

BIOLOGI DAN TAKSONOMI LIPAS

serta Perannya sebagai Vektor Penyakit



Evi Sulistyorini
BBLKL SALATIGA

Kerangka Teori

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Biologi Serangga

02

Taksonomi Lipas

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Peran sebagai Vektor

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Pengendalian Lipas

ARTHROPODA

ASAL

Bahasa Yunani, Arthro : Ruas dan Podos : Kaki

Arthropoda

Binatang yang memiliki kaki beruas, berbuku atau bersegmen

Ciri Utama

- Tubuhnya terbagi dua belahan yang sama bentuk dan ukuran (bilateral simetris)
- Anggota tubuhnya hampir selalu terdapat berpasangan
- Umumnya bersifat parasite, heterotropik (memanfaatkan bahan organik untuk disintesis sebagai sumber pakan) dan hidup bebas

KLASIFIKASI ARTHROPODA – SUB PHYLUM



CRUSTACEA

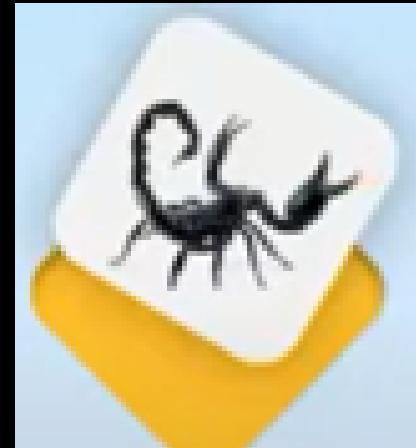
UDANG-UDANGAN

Kepala menyatu
dengan thorak
(sefalothorak)



MYRIAPODA

Berkaki banyak
Kepala terpisah
dari thorak dan
abdomen



CHELICERATA

Scorpion
Kepala
(sefalothorak) dan
abdomen



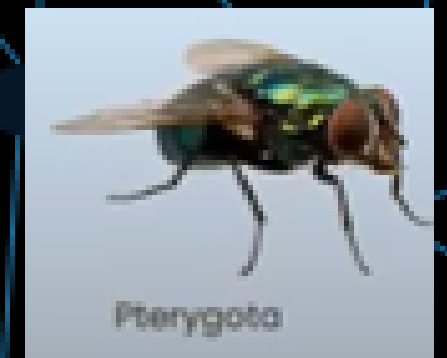
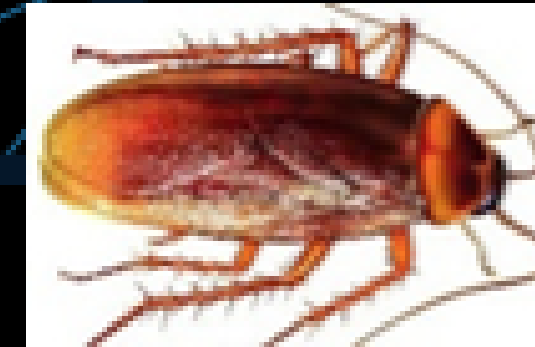
HEXAPODA

Serangga
Kepala terpisah
dari thorak dan
abdomen

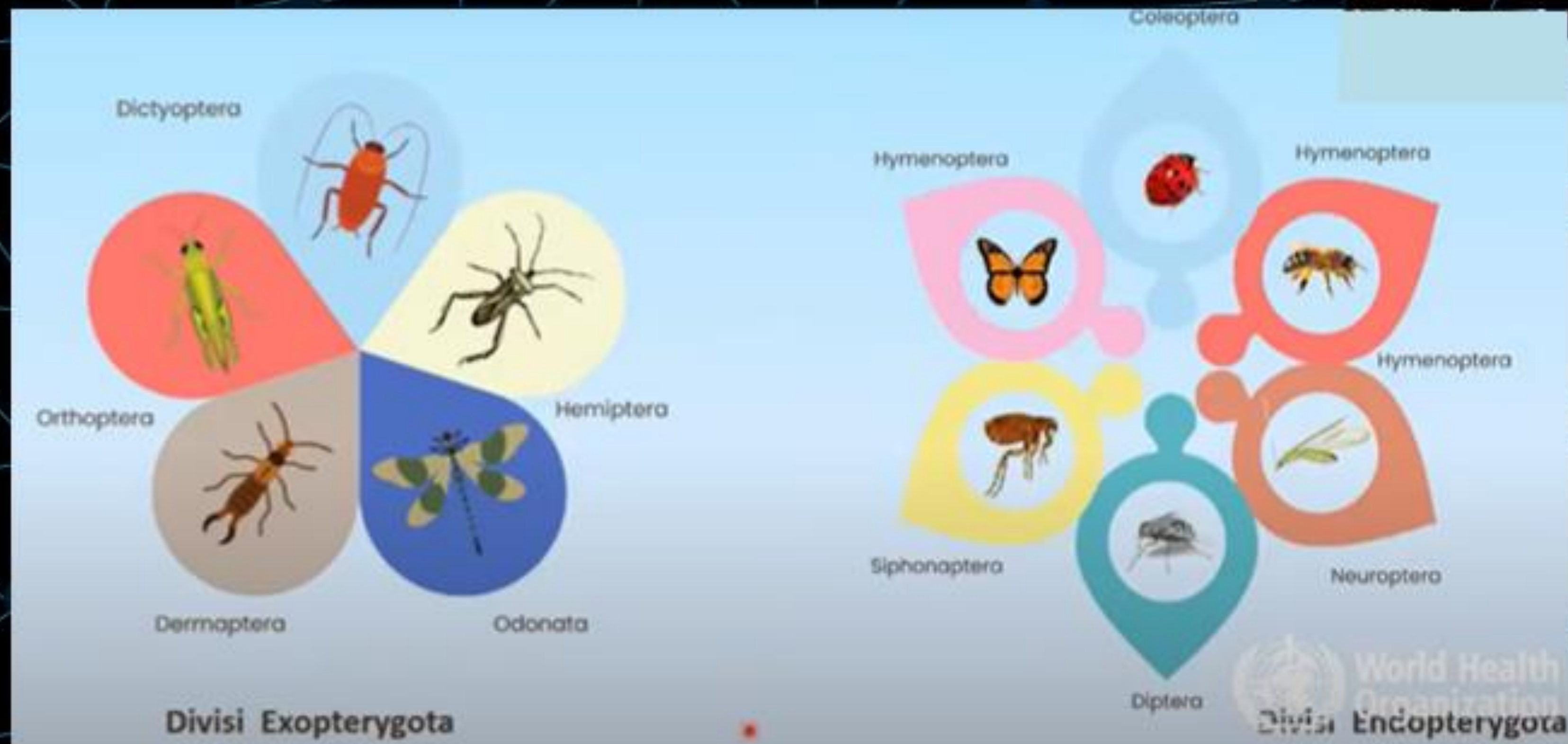
INSEKTA-SERANGGA

Terdiri 2 sub-kelas :

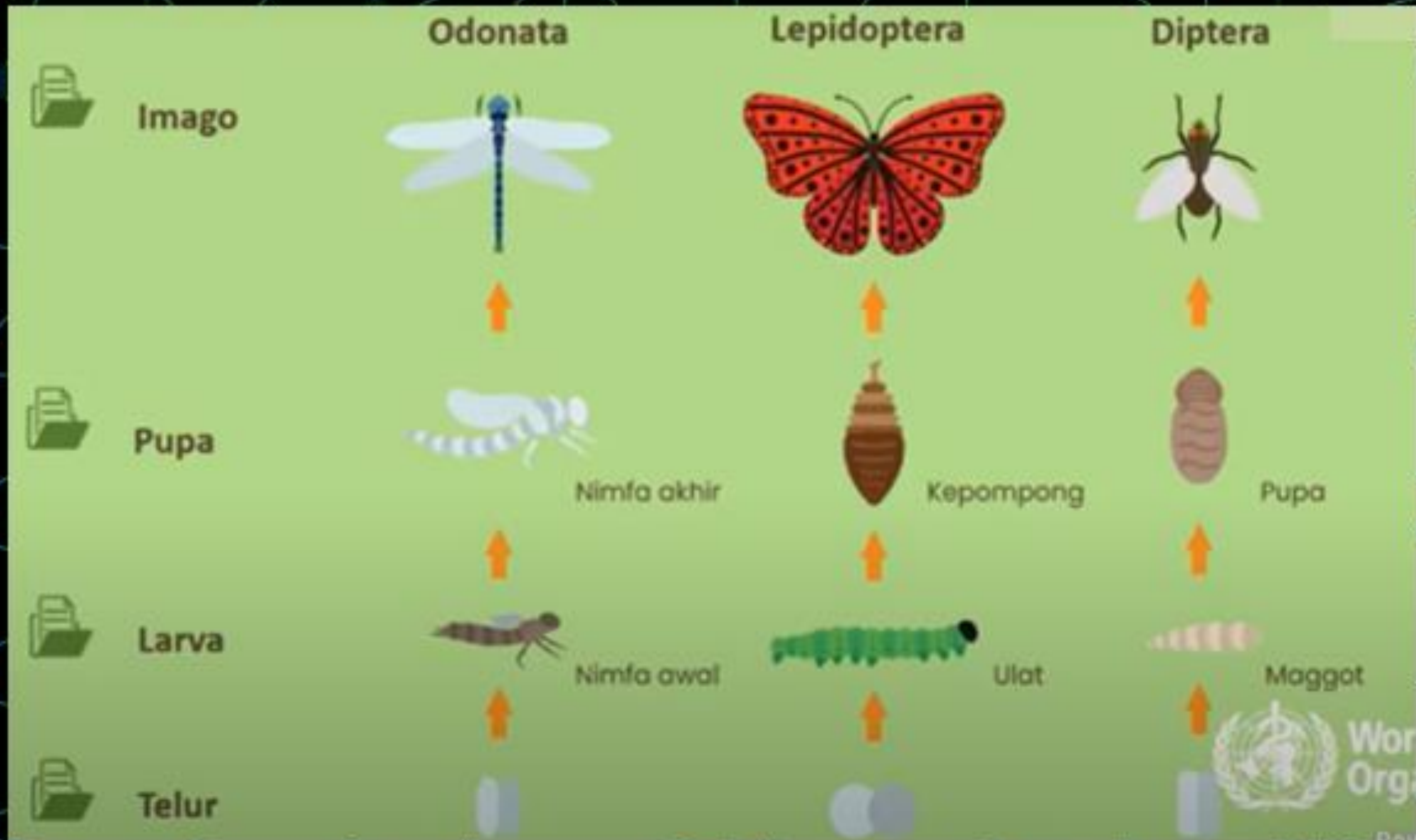
- Apterygota : tidak bersayap dan tidak mengalami metamorphosis
- Pterygota : bersayap dan mengalami metamorphosis
- Exopterygota : sayap berkembang di luar membentuk kuncup
- Endopterygota : sayap berkembang di dalam



INSEKTA-SERANGGA

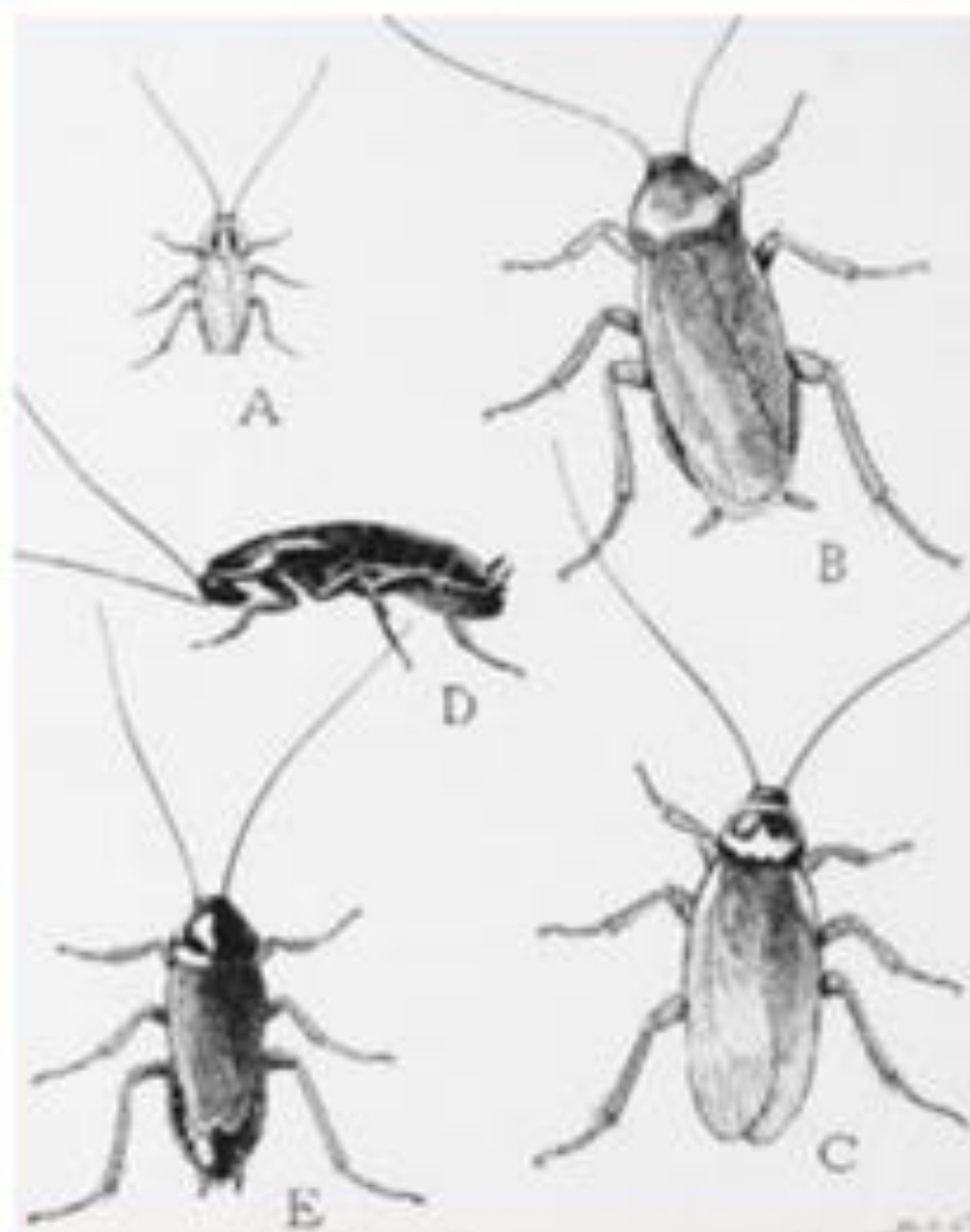


INSEKTA-SERANGGA





KECOA / LIPAS

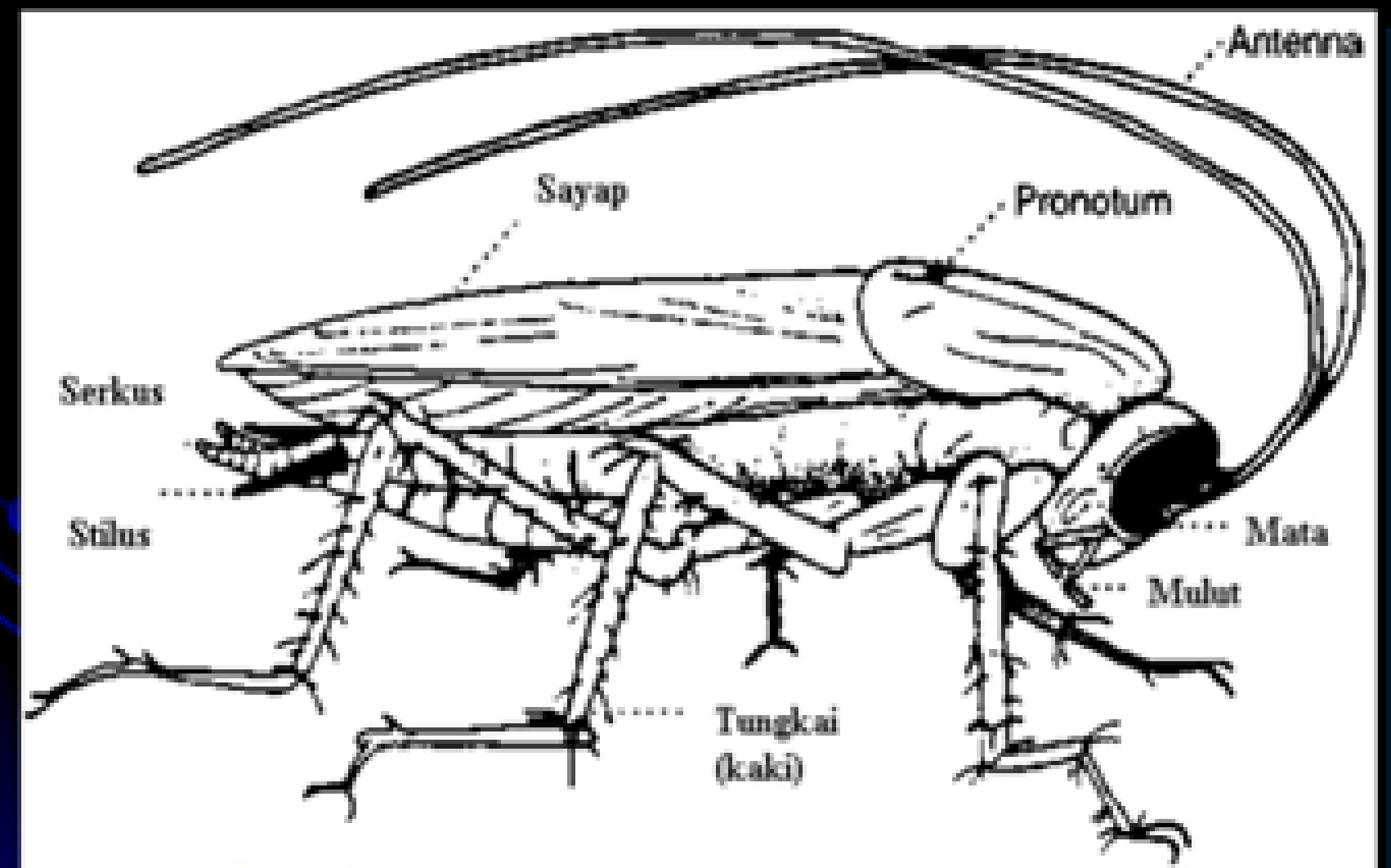
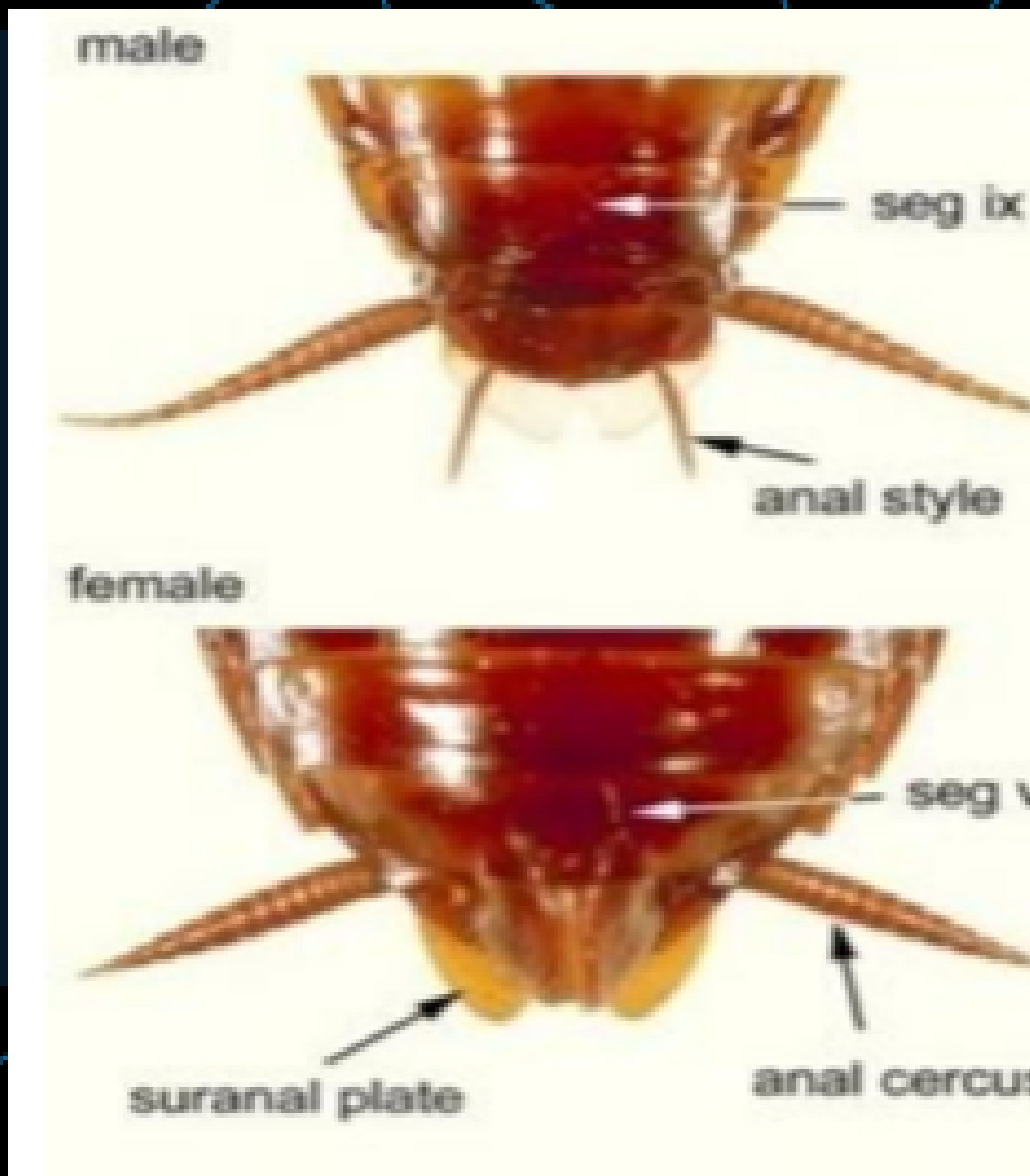


Kingdom	:	Animalia
Filum	:	Artropoda
Subfilum	:	Hexapodaa
Kelas	:	Insecta
Subkelas	:	Pterygota
Infrakelas	:	Neoptera
Superordo	:	Dictyoptera
Ordo	:	Blattodea
Famili	:	Orthoptera

Taksonomi

Morfologi

Lipas mempunyai kaki belakang yang tidak membesar, cerci dengan 8 segmen atau lebih, tubuh dorsoventral flattened, umumnya membulat, pronotum relatif besar

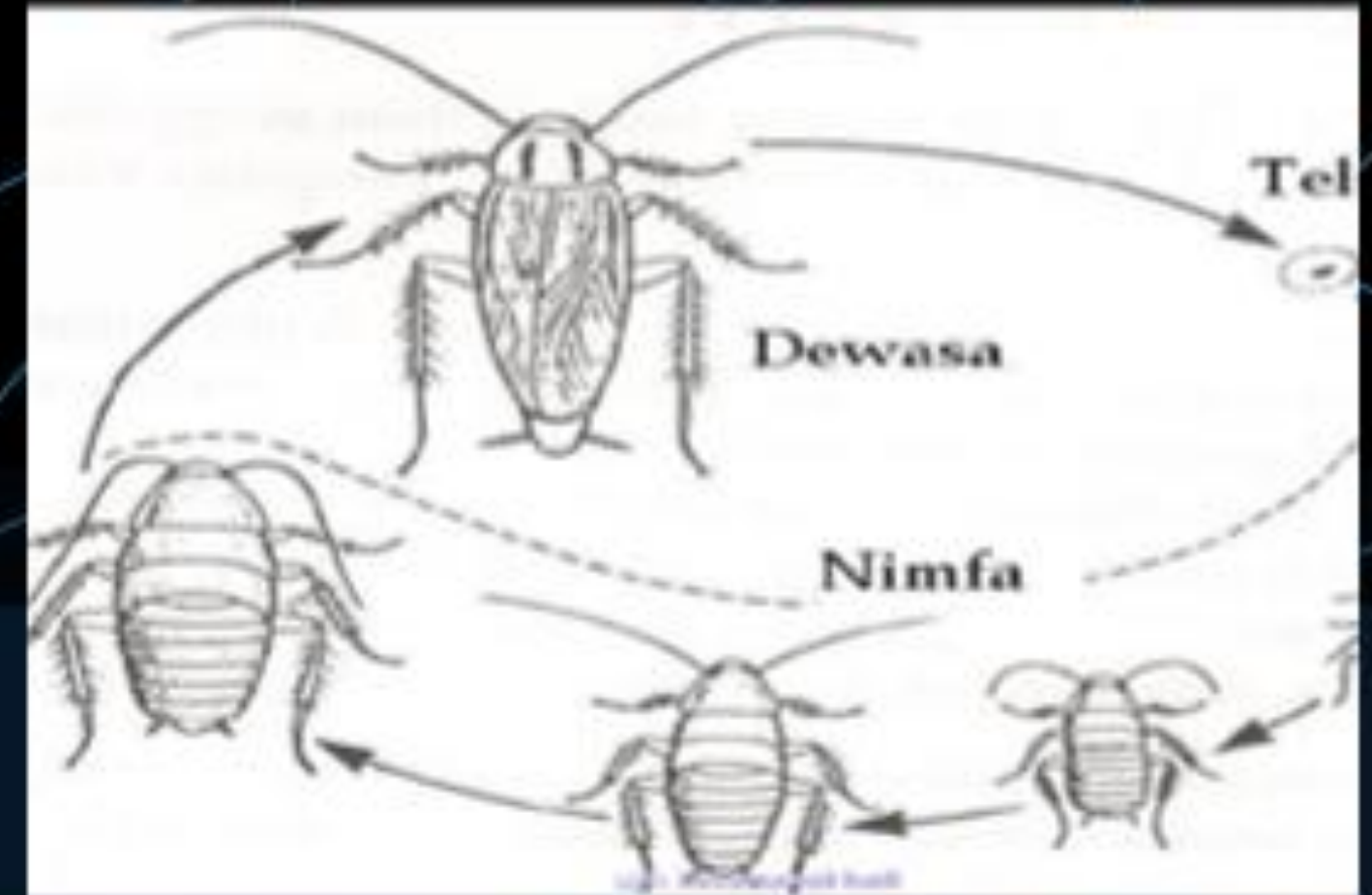
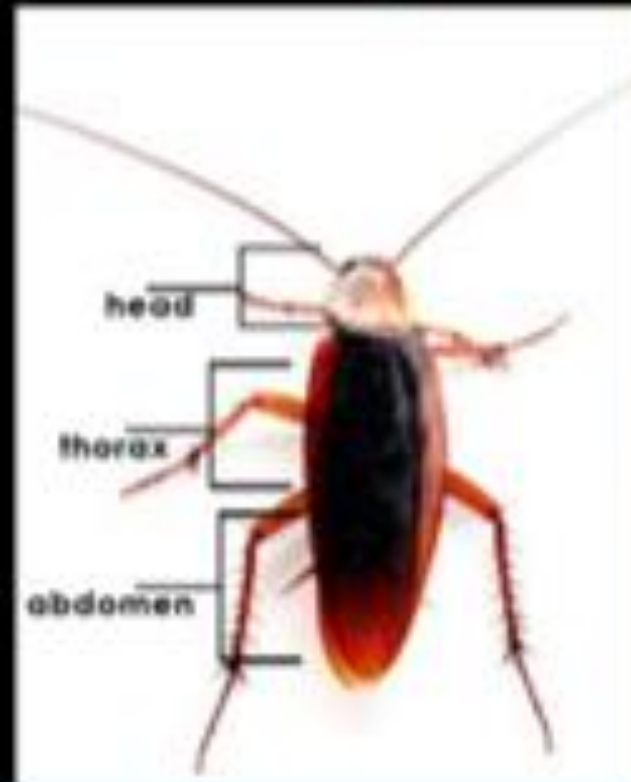


Sumber : Upik Kesuma H, 2006

Head



Body



Ootheca dan nimfa



Blattela germanica
with ootheca



DAUR HIDUP LIPAS

Lipas	Telur/ Ooteka	Periode Nimfa	Molting	Life span	Ooteka /betina
B.g	30-40	6-12mg	6-7	4-6bln	5-8
P.am	12-16	6-12mg	7-10	6- 12bln	10-50
P.aus	16-24	6-12mg	10-12	4-8bln	12-20
S.l	10-18	2-4bln	6-8	3-6mg	6-13
B.o	12-16	6-18bln	7-10	3-6mg	8-14
		upik kesumawati hadi			



Perilaku dan Ekologi

- Secara ekologi, dikelompokkan menjadi tiga, yaitu :
 - Domestik : hidup di dalam ruang dan sangat tergantung pada manusia
 - Peridomestik : hidup di dalam dan di luar habitat manusia
 - Feral : hidup tanpa tergantung dengan manusia

- Pemakan segala materi organik
- Bergantung pada keseimbangan air
- Nokturnal dan cenderung menghindari cahaya
- 30 dari 4500 species dikaitkan dengan tempat tinggal manusia, tetapi hanya beberapa yang dikenal sebagai serangga pengganggu : *Blatella germanica*, *Periplaneta americana*, *Supella longipalpa*, *Neostylopyga rhombifolia*, *Nauphoeta cinerea* dan *Periplaneta australasiae*

- **Bisa terbang tetapi jarang**
- **Bisa lari sampai tiga mil per jam (*Cursorial* = pelari cepat)**
- **Kecoak mencari dan memakan umpan dan membawanya kembali ke area bersarang**
- **Nimfa lebih sering tinggal di sarang**
- ***Coprophagy***
- ***Necrophagy***
- ***Emetophagy***

Periplaneta americana



Sumber : ResearchGate

- Kecoja jantan mempunyai sayap yang lebih panjang daripada abdomen, sedangkan betina hampir sama dengan abdomennya.
- Ooteca diproduksi 4-10 hari, telur dibawa 24 jam kemudian diletakkan, menetas dalam 30-45 hari, nympa moultng 7-13 kali selama 5 bulan, dewasa hidup 3 bulan-beberapa tahun,

Periplaneta brunnea



Dibandingkan *Periplaneta americana* :

- Sedikit lebih kecil dan lebih coklat
- Cerci lebih pendek, tidak meruncing dan tebal
- Ooteca lebih panjang
- Perilaku menyerupai *P. americana*

Periplaneta australasiae



Sumber : Upikke

- Satu betina mampu menghasilkan 20-30 ooteca selama hidupnya
- Masa inkubasi telur 40 hari, dari telur sampai dengan dewasa 365 hari
- Lipas dewasa mampu bertahan 145 hari

Blatella germanica



Sumber : Wikipedia

- **Kosmopolitan**
- **Sering dijumpai pada sarana transportasi**
- **Ukuran kecil 10-15 mm**
- **Warna coklat muda, ada dua garis hitam pada pronotum**
- **Ooteka dibawa terus sampai menetas, satu ooteka : 30-48 telur**
- **Satu betina menghasilkan 30.000 keturunan selama 1 tahun**

Blatta orientalis



Sumber : Biodiversidade

- Species ini tidak bisa berkembang cepat
- Habitat pada saluran air
- Sayap betina kurang berkembang sehingga mirip nympha
- Satu Ooteca : 16-18 telur
- Satu betina menghasilkan 200 telur selama 1 tahun



Supella longipalpa

- **Warna coklat sampai kemerahan**
- **Seperti mempunyai pita**
- **Lipas dewasa mampu bertahan 3-7 bulan**
- **Menghasilkan keturunan sampai dengan 600 ekor**

Neostylopyga rhombifolia



Sumber : iNaturalist

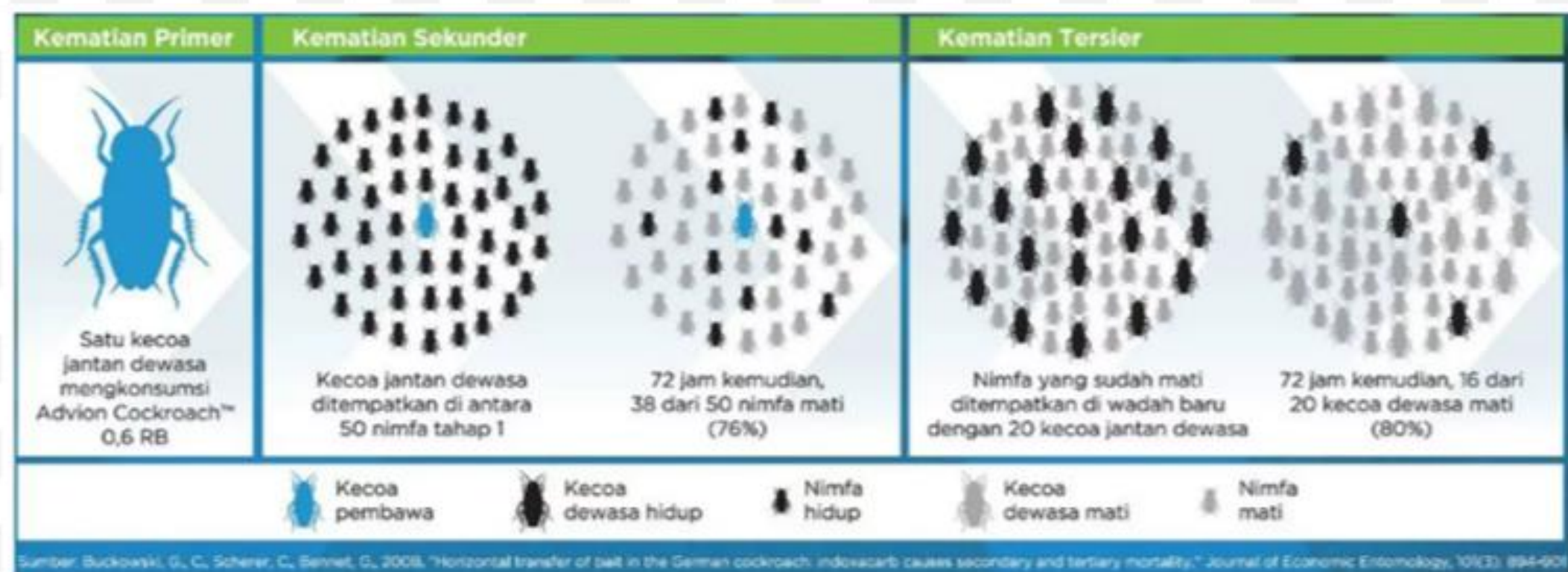
- Panjang 20-27 mm. Sayap depan berupa lobus kecil, sayap belakang tidak berkembang.
- Warna dan pola unik berupa corak hitam putih coklat dipelihara sebagai hewan peliharaan (pet) di berbagai belahan dunia. Lipas ini gerakannya sangat cepat dan lincah, di permukaan halus.
- Ooteca terdiri dari 15-30 telur. memiliki kemampuan menghasilkan zat kimia (amil asetat) yang berbau seperti tetesan buah pir yang digunakan untuk mempertahankan diri terhadap pemangsa.

Peran Lipas sebagai Vektor

- Lipas sebagai vector foodborne disease : diare, disentri, kolera, Hepatitis A, Polio pada anak
- Lipas mencemari ratusan ribu kilogram makanan yang disimpan setiap tahun



Pengendalian Lipas



- Akibat efek domino 3 tingkat
- Terdapat 3 cara yang memungkinkan bahan aktif diteruskan dari kecoa satu ke kecoa lainnya:
 - *Coprophagy*, yaitu mengonsumsi kotoran/feses. Nimfa kecoa memakan kotoran kecoa dewasa
 - *Necrophagy*, yaitu mengonsumsi bangkai kecoa yang sudah mati
 - *Emetophagy*, yaitu mengonsumsi sekresi yang dikeluarkan dari kecoa yang sekarat



Pengendalian Lipas



- Menghilangkan atau sangat mengurangi ketersediaan makanan, air dan tempat tinggal
- Menghalangi masuk ke bangunan
- Sampah harus disimpan dalam wadah tertutup rapat
- Keran air dan pipa bocor harus diperbaiki
- Memperbaiki sanitasi
- Gunakan umpan yang mengandung insektisida kerja lambat yang disatukan dengan sumber makanan yang menarik bagi kecoa



Cockroaches and Food-borne Pathogens

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ABSTRACT: Food-borne disease is a widespread and escalating public health problem globally. About a quarter of the microorganisms isolated from cockroaches are food-borne pathogens including *Escherichia coli* O157:H7, *Staphylococcus aureus*, *Bacillus cereus*, *Shigella dysenteriae*, *Salmonella enterica* subsp. *enterica* serovar Typhi, *Rotavirus*, *Aspergillus fumigatus*, and *Cryptosporidium parvum*. Thus, cockroaches could be an important reservoir and mechanical vector of food-borne pathogens. Generally, the role of cockroaches in human infections is poorly understood and has been an issue of debate for several years. This article aims to elucidate the possible role of cockroaches in food-borne infections by reviewing the relevant research publications.

KEYWORDS: *Escherichia coli* O157:H7, food-borne pathogens, antibiotic resistance, cockroach

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Introduction

Food is an important vehicle for the transmission of infectious pathogens to humans. The high incidence of food-borne diseases coupled with the emergence and re-emergence of food-borne pathogens, have placed food safety high on the agenda of public health issues. Cockroaches appear to be suitable mechanical transmitters for a wide range of food-borne path-

ogens prevalent in Africa and South-East Asia. Food is one of the most important vehicles for the transmission of food-borne illness. Food-borne diseases account for the vast majority of food-borne infections. Food-borne agents are responsible for most food-borne infections. Food-borne agents are responsible for most food-borne infections. Food-borne agents are responsible for most food-borne infections.

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Potency of Cockroaches (*Periplaneta americana* and *Blattella germanica*) on the ship as Vector of Salmonellosis in Baubau Port

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Abstract

Cockroaches are insects that act as mechanical vectors of pathogenic agents to humans such as *Salmonella* sp. The aim of this study was to identify the presence of *Salmonella* sp. in cockroach bodies on cargo and passenger ships. This research was conducted at Baubau Port from October to December 2017. A total of 24 ships were examined consisting of 12 passenger ships and 12 cargo ships. Cockroaches were collected from rooms inside each ship namely galley, bridge, deck and bathroom. A total of 3196 cockroaches caught consisting of *Periplaneta americana* (69.50%), *Blattella germanica* (29.60%), *Periplaneta brunnea* (0.66%), *Pseudophorapsis* sp. (0.03%), *Pycnoscelus surinamensis* (0.03%), *Periplaneta australasiae* (0.03%), and *Neophaeta cinerea* (0.03%). The presence of

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Cockroaches as Vectors of Parasites of Medical Importance; Reports from Nigeria

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Abstract

Background: Cockroaches are not associated with mosquitoes and fleas (by direct transmission); pathogens (typically those causing gastrointestinal disorders) deposited on foods and equipment as the cockroaches come in contact with them.

Methods: This report reveals an association of cockroaches with 13 bacteria species, 7 fungal species and 18 soil transmitted helminths all of which are medically important and have been implicated in many gastrointestinal disorders. *Entamoeba* species, *Balantidium coli*, hookworm and *Ascaris lumbricoides* have been reported to cause chronic diarrhea, liver complications and stunted growth in the affected people. Pathogen were independently isolated from the alimentary canal and body surface of cockroaches collected from toilets, residential houses, hostels, kitchens, living rooms, wardrobes and health facilities at six different states in Nigeria.

Results: This affirms that cockroaches constitute a serious public health threat in Nigeria. This study emphasizes the need to raise awareness on

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OPEN Intestinal pathogens detected in cockroach species within different food-related environment in Pudong, China

Jun Liu^{1,2,3}, Yongting Yuan^{1,2,3}, Lei Feng^{1,2}, Chen Lin^{1,2}, Chuchu Ye^{1,2}, Jingyi Liu^{1,2}, Huihui Li^{1,2}, Lipeng Hao^{1,2,3} & Hanzhao Liu^{1,2,3}

Cockroaches are considered mechanical transmitters of infectious diseases, posing a threat to human health. This study assessed the potential of cockroaches in food-related environments to mechanically transmit intestinal pathogens. Cockroaches captured with traps were placed together into a low temperature refrigerator at -80°C for 2 h. Standard taxonomic keys and Fluorescent quantitative PCR techniques were applied for species identification and digestive tract etiological examination. A total of 360 cockroach traps were placed, with a positive rate of 20.8%, and 266 cockroaches were captured. In general, compared with other places and areas, the degree of infestation of cockroaches was more serious in catering places and kitchens. *Blattella germanica* were most found in catering places (40.2%), followed by *Periplaneta fuliginosa* in schools (22.2%). According to the life stage, among the 128 cockroach samples, 23 were positive for nymphs and 13 were positive for adults. There were statistically significant differences in the intestinal pathogen detection rates between nymphs and adults ($P < 0.05$). A total of eight intestinal pathogens were detected, and enterovirus infections were

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Research Article Identification of Cockroaches as Mechanical Vector for Parasitic Infections and Infestations in Kuantan, Malaysia

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Abstract

Background and Objective: Cockroaches are considered as obnoxious household pest due to its nature that can feed on almost

A dark blue background featuring a complex network of thin, light blue lines connecting various circular nodes. Some nodes are a slightly lighter shade of blue than others, creating a sense of depth and connectivity.

THANK YOU

