| ADB | Asian Development Bank |
|-----------------------------|----------------------------------------------------------------------------------------|
| AIDS | Acquired immunodeficiency Syndrome |
| APBD | Regional budget |
| APBN | National budget |
| BAPEDAL | Environmental Impact Management Agency |
| BAPEDALDA | Regional/Local Environmental Impact Management Agency |
| BAPI | Biodiversity Action Plan for Indonesia |
| BAPPEDA | Regional Development Planning Board |
| BAPPENAS | National Development Planning Agency |
| BCN | Biodiversity Conservation Network |
| BKSDA | Natural Resources Conservation Unit |
| BIC | Biodiversity Information Center |
| BIOME | Biodiversity Marketing Enterprise |
| BPPT | Agency for Technology Assessment and Development |
| BPS | Central Statistics Bureau |
| CBCS | Centre for Biodiversity and Conservation Studies |
| CBD | The United Nations Convention on Biological Diversity |
| CGI | Consultative Group on Indonesia |
| CHM | Clearing House Mechanism |
| CI | Conservation International |
| CIFOR | |
| CITES | Center for International Forestry Research |
| CITES | The Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| СОР | Conference of the Parties |
| COREMAP | |
| CRB | Coral Reef Rehabilitation and Management Project |
| | Centre for Research on Biology |
| CSF CTRC | Centre for Social Forestry |
| | Conservation Training and Resource Center |
| Depkimpraswil (MIS) DFID | , |
| | The UK Department for International Development |
| DPR | House of Representatives El Nino Southern Oscillation |
| ENSO | |
| EPIQ | Environmental Policy and Institutional Strengthening Indefinite |
| EAO | Quantity Contract |
| FAO | Food and Agriculture Organization |
| FFI | Fauna & Flora International |
| FKS | The Sulawesi Biodiversity Forum |
| FWI | Forest Watch Indonesia |
| GBHN | State Guidelines |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GFW | Global Forest Watch |
| GMO/LMO | Genetically Modified Organism/Living Modified Organism |
| GNP | Gross National Product |
| HYVs | High Yielding Crop Varieties |
| IBIS | Indonesian Biodiversity Information System |
| IBSAP | Indonesian Biodiversity Strategy and Action Plan |
| ICDP | Integrated Conservation and Development Programme |
| ICRAF | International Center for Research on Agro Forestry |
| IMO | International Maritime Organization |
| IHN | National Forest Inventory |

| IPAs | : Integrated Protected Areas |
|-----------------|---------------------------------------------------------------------|
| IPAS IPM-FFS | |
| | : Integrated Pest Management-Farmer Field Schools |
| IPRs | : Intellectual Property Rights |
| IRRI | : International Rice Research Institute |
| ITPGRFA | : International Treaty on Plant Genetic Resources for Food and |
| | Agriculture |
| IUCN | : International Union for the Conservation of Nature |
| JICA | : Japan International Cooperation Agency |
| JKTI | : Indonesian Network in Traditional Wisdom |
| KEHATI | : Indonesia Biodiversity Foundation |
| KNPN | : The National Commission on Genetic Resources |
| KSDE | : Conservation of Biological Resources and Ecosystems |
| LIPI | : The National Institute of Sciences |
| LON LIPI | : The National Oceanology Institute |
| MAB | : Man And Biosphere |
| MCRMP | : Marine and Coastal Resources Management Project |
| MEMR | : Ministry of Energy and Mineral Resources |
| MMF | : Ministry of Marine and Fishery |
| MNC | : Multi National Corporation |
| MoA | : Ministry of Agriculture |
| MoE | : Ministry of Environment |
| MoF | Ministry of Forestry |
| МоН | : Ministry of Home Affairs |
| MPR | : The Peoples Assembly |
| MREP | : Marine Resource Environment and Planning |
| MRT | : Ministry of Research and Technology |
| NBIN | : National Biodiversity Information Network |
| NCIC | : Nature Conservation Information Center |
| NCSD | : National Council on Sustainable Development |
| NGO | : Non-governmental organizations |
| NGO NP | : National Park |
| NRM | |
| | : Natural Resources Management Program |
| PLG | : The one million hectares peatland project |
| ppm | : parts per million |
| PVP | : Plant Variety Protection |
| PROSEA | : Plant Resources of South-East Asia |
| PSDA | : Natural Resources Management Act |
| Protekan | : Fishery Intensification Program |
| Propenas | : National Development Program |
| RePPProT | : The Regional Physical Planning Programme for Transmigration |
| SCEnt | : Societies Commission on the Environment Foundation |
| STD | : Submarine Tailing disposal |
| TNC | : The Nature Conservancy |
| TRIPS | : Trade Related Aspects of Intellectual Property Rights |
| UN | : United Nations |
| UNCED | : United Nations Conference on Environment and Development |
| UNDP | : United Nations Development Programme |
| UNEP | : United Nations Environment Programme |
| UNESCO | : United Nations Educational, Scientific, and Cultural Organization |
| USAID | : United States Agency for International Development |
| WALHI | : Wahana Lingkungan Hidup Indonesia, a national NGO |
| WARSI | : Warung Informasi Konservasi, a NGO in Jambi |
| WCMC | : World Conservation Monitoring Center |
| WCS | : Wildlife Conservation Society |
| WHO | : World Health Organization |
| | 0 |

| WIPO | : | World Intellectual Property Rights Organization |
|------|---|-------------------------------------------------|
| WRI | : | World Resources Institute |
| WSSD | : | World Summit on Sustainable Development |
| WTO | : | World Trade Organization |
| WWF | : | World Wide Fund for Nature |



The Biak Coast, at the northern part of the Papua Island, is a natural scenic coastal landscape that attracts domestic and international tourists. Biak is the largest island in Papua and has famous snorkeling and tourist spots.



Momordica cochinchinensis or Pakurebu, found in semi open forests, at 0-1000 m above sea level. The plant, with round, tennis ball sized fruits, is found in Kalimantan and Gorontalo. It is a unique plant with durian like fruit of attractive colors, however it belongs to the cucumber family, not to the durian family.