基础昆虫学

BASIC ENTOMOLOGY

作者：黄乃盛
协助制作：官晋宇，田贤峰

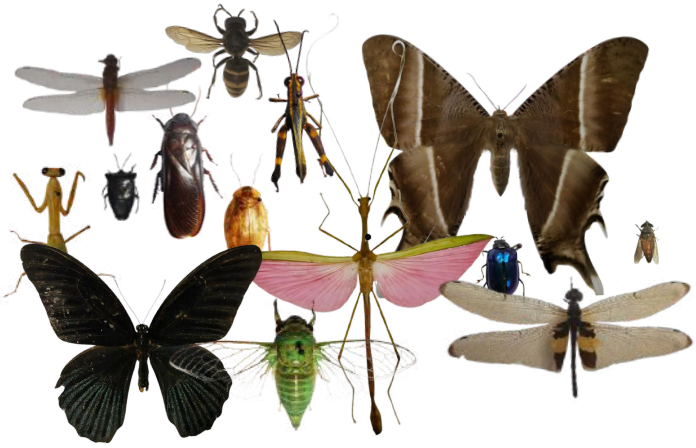
昆虫

Insect

界：动物界
Kingdom : Animalia

门：节肢动物门
Phylum : Arthropoda

纲：昆虫纲
Class : Insecta



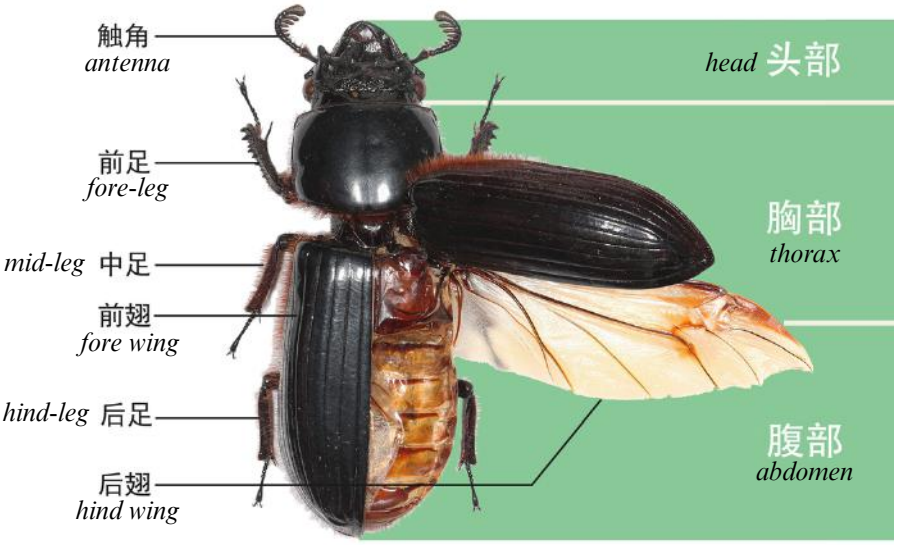
昆虫纲是节肢动物门中最大的一个纲。
Class Insecta is the largest group of the arthropods.

一般特征

General Characteristics

1. 昆虫可分为头、胸、腹3个体部。

Insect body divided into three tagmata, which are head, thorax and abdomen.

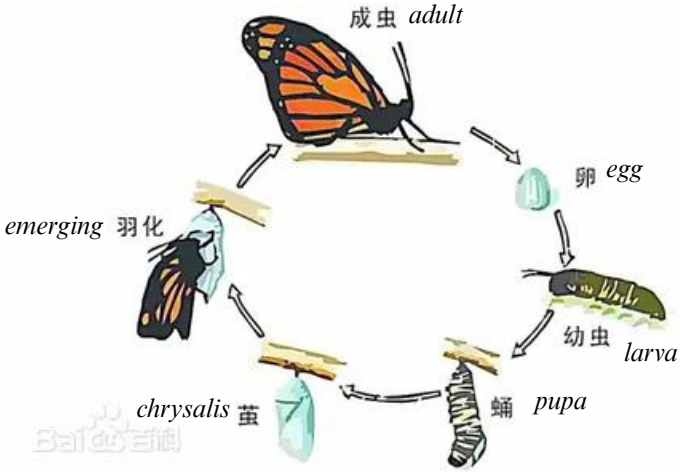


甲虫身体构造
（图片来源：*https://xinwen.bjd.com.cn/content/s683037add5de22fe55d209c0.html*）

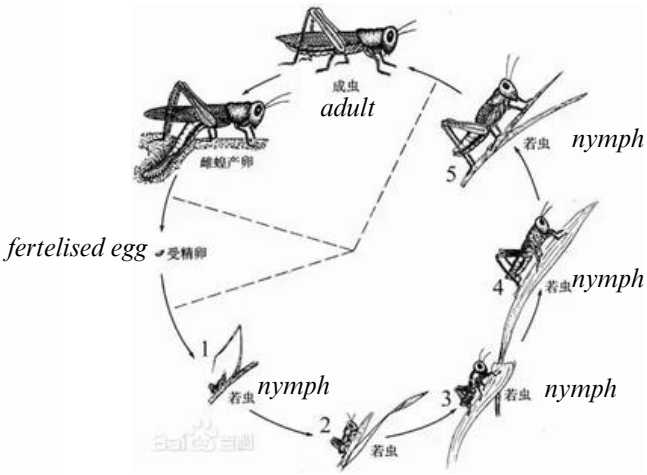
2. 经历变态和蜕皮。

Undergo metamorphosis and ecdysis.

- 昆虫变态过程可分为完全变态过程及不完全变态过程。
  Metamorphosis process can be divided into complete metamorphosis and incomplete metamorphosis.
- 完全变态指昆虫个体需经历卵、幼虫、蛹、成虫四个阶段的发育过程。
  Complete metamorphosis refers to the developmental process of an insect that goes through four stages which are egg, larva, pupa, and adult.
- 不完全变态指昆虫个体经历卵、若虫、成虫三个阶段的发育过程。
  Incomplete metamorphosis refers to the developmental process of an insect that goes through three stages which are egg, nymph, and adult.



完全变态概述图
（图片来源：
https://xinwen.bjd.com.cn/content/s683037add5de22fe55d209c0.html）



不完全变态概述图（图片来源：
https://baike.baidu.com/item/%E4%B8%8D%E5%AE%8C%E5%85%A8%E5%8F%98%E6%80%81%E5%8F%91%E8%82%B2?fromModule=lemma_search-box）

- 昆虫表皮由几丁质和蛋白质构成，随体型增长逐渐紧绷，需通过蜕皮实现生长空间扩展 。

  The insect exoskeleton, made of chitin and protein, becomes tight as the insect grows, so it must undergo ecdysis (molting) to expand its body size.

蝉蜕皮
（取自：
https://xinwen.bjd.com.cn/content/s683037add5de22fe55d209c0.html）

甲虫蜕皮
（取自：
https://xinwen.bjd.com.cn/content/s683037add5de22fe55d209c0.html）

昆虫分类

Insect Classification

- 主要根据翅膀结构、口器和变态类型来进行分类。(Triplehorn & Johnson , 2005)

  Divided into order primarily on the basis of the structure of the wings, mouthparts and type of metamorphosis.(Triplehorn & Johnson , 2005)
- 用于分类的主要特征有：翅膀（数量、类型和翅脉)、口器、尾须、触角；以及某些特定群体中独有的特殊特征。(Hill & Abang,2005)

  Main characters used in classification are wings (number type and veination), mouth-parts, cerci, antennae; some specialized features found only in certain groups.（Hill & Abang,2005）

常见昆虫目

Common Insect Order

- 鞘翅目（甲虫） 

  Coleoptera (beetle)
- 鳞翅目（蝴蝶，飞蛾）

  Lepidoptera (Butterfly, Moth)
- 直翅目（蚱蜢，蟋蟀，螽斯） 

  Orthoptera (Grasshopper, Crickets, Katydids)
- 半翅目（蝽象） 

  Hemiptera (True Bug)
- 膜翅目（蜜蜂，蚂蚁，黄蜂） 

  Hymenoptera (Bees, Ants, Wasps)
- 蜚蠊目（白蚁，蟑螂） 

  Blattodea (Termites, cockroach)
- 蜻蛉目（蜻蜓，豆娘） 

  Odonata (Dragonfly, Damselfly)
- 双翅目（苍蝇，蚊子） 

  Diptera (Fly, Mosquito)
- 螳螂目（螳螂） 

  Mantodea (Praying Mantis)
- 同翅目（蚜虫，蝉，叶蝉） 

  Homoptera (Aphids, Cicada, Leafhopper)
- 竹节虫目（竹节虫） 

  Phasmatodea (Stick Insect)

鞘翅目
Order Coleoptera

形态特征
Morphological Characteristics

体小至大形。复眼发达。前翅质地坚硬，角质化，形成鞘翅，背中央相遇成一直线，后翅膜质，常纵横叠于鞘翅下。成、幼虫均为咀嚼式口器。

From smaller to larger in size. Compound eyes. Tough and hardened forewings forms elytra, meet in straight line down the abdomen. Membranous hindwings folded underneath.

生长
Growth

完全变态发育。幼虫称之为蛴螬（金龟子科）。

Experiences complete metamorphosis. Larva called grubs (scarabaeiform).

生活习性
Behavior

成、幼虫的食性复杂，有食腐性（阎甲）、食粪性（蜣螂）、尸食性（葬甲）、植食性（叶甲）、捕食性（步甲）和寄生性等。

Adult and larva have varies type of nutritional strategy, such as dead plant feeders, carrion feeders, dung feeder (dung beetles), phytophagous, predators and parasite.

生物重要性
Biological Importance

鞘翅目昆虫作为分解者分解有机物，促进养分循环。一些甲虫种类可作为授粉者。

As decomposers, they break down organic matter and promote nutrient cycling. Some beetle species can also act as pollinators.

鞘翅目

姬独角仙
Siamese Rhinoceros Beetle
Xylotrupes gideon Philippinensis

犀角金龟
Coconut Rhinoceros Beetle
Asiatic rhinoceros

甲虫
Beetle sp.

甲虫
Beetle

四齿金龟
Paratasia Beetle
Parastasia sp.

甲虫
Beetle

甲虫
Beetle

拟步行虫
Dark-ling Beetle
Tenebrionidae sp.

甲虫
Beetle

蓝薄荷叶甲虫
Blue Mint Beetle
Chrysolina coerulans

*不能精准辨认的物种都一律写成“甲虫”或“锹形虫”或“天牛”。
All the undefined species are written as “Beetle”or “Stag Beetle” or “Longhorn Beetle”.

鞘翅目

拟步行虫
Dark-ling Beetle
Tenebrionidae sp.

金花虫
Leaf Beetle
Chrysomelidae sp.

甲虫
Beetle

甲虫
Dark-ling Beetle

甲虫
Beetle

锹形虫
Stag Beetle

天牛
Longhorn Beetle

锹形虫
Stag Beetle

天牛
Longhorn Beetle

天牛
Longhorn Beetle

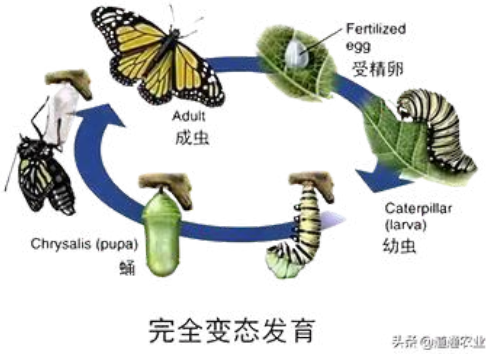
*不能精准辨认的物种都一律写成“甲虫”或“锹形虫”或“天牛”。
All the undefined species are written as “Beetle”or “Stag Beetle” or “Longhorn Beetle”.

鳞翅目
Order Lepidoptera

形态特征
Morphological Characteristics

体小至大形。成虫翅膀上布满鳞片，虹吸式口器。幼虫咀嚼式口器。

From smaller to larger in size. Adult has scaly wings, siphoning mouthpart. Larva mandibulate mouthpart.

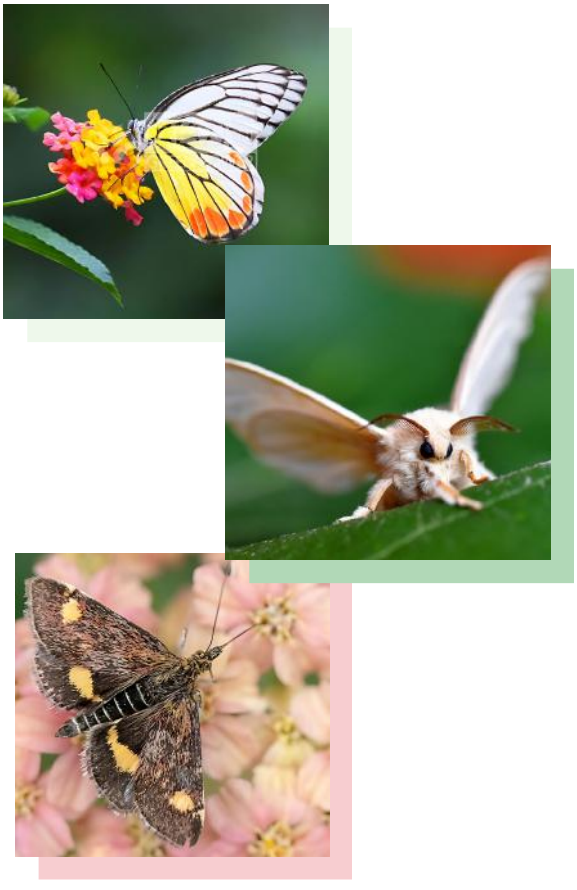


完全变态发育

生长
Growth

完全变态发育。经历受精卵、幼虫、蛹、成虫。

Complete metamorphosis. Fertilized egg, larva, pupa and adult.



生活习性
Behavior

成虫一般取食花蜜、水等。幼虫大多数陆生，植食性。蝴蝶类多为昼行性，蛾类多为夜行性。 蝶类休息时翅膀竖立在 背上，蛾类休息时翅叠在背上呈屋脊状.

Adults generally feed on nectar, water, etc. Most larvae are terrestrial and herbivorous. Butterflies are mostly diurnal, while moths are mostly nocturnal. Butterflies fold wings flat above body at rest, moths hold their wings folded back over their bodies in a roof-like shape.

生物重要性
Biological Importance

鳞翅目是许多开花植物的花粉传播者。鳞翅目昆虫对环境变化非常敏感，常被用作环境健康的生物指标。

Lepidopterans serve as pollinators for numerous flowering plants. Their high sensitivity to environmental changes makes them valuable biological indicators of ecological health.

鳞翅目

♀

♂

大凤蝶
Bornean Mormon
Papilio acheron

绢斑蝶
Glassy Tiger
Parantica aglea

蔽眼蝶
Bush Brown Butterfly
Bicyclus sp.

青眼蛱蝶
Blue Pansy
Junonia orithya minagara

一点燕娥
Grey Swallowtail Moth
Micronia aculeata

斜纹天蛾
Pale Brown Hawkmoth
Theretra latreillii

直翅目
Order Orthoptera

形态特征
Morphological Characteristics

长而窄的体型。后退粗壮，特化为跳跃式，善于跳跃。拥有咀嚼式口器。

Elongated, narrow body. Stout hind legs, specialized for jumping. Chewing mouthparts。

生活习性
Behavior

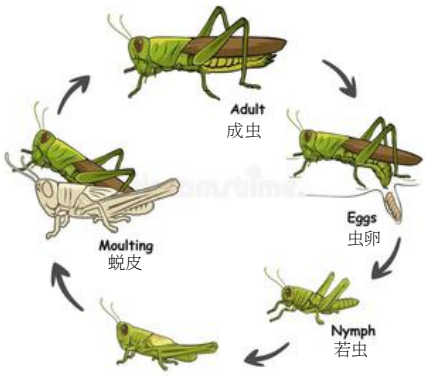
大多数种类为植食性。雄性通过摩擦翅膀或腿部发出鸣叫声，用以求偶或宣示领地。

Adult and larva have varies type of nutritional strategy, such as dead plant feeders, carrion feeders, dung feeder（dung beetles）, phytophagous, predators and parasite.

生长
Growth

不完全变态发育。若虫在形态上与成虫相似，每次蜕皮后逐渐长大。

incomplete metamorphosis. Nymphs are similar in form to adults and grow larger with each molt.



生物重要性
Biological Importance

作为许多动物（包括鸟类和哺乳动物）的食物来源。一些物种则作为分解者，帮助养分循环。然而，其他一些物种，例如蝗虫，可能是造成广泛农作物损害的主要农业害虫。

As a food source for many animals, including birds and mammals. Some species act as decomposers, aiding in nutrient cycling. However, others, like locusts, can be major agricultural pests that cause widespread crop damage.

直翅目

纺织娘
Malaysia bush-cricket
Mecopoda elongata

蚱蜢
Grasshopper

蚱蜢
Grasshopper

蚱蜢
Grasshopper

日本纺织娘
Long-legged Grasshopper
Mecopoda nipponensis

蚱蜢
Grasshopper

蝼蛄
Mole Cricket
Gryllotalpa sp.

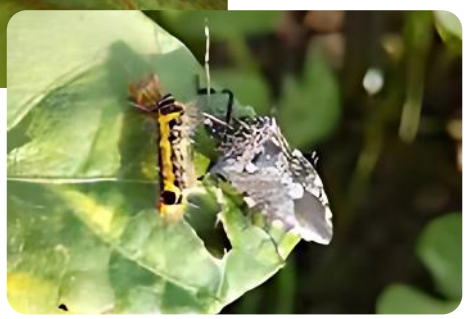
*不能精准辨认的物种都一律写成“蚱蜢”。
All the undefined species are written as “Grasshopper”.

半翅目
Order Hemiptera

形态特征
Morphological Characteristics

体小至大型。刺吸式口器，通常呈喙状。前翅基部较为坚硬，革制，末端为膜质，后翅完全膜质。

Body size ranges from small to large. Piercing-sucking mouthparts, typically beak-like. Forewings are hardened and leathery at the base with membranous tips; hind wings are entirely membranous.



生活习性
Behavior

大多数半翅目昆虫为植食性，通过刺吸植物汁液为食。部分物种为肉食性，捕食其他小型昆虫或通过寄生吸食其他动物血液。

Most hemipterans are herbivorous, feeding by piercing and sucking plant sap. Some species are carnivorous, preying on other small insects or parasitizing other animals by sucking their blood.

生长
Growth

不完全变态发育。若虫在形态上与成虫相似，每次蜕皮后逐渐长大。

incomplete metamorphosis. Nymphs are similar in form to adults and grow larger with each molt.

生物重要性
Biological Importance

蚜虫，叶蝉等会传播植物病毒是害虫。捕食性半翅目昆虫如猎蝽可以控制害虫数量。同时半翅目昆虫也是许多鸟类和其他动物的食物来源。

Pests like aphids and leafhoppers transmit plant viruses. Predatory hemipterans, such as assassin bugs, can control pest populations. Additionally, hemipterans are a food source for many birds and other animals.

半翅目

蝉
Cicada

椿象
True Bug

绿蝉
April Green Cicada
Kikihia ochrina

椿象
True Bug

蝉
Cicada

椿象
True Bug

*不能精准辨认的物种都一律写成“蝉”或“椿象”。
All the undefined species are written as “Cicada”or”True Bug”.

膜翅目
Order Hymenoptera

形态特征
Morphological Characteristics

体中至大形。两队薄而透明的膜质翅膀。有些膜翅目昆虫如蚂蚁翅膀则完全退化。复眼发达。口器有咀嚼与舔舐功能，但有些昆膜翅目虫如蜜蜂是虹管型口器。许多膜翅目昆虫的产卵管特化为蛰针。

Body size is medium to large. They possess two pairs of thin, transparent, membranous wings. In some Hymenoptera species, such as ants, wings are completely vestigial. Compound eyes are well-developed. The mouthparts are adapted for chewing and lapping, although some species like bees have a haustellate mouthparts. In many hymenopterans, the ovipositor is modified into a stinger.

生活习性
Behavior

膜翅目昆虫习性多样化。许多种类具有社会性，具有育儿行为，形成了高度组织化的社会群体如蚂蚁和蜜蜂。

Hymenopterans have very diverse habits. Many species are social, forming highly organized communities like ants and bees. They also exhibit parental care.

生长
Growth

完整变态发育。经历受精卵、幼虫、蛹、成虫。

Complete metamorphosis. Fertilized egg, larva, pupa and adult.

生物重要性
Biological Importance

膜翅目昆虫是许多植物的重要授粉者，如蜜蜂。一些小型膜翅目昆虫在生物防治方面也可以起到压制鳞翅目族群数量。

Hymenopterans are important pollinators for many plants, such as bees. Some smaller hymenopterans are used in biological pest control, as they can suppress the population of lepidopterans.

膜翅目

圆柄木蜂
Slender-scaped Carpenter Bee
Xylocopa tenuiscapa

扁柄木蜂
Broad-handed Carpenter Bee
Xylocopa latipes

黄蜂
Wasp

蜜蜂
Bee

巨山蚁
Carpenter Ant
Camponotus sp.

拟黑多刺蚁
Chinese Black Ant
Polyrhachis vicina roger

*不能精准辨认的物种都一律写成“黄蜂”或“蜜蜂”。
All the undefined species are written as “Wasp” or “Bee”.

蜚蠊目
Order Blattodea

形态特征
Morphological Characteristics

蜚蠊目昆虫俗称蟑螂。体型呈扁平的卵圆形，头隐藏在前胸背板下方。有两对翅膀，前翅革制，较硬，为后翅的保护层，后翅膜质，较薄，用于飞行。拥有咀嚼式口器。触角细长，具有极佳的嗅觉和触觉功能。足部粗壮，适于奔跑。

Commonly known as cockroaches, are insects with a flattened, oval-shaped body. The head is concealed beneath the pronotum. They possess two pairs of wings: the leathery and hardened forewings serve as protective covers for the membranous hindwings, which are used for flight. They have chewing mouthparts. The antennae are slender and filiform, providing excellent olfactory and tactile functions. Their robust legs are adapted for running.

生活习性
Behavior

蟑螂是夜行性昆虫，常躲藏于黑暗，温暖，潮湿处。杂食性。蟑螂是群居性昆虫。

Cockroaches are nocturnal insects that typically hide in dark, warm, and humid places. They are omnivorous and exhibit gregarious behavior.

生长
Growth

不完全变态发育。生命周期分为三个阶段即卵、若虫和成虫。雌性蟑螂会将卵产于卵鞘之中，一个卵鞘可容纳数十枚卵。卵鞘坚硬，用于保护虫卵。若虫经历多次蜕皮后最终羽化为有翅膀的成虫。

Incomplete metamorphosis, with a life cycle consisting of three stages: egg, nymph, and adult. The female deposits eggs within a protective, hardened ootheca, which can contain dozens of eggs. After multiple molts, the nymphs eventually develop into winged adults.

生物重要性
Biological Importance

蜚蠊目昆虫是重要的分解者，分解腐烂的有机物，加速营养物质的循环。蜚蠊目昆虫也是许多捕食性动物如鸟类，蜥蜴，蜘蛛的食物来源。

Blattodeans play a significant ecological role as decomposers, breaking down decaying organic matter and accelerating nutrient cycling. They also serve as a food source for many predators, including birds, lizards, and spiders.

蜚蠊目

枯叶蟑螂
Dried Leaf Cockroach
Pseudophoraspism sp.

黑褐硬蠊
Wood Cockroach
Panesthia angustipennis

蟑螂
Cockroach

*不能精准辨认的物种都一律写成“蟑螂”。
All the undefined species are written as “Cockroach”.

蜻蛉目

Order Odonata

形态特征

Morphological Characteristics

蜻蜓体型较为粗壮，休息时翅膀平展于身体两侧。豆娘提醒较为纤细，休息时翅膀合拢树立在背上。蜻蛉目昆虫有两队网状翅脉的膜质翅膀，具有出色的飞行能力。

Dragonflies are generally more robust, holding their wings horizontally and spread out from the body at rest. Damselflies are more slender, folding their wings together and vertically over their back when at rest. Both possess two pairs of membranous wings with intricate venation, enabling their flight performance.

生活习性

Behavior

肉食性，以其他昆虫为食如蚊子，苍蝇等。蜻蛉目昆虫在空中捕食。蜻蛉目昆虫常于湖泊，河流，池塘，沼泽等水源附近活动。

Odonates are carnivorous, preying on other insects like mosquitoes and flies. They hunt in the air and are frequently found near aquatic habitats such as lakes, rivers, ponds, and swamps.

生长

Growth

不完全变态，生命周期分为三个阶段即卵、若虫和成虫。雌性昆虫会将卵产在水体或水生植物上。卵孵化后，稚虫（也称水蚤）在水中生活。当水蚤经历多次蜕皮完全成熟后，会爬出水面，附着在植物茎秆或其他物体上，进行最后一次蜕皮，进行最后一次羽化。

Incomplete metamorphosis, with a life cycle consisting of three stages: egg, nymph (also known as a naiad), and adult. Females deposit eggs in or on water bodies or aquatic vegetation. After hatching, the naiads live in water, where they are aquatic predators. Upon reaching maturity after multiple molts, the naiad climbs out of the water, attaches to a plant stem or other object, and undergoes its final molt to emerge as a winged adult.

生物重要性

Biological Importance

蜻蛉目昆虫在生物防治方面扮演着非常重要的角色。蜻蛉目昆虫是害虫捕食者，能够控制蚊子，苍蝇，蚋等有害昆虫的族群数量。蜻蛉目昆虫也是其他捕食性动物的食物来源。蜻蛉目昆虫对于水质变化高度敏感，可作为水生生态系统健康的生物指标。

Odonates play a crucial role in biological pest control as they are effective predators of pests like mosquitoes, flies, and gnats, helping to control their population size. They also serve as a food source for other predators. Because of their high sensitivity to changes in water quality, odonates are considered excellent bioindicators of the health of aquatic ecosystems.

蜻蜓目

豆娘
Damselfly

蜻蜓
Dragonfly

蜻蜓
Dragonfly

豆娘
Damselfly

蜻蜓
Dragonfly

蜻蜓
Dragonfly

*不能精准辨认的物种都一律写成“蜻蜓”或“豆娘”。
All the undefined species are written as “Dragonfly” or “Damselfly”.

双翅目
Order Diptera

形态特征
Morphological Characteristics

双翅目昆虫俗称苍蝇和蚊子。前翅发达，呈透明膜质，后翅退化演变成一对小型平衡棒。平衡棒能感知身体的旋转和倾斜，帮助飞行。双翅目昆虫口器高度特化。蚊子为刺吸式口器，用于刺穿生物表皮吸血或植物汁液。苍蝇口器为舐吸式口器，用于舔舐流质食物。

Commonly known as flies and mosquitoes, are characterized by their single pair of well-developed, membranous forewings used for flight. Their hindwings are reduced to a pair of small, club-shaped halteres, which function as gyroscopic stabilizers, sensing body rotation and tilt for precise flight control. The mouthparts are highly developed; mosquitoes have piercing-sucking mouthparts for feeding on blood or plant sap, while flies have siphoning or lapping mouthparts for consuming liquid food.

生活习性
Behavior

双翅目昆虫生活习性因种类各异，都具有很像的适应性。一部分双翅目成虫式吸血性，如蚊子，虻。另一部分双翅目成虫多为食腐性，如家蝇。小部分双翅目昆虫以花蜜或植物汁液为食。

The habits of Dipterans are highly varied but share a high degree of adaptability. While some adults are hematophagous (blood-feeding), such as mosquitoes others are primarily saprophagous (decomposers), like house flies. A smaller number of species feed on nectar or plant juices.

生长
Growth

完全变态发育，生命周期分为四个阶段即卵、幼虫、蛹、成虫。蛆为苍蝇幼虫，孑孓为蚊子幼虫。

Complete metamorphosis, with a life cycle that includes four stages: egg, larva, pupa, and adult. The larvae of flies are known as maggots, while those of mosquitoes are called wigglers.

生物重要性
Biological Importance

双翅目昆虫多为病原体传播媒介，具有医药研究价值。双翅目幼虫作为分解者和食腐者，可分解动植物尸体及排泄物。一些苍蝇，如食芽蝇和丽蝇式重要的传粉者，如*Forcipomyia* sp.（铗蠓）是可可树主要的传粉者。

Dipterans are significant vectors for pathogens and are consequently of great medical and research interest. As decomposers and scavengers, their larvae play a critical role in breaking down dead animal and plant matter and waste, accelerating nutrient cycling. Some flies, such as syrphids and calliphorids, are important pollinators. Notably, Forcipomyia midges are the primary pollinators of the cacao tree.

Flies are saving your chocolate cravings

双翅目

牛虻
Gadfly

苍蝇
Fly

*不能精准辨认的物种都一律写成“牛虻”或“苍蝇”。
All the undefined species are written as “Gadfly” or “Fly”.

螳螂目
Order Mantodea

兰花螳螂
Orchid mantis

形态特征
Morphological Characteristics

前足粗壮，其胫节和股节有锋利倒刺，用于捕捉及紧握猎物，是特化的捕捉足。螳螂头部呈三角形，可180度转动。复眼发达，有出色的视觉，能够精准地判断猎物地距离。拥有咀嚼式口器。螳螂前翅革制，较硬，以保护后翅，后翅膜质，用于飞行，但多数螳螂物种不善于飞行。

The forelegs are developed become raptorial appendages, with sharp spines on the tibia and femur used to grasp and hold prey. The triangular head is highly mobile and can rotate 180 degrees. Well-developed compound eyes provide exceptional binocular vision, allowing for precise depth perception to gauge the distance to prey. They have chewing mouthparts. The forewings are leathery and serve to protect the membranous hindwings, which are used for flight, though most mantid species are not strong fliers.

生活习性
Behavior

螳螂为昼行性独居昆虫。具有卓越的伪装能力。螳螂是肉食性昆虫，以其他昆虫为食，如苍蝇、蛾、蝗虫等，也有能力不是小型脊椎动物，如蜥蜴，蛇，小型鸟类等。

Mantises are diurnal, solitary insects with remarkable camouflage abilities. They are carnivorous, preying on other insects like flies, moths, and grasshoppers, and are also capable of capturing small vertebrates such as lizards, snakes, and small birds.

生长
Growth

不完全变态发育，生命周期分为三个阶段即卵、若虫和成虫。雌性螳螂会将卵产在有分泌物形成地泡沫状卵鞘之中。卵鞘干燥后变得坚硬。若虫与成虫食性相似。若虫经历多次蜕皮后最终羽化为有翅膀的成虫。

Incomplete metamorphosis, with a life cycle consisting of three stages: egg, nymph, and adult. The female deposits her eggs in a foamy ootheca, which hardens upon drying. The nymphs share a similar diet with the adults. After several molts, the nymphs undergo their final ecdysis to emerge as winged adults.

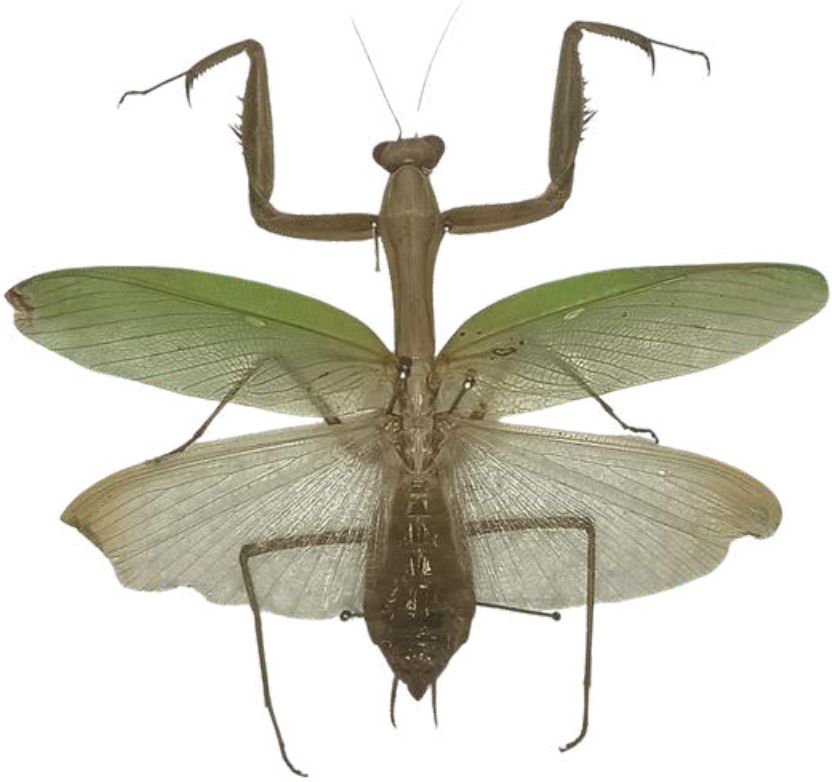
生物重要性
Biological Importance

螳螂是害虫捕食者，控制蚜虫、蝗虫、毛虫等农作物害虫的数量。螳螂也是其他捕食性动物的食物来源，如鸟类、蝙蝠、蛇类等。螳螂独特的捕捉足、高度灵活的头部及视觉为仿生学提供了设计灵感，为机器人技术及机械臂设计领域提供灵感。

Mantises are important predators of agricultural pests, helping to control populations of aphids, grasshoppers, and caterpillars. They also serve as a food source for other predators, including birds, bats, and snakes. The unique raptorial forelegs, highly flexible head, and advanced vision of mantises provide inspiration for biomimicry, particularly in the fields of robotics and mechanical arm design.

受螳螂视觉启发的立体人工复眼技术及其边缘计算应用

螳螂目



绿纹痣螳
Arizona Mantis
Stagmomantis limbata

螳螂
Preying Mantis

弒亲菱颈螳
Shield Mantis
Rhombodera fratricida

*不能精准辨认的物种都一律写成“螳螂”。
All the undefined species are written as “Preying Mantis”.

竹节虫目
Order Phasmatodea

形态特征
Morphological Characteristics

竹节虫的体态各种各样，都具有高度特化的拟态。体型多为细长如树枝，或扁平宽大如树叶。身体颜色及纹理与周围环境一致。拥有咀嚼式口器。多数竹节虫是无翅的，或翅膀退化。少数竹节虫有翅，但也不善于飞行。

Commonly known as stick insects and leaf insects, exhibit a wide variety of forms, all with a highly specialized ability for mimicry. Their body shapes are typically elongated and slender, resembling twigs, or flattened and broad, resembling leaves. Their body coloration and texture perfectly match their surroundings. They possess chewing mouthparts. Most species are apterous (wingless), or their wings are vestigial. Even among winged species, flight capability is often poor.

生活习性
Behavior

植食性昆虫，以叶子、嫩枝或树皮为食。竹节虫多为夜行性昆虫。

They are herbivorous insects, feeding on leaves, tender stems, or bark. Most phasmatodeans are nocturnal.

生长
Growth

不完全变态，生命周期分为三个阶段即卵、若虫和成虫。卵呈种子状，具有坚硬的外壳。若虫经历多次蜕皮后最终羽化为有翅膀的成虫。

Incomplete metamorphosis, with a life cycle consisting of three stages: egg, nymph, and adult. The eggs are seed-like with a hardened outer shell. Nymphs undergo multiple molts before their final ecdysis into a adult.

生物重要性
Biological Importance

在生态系统中，竹节虫是重要的初级消费者，是需要鸟类、蜘蛛、爬行动物及小型哺乳动物的食物来源。其优秀的拟态和伪装能力为进化生物学及生态学提供了很好的研究价值。

In ecosystems, phasmatodeans serve as primary consumers and are a food source for numerous predators, including birds, spiders, reptiles, and small mammals. Their exceptional mimicry and camouflage abilities make them a valuable subject for research in evolutionary biology and ecology.

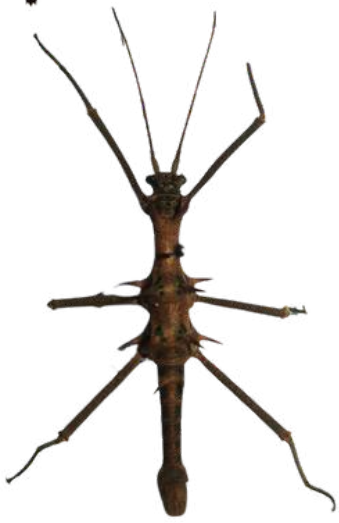
竹节虫目

竹节虫
Stick Insect

越南竹节虫
Annam Walking Stick
Medauroidea extradentata

竹节虫
Stick Insect

竹节虫
Stick Insect



竹节虫
Stick Insect

*不能精准辨认的物种都一律写成“竹节虫”。
All the undefined species are written as “Stick Insect”.