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Por que as abelhas são importantes

Celebrado em 20 de maio, o Dia Mundial da Abelha chama atenção para a relevância desses pequenos insetos na natureza. A data foi criada pela ONU em 2017 e presta homenagem ao esloveno Anton Janša, pioneiro da apicultura moderna. Ele nasceu nesse mesmo dia, em 1734, e contribuiu muito para o cuidado sustentável com as abelhas. As abelhas são fundamentais para a produção de alimentos. Isso porque elas realizam a polinização, ou seja, transportam o pólen entre flores. Esse processo permite a reprodução de várias plantas. Assim, não é à toa que existe o Dia Mundial da Abelha. Atualmente, cerca de 75% das culturas agrícolas e 90% das flores silvestres dependem, ao menos em parte, da ajuda das abelhas. Sem elas, o cultivo de frutas, legumes e verduras seria muito mais difícil. Além disso, esses insetos garantem mais do que comida no prato. Com a polinização, eles contribuem para a preservação da vegetação e da biodiversidade. Isso beneficia não só os humanos, mas também diversos animais. O Dia Mundial da Abelha destaca, principalmente, que, apesar de seu papel essencial, as abelhas estão ameaçadas. O uso excessivo de agrotóxicos, a destruição de áreas naturais e as mudanças climáticas afetam diretamente suas populações. Em algumas regiões da Europa, por exemplo, apicultores já registram uma taxa de mortalidade superior a 30%. Além disso, doenças e parasitas têm se espalhado com mais facilidade, agravando ainda mais a situação. Essas ameaças comprometem a polinização e, consequentemente, a produção de alimentos. Proteger as abelhas é, portanto, essencial para a segurança alimentar e o equilíbrio dos ecossistemas. O Dia Mundial da Abelha mostra ainda que todos podem contribuir com a proteção desses insetos. Uma das formas mais simples é cultivar flores em casa, preferindo espécies nativas. Elas fornecem néctar e pólen, o que atrai os polinizadores. Outra atitude importante é evitar o uso de pesticidas e herbicidas. Eles afetam diretamente a saúde das abelhas e podem matar colônias inteiras. Optar por métodos naturais ajuda a manter o ambiente mais equilibrado. Também é possível apoiar apicultores locais, comprando mel e outros produtos direto da fonte. Isso valoriza o trabalho sustentável e fortalece cadeias produtivas responsáveis. O Dia Mundial da Abelha é, portanto, mais do que uma data simbólica. É um convite para refletir sobre nosso papel na preservação desses pequenos, mas essenciais, defensores da vida no planeta. Nesta terça-feira (20), é celebrado o Dia Mundial da Abelha, data criada pela Organização das Nações Unidas (ONU) em 2017 para conscientizar sobre a importância desses insetos para o equilíbrio ambiental. O dia 20 de maio foi escolhido em homenagem a Anton Janša, esloveno considerado um dos precursores da apicultura moderna. Muito mais do que produtoras de mel, as abelhas exercem um papel essencial na manutenção do equilíbrio ambiental e na segurança alimentar. Para entender melhor essa relação, a FolhaBV conversou com a zootecnista Sheron Barbosa, de 34 anos, mestre em Recursos Naturais e doutoranda em Biotecnologia de Produtos de Abelha. “Na realidade, eu digo que as abelhas me escolheram”, contou Sheron. O interesse surgiu durante o mestrado, quando ela pensou em trabalhar com própolis. “Mas eu precisei ir para o campo, conhecer os apiários, e acabei me apaixonando”, relembra. Sheron comentou que nos últimos anos, o crescimento de interessente sobre a apicultura e abelhas tem aumentado. (Foto: Nilzete Franco/FolhaBV) Ela explica que a apicultura trabalha com abelhas com ferrão, enquanto a meliponicultura é voltada às espécies sem ferrão, muito comuns na Amazônia. Mas o trabalho das abelhas vai muito além da produção de mel. “Elas fazem um serviço essencial de forma natural e gratuita, que é a polinização. Isso é importante para o meio ambiente e também para a nossa vida”, explica Sheron. Ela lembra uma frase de Einstein: se as abelhas desaparecerem, a humanidade não duraria mais que quatro anos. Isso porque o trabalho das abelhas ajuda as plantas a se reproduzirem, o que mantém as florestas vivas, o clima equilibrado e a água limpa. “A polinização ajuda a manter a vegetação, que purifica o ar, evita o assoreamento de rios e ajuda no clima. E tudo isso impacta diretamente na nossa vida. Cerca de 80% das plantas que produzem frutos e sementes — ou seja, alimentos — dependem das abelhas”, completa A equipe da FolhaBV foi até o apiário da EAgro/UFRR. (Foto: Nilzete Franco/FolhaBV) Apesar da importância, os apicultores enfrentam muitos desafios. O principal é o uso de agrotóxicos e pesticidas, que contaminam as abelhas e podem dizimar colmeias inteiras. Além disso, Sheron aponta a falta de incentivo e estrutura como um entrave para o crescimento da atividade, especialmente na região amazônica. “A dinâmica de retirada do mel, por exemplo, nem sempre é fácil. Muitas vezes falta acesso ou transporte adequado”, afirma. A extração do mel deve ocorrer em períodos específicos, chamados de safra, quando há abundância de flores. Em Roraima, essa temporada vai de setembro a março. Durante esse tempo, os apicultores retiram os quadros de mel das colmeias e levam até um ambiente higienizado para fazer a extração. “Usamos equipamentos como a mesa desoperculadora e a centrífuga manual. Depois, o mel é colocado em decantadores, onde impurezas se separam do produto puro”, explica. Para garantir a qualidade, é necessário seguir normas rígidas. A umidade, por exemplo, precisa ser de no máximo 20%. “As próprias abelhas sabem disso. Elas só fecham o favo quando o mel está pronto, com essa umidade ideal”, conta Sheron. Sheron levou a equipe para conhecer e ver os favos de mel produzidos pelas abelhas. (Foto: Nilzete Francio/FolhaBV) Sim, existe mel falsificado. São produtos adulterados com açúcar, amido ou até água, o que compromete sua eficácia medicinal e seu valor nutricional. “Não causa problemas à saúde, mas não oferece os benefícios do mel puro, como ação anti-inflamatória”, alerta a especialista. Abelhas sem ferrão: Existem mais de 300 espécies só no Brasil! Elas são nativas e muito importantes para a polinização da flora amazônica. Mel muda de sabor, cor e cheiro dependendo da flor de onde vem o néctar. Isso é chamado de mel monofloral ou multifloral. Apenas as fêmeas operárias têm ferrão e o usam somente em situações extremas. As abelhas batem as asas 200 vezes por segundo! Um único pote de mel é resultado do trabalho de milhares de viagens de coleta — uma abelha visita cerca de 2 mil flores por dia. O mel é o único alimento natural que não estraga se armazenado corretamente. Abelhas nas caixas onde são acondicionas as colmeias. (Foto: Nilzete Franco/FolhaBV) As abelhas podem ser pequenas em tamanho, mas seu impacto no meio ambiente é gigantesco. Elas desempenham um papel vital na polinização, um processo essencial para a sobrevivência de plantas, a produção de alimentos e o equilíbrio dos ecossistemas. Sem elas, o mundo enfrentaria graves consequências ambientais, econômicas e sociais. Vamos explorar por que as abelhas são tão importantes e o que podemos fazer para protegê-las. A polinização é o processo pelo qual o pólen é transferido de uma flor para outra, possibilitando a fertilização e, consequentemente, a produção de frutos e sementes. Embora vento e água também possam ajudar na polinização, a maioria das plantas depende de polinizadores vivos, especialmente as abelhas. As abelhas visitam flores para coletar néctar, sua principal fonte de energia, e pólen, rico em proteínas. Durante essa coleta, elas transportam o pólen entre flores, fertilizando-as sem perceber. Esse trabalho silencioso: Garante a reprodução das plantas. Aumenta a biodiversidade, criando ecossistemas mais saudáveis e resilientes. Estima-se que cerca de 75% das culturas alimentares do mundo dependem em algum grau da polinização. Isso inclui frutas, vegetais, nozes, café e até mesmo plantas usadas para alimentar animais. Plantas polinizadas por abelhas produzem frutos maiores, mais saborosos e em maior quantidade. Sem a polinização adequada, muitos alimentos se tornariam escassos e caros. As abelhas não apenas ajudam na produção de alimentos humanos, mas também sustentam a cadeia alimentar de outros animais. Muitas espécies dependem de plantas polinizadas para se alimentar, direta ou indiretamente. Ao polinizar uma variedade de plantas, as abelhas promovem a diversidade vegetal, que é crucial para: Abrigar animais selvagens. Melhorar a qualidade do solo e da água. Combater mudanças climáticas por meio da absorção de carbono. Apesar de sua importância, as abelhas estão enfrentando ameaças alarmantes, que incluem: A destruição de florestas, campos e prados para agricultura e urbanização reduz os espaços onde as abelhas podem viver e encontrar alimento. Muitos pesticidas usados na agricultura são tóxicos para as abelhas, causando desde desorientação até a morte. O aquecimento global altera os ciclos de floração das plantas, desregulando o tempo de alimentação das abelhas. Eventos climáticos extremos, como secas e enchentes, também impactam suas colmeias. O ácaro Varroa destructor é um dos maiores vilões das colmeias, espalhando doenças que enfraquecem as populações de abelhas. A extinção das abelhas teria consequências devastadoras: Produção de alimentos reduzida: Muitas culturas agrícolas desapareceriam ou teriam produções drasticamente menores. Prejuízo econômico: A polinização pelas abelhas contribui com bilhões de dólares anualmente para a agricultura global. Colapso de ecossistemas: Sem polinização, muitas plantas não sobreviveriam, levando à extinção de espécies que dependem delas. Albert Einstein é frequentemente citado (embora sem confirmação) por ter dito que, sem abelhas, a humanidade sobreviveria apenas quatro anos. Mesmo sem validação científica, a ideia reflete o impacto potencial de sua ausência. Embora a situação seja preocupante, há muitas maneiras de contribuir para a preservação das abelhas: Crie jardins com flores ricas em néctar e pólen, como lavanda, girassol e margaridas. Plantas nativas são especialmente úteis, pois são adaptadas às espécies locais de abelhas. Evite pesticidas químicos em seu jardim. Use métodos naturais de controle de pragas sempre que possível. Compre produtos orgânicos e apoie agricultores que promovem práticas amigáveis às abelhas. Ajude abelhas solitárias (que não vivem em colmeias) instalando abrigos especiais em jardins ou varandas. Apoie organizações e iniciativas que trabalham para proteger habitats e combater a morte de abelhas. Abelhas comunicam-se dançando: Elas realizam uma “dança do agitar” para indicar a localização das melhores flores para a colmeia. Uma abelha visita cerca de 5.000 flores por dia: Esse trabalho incansável é o que torna a polinização tão eficiente. Mel é eterno: O mel produzido pelas abelhas é o único alimento que nunca estraga, graças às suas propriedades naturais. As abelhas são muito mais do que produtoras de mel. Elas são as guardiãs do equilíbrio ecológico e da segurança alimentar global. Proteger essas pequenas polinizadoras é essencial para preservar nosso planeta e garantir um futuro sustentável. E você, já pensou em como ajudar as abelhas na sua região? Gostou deste artigo? Compartilhe para conscientizar outras pessoas sobre a importância das abelhas no nosso ecossistema! As abelhas são frequentemente associadas à produção de mel, mas a sua importância vai muito além disso. Esses pequenos insetos desempenham um papel crucial na polinização de plantas, o que é vital para a produção de alimentos e a manutenção da biodiversidade. No entanto, as abelhas estão enfrentando sérios desafios que ameaçam sua sobrevivência. Aqui, vamos explorar a importância das desses pequenos insetos e oferecer dicas sobre como podemos protegê-las. As abelhas são responsáveis pela polinização de cerca de 70% das culturas alimentares em todo o mundo. Isso inclui frutas, vegetais, nozes e sementes, que são essenciais para a dieta humana. Sem a polinização, a produção desses alimentos diminuiria drasticamente, levando a uma escassez de alimentos e aumento dos preços. A polinização realizada pelas abelhas não apenas suporta a produção de alimentos, mas também mantém a diversidade das plantas selvagens. Muitas plantas dependem delas para a reprodução, e sem elas, muitas espécies poderiam desaparecer, levando a um desequilíbrio nos ecossistemas. A contribuição econômica das abelhas para a agricultura é imensa. Estima-se que o valor global da polinização delas seja de bilhões de dólares por ano. Sem esses insetos, os agricultores teriam que recorrer a métodos de polinização manual, que são caros e ineficazes. Os pesticidas, especialmente os neonicotinoides, são altamente tóxicos para elas. Eles afetam o sistema nervoso delas, prejudicando sua capacidade de navegação e forrageamento, o que pode levar à morte. A urbanização e a agricultura intensiva estão destruindo os habitats naturais das abelhas. A perda de flores silvestres e áreas naturais significa menos fontes de alimento e locais para nidificação. As abelhas também estão ameaçadas por doenças e parasitas, como o ácaro Varroa. Esses parasitas se alimentam do sangue delas e transmitem vírus, enfraquecendo as colônias. As mudanças climáticas estão alterando os padrões de floração das plantas e o clima, tornando mais difícil para as abelhas encontrar alimentos e sobreviver. Uma das melhores maneiras de ajudar as abelhas é plantar flores nativas que florescem em diferentes épocas do ano. Isso fornece uma fonte contínua de néctar e pólen. Sempre que possível, evite o uso de pesticidas no seu jardim. Opte por métodos de controle de pragas orgânicos e seguros para as elas. Forneça locais de nidificação para as abelhas. Isso pode incluir deixar áreas do seu jardim com vegetação nativa e instalar hotéis para esses pequenos insetos. Compre produtos de agricultores que praticam a agricultura sustentável e evitam o uso de pesticidas prejudiciais. Eduque outras pessoas sobre a importância das abelhas e as ameaças que elas enfrentam. A conscientização é um passo crucial para a conservação. As abelhas são fundamentais para a saúde do nosso planeta e para a nossa sobrevivência. Proteger esses insetos cruciais exige um esforço coletivo e mudanças em nossos hábitos diários. Ao seguir as dicas mencionadas, podemos contribuir para a preservação delas e garantir que continuem desempenhando seu papel vital na polinização e na manutenção da biodiversidade. Veja também: Alimente a sua curiosidade Assine a la revista por apenas 1€ por mês ASSINE AGORA Avance uma casa no jogo da História Assine a la revista por apenas 1€ por mês ASSINE AGORA Clade of insects This article is about the group of flying insects. For other uses, see Bee (disambiguation). BeesTemporal range: 70–0 Ma Pre€ € O S D C P T J K Pg N Late Cretaceous – Present The sugarbag bee, Tetragonula carbonaria Scientific classification Domain: Eukaryota Kingdom: Animalia Phylum: Arthropoda Class: Insecta Order: Hymenoptera Suborder: Apocrita Infraorder: Aculeata Superfamily: Apoidea Clade: Anthophila Families Andrenidae Apidae Colletidae Halictidae Megachilidae Melittidae Stenotritidae Synonyms Apiformes (from Latin 'apis') Bees are winged insects closely related to wasps and ants, known for their roles in pollination and, in the case of the best-known bee species, the western honey bee, for producing honey. Bees are a monophyletic lineage within the superfamily Apoidea. They are currently considered a clade, called Anthophila.[1] There are over 20,000 known species of bees in seven recognized biological families.[2][3][4] Some species – including honey bees, bumblebees, and stingless bees – live socially in colonies while most species (>90%) – including mason bees, carpenter bees, leafcutter bees, and sweat bees – are solitary. Bees are found on every continent except Antarctica, in every habitat on the planet that contains insect-pollinated flowering plants. The most common bees in the Northern Hemisphere are the Halictidae, or sweat bees, but they are small and often mistaken for wasps or flies. Bees range in size from tiny stingless bee species, whose workers are less than 2 millimeters (0.08 in) long,[5] to the leafcutter bee Megachile pluto, the largest species of bee, whose females can attain a length of 39 millimeters (1.54 in). Bees feed on nectar and pollen, the former primarily as an energy source and the latter primarily for protein and other nutrients. Most pollen is used as food for their larvae. Vertebrate predators of bees include primates and birds such as bee-eaters; insect predators include beewolves and dragonflies. Bee pollination is important both ecologically and commercially, and the decline in wild bees has increased the value of pollination by commercially managed hives of honey bees. The analysis of 353 wild bee and hoverfly species across Britain from 1980 to 2013 found the insects have been lost from a quarter of the places they inhabited in 1980.[6] Human beekeeping or apiculture (meliponiculture for stingless bees) has been practiced for millennia, since at least the times of Ancient Egypt and Ancient Greece. Bees have appeared in mythology and folklore, through all phases of art and literature from ancient times to the present day, although primarily focused in the Northern Hemisphere where beekeeping is far more common. In Mesoamerica, the Mayans have practiced large-scale intensive meliponiculture since pre-Columbian times.[5] The immediate ancestors of bees were stinging wasps in the family Crabronidae, which were predators of other insects. The switch from insect prey to pollen may have resulted from the consumption of prey insects which were flower visitors and were partially covered with pollen when they were fed to the wasp larvae. This same evolutionary scenario may have occurred within the vespoid wasps, where the pollen wasps evolved from predatory ancestors.[7] Based on phylogenetic analysis, bees are thought to have originated during the Early Cretaceous (about 124 million years ago) on the supercontinent of West Gondwana, just prior to its breakup into South America and Africa. The supercontinent is thought to have been a largely xeric environment at this time; modern bee diversity hotspots are also in xeric and seasonal temperate environments, suggesting strong niche conservatism among bees ever since their origins.[8] Genomic analysis indicates that despite only appearing much later in the fossil record, all modern bee families had already diverged from one another by the end of the Cretaceous. The Melittidae, Apidae, and Megachilidae had already evolved on the supercontinent prior to its fragmentation. Further divergences were facilitated by West Gondwana's breakup around 100 million years ago, leading to a deep Africa-South America split within both the Apidae and Megachilidae, the isolation of the Melittidae in Africa, and the origins of the Colletidae, Andrenidae and Halictidae in South America. The rapid radiation of the South American bee families is thought to have followed the concurrent radiation of flowering plants in the same region. Later in the Cretaceous (80 million years ago), colletid bees colonized Australia from South America (with an offshoot lineage evolving into the Stenotritidae), and by the end of the Cretaceous, South American bees had also colonized North America.[8] The North American fossil taxon Cretotrigona belongs to a group that is no longer found in North America, suggesting that many bee lineages went extinct during the Cretaceous-Paleogene extinction event.[8] Following the K-Pg extinction, surviving bee lineages continued to spread into the Northern Hemisphere, colonizing Europe from Africa by the Paleocene, and then spreading east to Asia. This was facilitated by the warming climate around the same time, allowing bees to move to higher latitudes following the spread of tropical and subtropical habitats. By the Eocene (~45 mya) there was already considerable diversity among eusocial bee lineages.[9][a] A second extinction event among bees is thought to have occurred due to rapid climatic cooling around the Eocene-Oligocene boundary, leading to the extinction of some bee lineages such as the tribe Melikertini. Over the Paleogene and Neogene, different bee lineages continued to spread all over the world, and the shifting habitats and connectedness of continents led to the isolation and evolution of many new bee tribes.[8] The oldest non-compression bee fossil is Cretotrigona prisca, a corbiculate bee of Late Cretaceous age (~70 mya) found in New Jersey amber.[7] A fossil from the early Cretaceous (~100 mya), Melittosphex burmensis, was initially considered "an extinct lineage of pollen-collecting Apoidea sister to the modern bees",[12] but subsequent research has rejected the claim that Melittosphex is a bee, or even a member of the superfamily Apoidea to which bees belong, instead treating the lineage as incertae sedis within the Aculeata.[13] The Allodapini (within the Apidae) appeared around 53 Mya.[14] The Colletidae appear as fossils only from the late Oligocene (~25 Mya) to early Miocene.[15] The Melittidae are known from Palaeomacropis eocenicus in the Early Eocene.[16] The Megachilidae are known from trace fossils (characteristic leaf cuttings) from the Middle Eocene.[17] The Andrenidae are known from the Eocene-Oligocene boundary, around 34 Mya, of the Florissant shale.[18] The Halictidae first appear in the Early Eocene[19] with species[20][21] found in amber. The Stenotritidae are known from fossil brood cells of Pleistocene age.[22] Long-tongued bees and long-tubed flowers coevolved, like this Amegilla species (Apidae) on Acanthus ilicifolius. Further information: Coevolution The earliest animal-pollinated flowers were shallow, cup-shaped blooms pollinated by insects such as beetles, so the syndrome of insect pollination was well established before the first appearance of bees. The novelty is that bees are specialized as pollination agents, with behavioral and physical modifications that specifically enhance pollination, and are the most efficient pollinating insects. In a process of coevolution, flowers developed floral rewards[23] such as nectar and longer tubes, and bees developed longer tongues to extract the nectar.[24] Bees also developed structures known as scopal hairs and pollen baskets to collect and carry pollen. The location and type differ among and between groups of bees. Most species have scopal hairs on their hind legs or on the underside of their abdomens. Some species in the family Apidae have pollen baskets on their hind legs, while very few lack these and instead collect pollen in their crops.[3] The appearance of these structures drove the adaptive radiation of the angiosperms, and, in turn, bees themselves.[10] Bees coevolved not only with flowers but it is believed that some species coevolved with mites. Some provide tufts of hairs called acarinaria that appear to provide lodgings for mites; in return, it is believed that mites eat fungi that attack pollen, so the relationship in this case may be mutualistic.[25][26] Molecular phylogeny was used by Debevic et al, 2012, to demonstrate that the bees (Anthophila) arose from deep within the Crabronidae sensu lato, which was thus rendered paraphyletic. In their study, the placement of the monogeneric Heterogynaidae was uncertain. The small family Mellinidae was not included in this analysis.[27] Further studies by Sann et al., 2018, elevated the subfamilies (plus one tribe and one subtribe) of Crabronidae sensu lato to family status. They also recovered the placement of Heterogyna within Nyssonini and sunk Heterogynaidae. The newly erected family, Ammoplanidae, formerly a subtribe of Pemphredoninae, was recovered as the most sister family to bees.[28] Apoidea Ampulicidae (Cockroach wasps) Astatidae Bembicidae Sphecidae (sensu stricto) Crabronidae (sensu stricto) Mellinidae Pemphredonidae Philanthidae Psenidae Ammoplanidae Anthophila (bees) This cladogram of the bee families is based on Hedtke et al., 2013, which places the former families Dasypodaidae and Meganomiidae as subfamilies inside the Melittidae.[29] English names, where available, are given in parentheses. Anthophila (bees) Melittidae (inc. Dasypodainae, Meganomiinae) at least 50 Mya long-tongued bees Apidae (inc. honeybees, cuckoo bees, carpenter bees) ≈87 Mya Megachilidae (mason, leafcutter bees) ≈50 Mya short-tongued bees Andrenidae (mining bees) ≈34 Mya Halictidae (sweat bees) ≈50 Mya Colletidae (plasterer bees) ≈25 Mya Stenotritidae (large Australian bees) ≈2 Mya The lapping mouthparts of a honey bee, showing labium and maxillae See also: Characteristics of common wasps and bees Bees differ from closely related groups such as wasps by having branched or plume-like setae (hairs), combs on the forelimbs for cleaning their antennae, small anatomical differences in limb structure, and the venation of the hind wings; and in females, by having the seventh dorsal abdominal plate divided into two half-plates.[30] Bees have the following characteristics:[31] A pair of large compound eyes which cover much of the surface of the head. Between and above these are three small simple eyes (ocelli) which provide information on light intensity.[31] The antennae usually have 13 segments in males and 12 in females, and are geniculate, having an elbow joint part way along. They house large numbers of sense organs that can detect touch (mechanoreceptors), smell and taste; and small, hairlike mechanoreceptors that can detect air movement so as to "hear" sounds.[31] The mouthparts are adapted for both chewing and sucking by having both a pair of mandibles and a long proboscis for sucking up nectar.[31] The thorax has three segments, each with a pair of robust legs, and a pair of membranous wings on the hind two segments. The front legs of corbiculate bees bear combs for cleaning the antennae, and in many species the hind legs bear pollen baskets, flattened sections with incurving hairs to secure the collected pollen. The wings are synchronized in flight, and the somewhat smaller hind wings connect to the forewings by a row of hooks along their margin which connect to a groove in the forewing. The abdomen has nine segments, the hindermost three being modified into the sting.[31] Head-on view of a male carpenter bee, showing antennae, three ocelli, compound eyes, and mouthparts The largest species of bee is thought to be Wallace's giant bee Megachile pluto, whose females can attain a length of 39 millimeters (1.54 in).[32] The smallest species may be dwarf stingless bees in the tribe Meliponini whose workers are less than 2 millimeters (0.08 in) in length.[33] Further information: Haplodiploidy Willing to die for their sisters: worker honey bees killed defending their hive against yellowjackets, along with a dead yellowjacket. Such altruistic behaviour may be favoured by the haplodiploid sex determination system of bees. According to inclusive fitness theory, organisms can gain fitness not just through increasing their own reproductive output, but also that of close relatives. In evolutionary terms, individuals should help relatives when Cost < Relatedness * Benefit. The requirements for eusociality are more easily fulfilled by haplodiploid species such as bees because of their unusual relatedness structure.[34] In haplodiploid species, females develop from fertilized eggs and males from unfertilized eggs. Because a male is haploid (has only one copy of each gene), his daughters (which are diploid, with two copies of each gene) share 100% of his genes and 50% of their mother's. Therefore, they share 75% of their genes with each other. This mechanism of sex determination gives rise to what W. D. Hamilton termed "supersisters", more closely related to their sisters than they would be to their own offspring.[35] Workers often do not reproduce, but they can pass on more of their genes by helping to raise their sisters (as queens) than they would by having their own offspring (each of which would only have 50% of their genes), assuming they would produce similar numbers. This unusual situation has been proposed as an explanation of the multiple (at least nine) evolutions of eusociality within Hymenoptera.[36][37] Haplodiploidy is neither necessary nor sufficient for eusociality. Some eusocial species such as termites are not haplodiploid. Conversely, all bees are haplodiploid but not all are eusocial, and among eusocial species many queens mate with multiple males, creating half-sisters that share only 25% of each other's genes.[38] But, monogamy (queens mating singly) is the ancestral state for all eusocial species so far investigated, so it is likely that haplodiploidy contributed to the evolution of eusociality in bees.[36] A Western honey bee swarm Western honey bee nest in the trunk of a spruce Further information: Eusociality Bees may be solitary or may live in various types of communities. Eusociality appears to have originated from at least three independent origins in halictid bees.[39] The most advanced of these are species with eusocial colonies; these are characterized by cooperative brood care and a division of labour into reproductive and non-reproductive adults, plus overlapping generations.[40] This division of labour creates specialized groups within eusocial societies which are called castes. In some species, groups of cohabiting females may be sisters, and if there is a division of labour within the group, they are considered semisocial. The group is called eusocial if, in addition, the group consists of a mother (the queen) and her daughters (workers). When the castes are purely behavioural alternatives, with no morphological differentiation other than size, the system is considered primitively eusocial, as in many paper wasps; when the castes are morphologically discrete, the system is considered highly eusocial.[24] True honey bees (genus Apis, of which eight species are currently recognized) are highly eusocial, and are among the best known insects. Their colonies are established by swarms, consisting of a queen and several thousand workers. There are 29 subspecies of one of these species, Apis mellifera, native to Europe, the Middle East, and Africa. Africanized bees are a hybrid strain of A. mellifera that escaped from experiments involving crossing European and African subspecies; they are extremely defensive.[41] Stingless bees are also highly eusocial. They practice mass provisioning, with complex nest architecture and perennial colonies also established via swarming.[5][42] A bumblebee carrying pollen in its pollen baskets (corbiculae) Many bumblebees are eusocial, similar to the eusocial Vespidae such as hornets in that the queen initiates a nest on her own rather than by swarming. Bumblebee colonies typically have from 50 to 200 bees at peak population, which occurs in mid to late summer. Nest architecture is simple, limited by the size of the pre-existing nest cavity, and colonies rarely last more than a year.[43] In 2011, the International Union for Conservation of Nature set up the Bumblebee Specialist Group to review the threat status of all bumblebee species worldwide using the IUCN Red List criteria.[44] There are many more species of primitively eusocial than highly eusocial bees, but they have been studied less often. Most are in the family Halictidae, or "sweat bees". Colonies are typically small, with a dozen or fewer workers, on average. Queens and workers differ only in size, if at all. Most species have a single season colony cycle, even in the tropics, and only mated females hibernate. A few species have long active seasons and attain colony sizes in the hundreds, such as Halictus hesperus.[45] Some species are eusocial in parts of their range and solitary in others,[46] or have a mix of eusocial and solitary nests in the same population.[47] The orchid bees (Apidae) include some primitively eusocial species with similar biology. Some allodapine bees (Apidae) form primitively eusocial colonies, with progressive provisioning: a larva's food is supplied gradually as it develops, as is the case in honey bees and some bumblebees.[48] A leafcutting bee, Megachile rotundata, cutting circles from acacia leaves Most other bees, including familiar insects such as carpenter bees, leafcutter bees and mason bees are solitary in the sense that every female is fertile, and typically inhabits a nest she constructs herself. There is no division of labor so these nests lack queens and worker bees for these species. Solitary bees typically produce neither honey nor beeswax. Bees collect pollen to feed their young, and have the necessary adaptations to do this. However, certain wasp species such as pollen wasps have similar behaviours, and a few species of bee scavenge from carcases to feed their offspring.[30] Solitary bees are important pollinators; they gather pollen to provision their nests with food for their brood. Often it is mixed with nectar to form a paste-like consistency. Some solitary bees have advanced types of pollen-carrying structures on their bodies. Very few species of solitary bee are being cultured for commercial pollination. Most of these species belong to a distinct set of genera which are commonly known by their nesting behavior or preferences, namely: carpenter bees, sweat bees, mason bees, plasterer bees, squash bees, dwarf carpenter bees, leafcutter bees, alkali bees and digger bees.[49] A solitary bee, Anthidium florentinum (family Megachilidae), visiting Lantana Most solitary bees are fossorial, digging nests in the ground in a variety of soil textures and conditions, while others create nests in hollow reeds or twigs, or holes in wood. The female typically creates a compartment (a "cell") with an egg and some provisions for the resulting larva, then seals it off. A nest may consist of numerous cells. When the nest is in wood, usually the last (those closer to the entrance) contain eggs that will become males. The adult does not provide care for the brood once the egg is laid, and usually dies after making one or more nests. The males typically emerge first and are ready for mating when the females emerge. Solitary bees are very unlikely to sting (only in self-defense, if ever), and some (esp. in the family Andrenidae) are stingless.[50][51] The mason bee Osmia cornifrons nests in a hole in dead wood. Bee "hotels" are often sold for this purpose. While solitary, females each make individual nests.[52] Some species, such as the European mason bee Hoplitis anthocopoides,[53] and the Dawson's Burrowing bee, Amegilla dawsoni,[54] are gregarious, preferring to make nests near others of the same species, and giving the appearance of being social. Large groups of solitary bee nests are called aggregations, to distinguish them from colonies. In some species, multiple females share a common nest, but each makes and provisions her own cells independently. This type of group is called "communal" and is not uncommon. The primary advantage appears to be that a nest entrance is easier to defend from predators and parasites when multiple females use that same entrance regularly.[53] Various bees visit a morning glory flower. A Tumbling flower beetle remains in the flower with a bee visitor. Further information: Honey bee life cycle The life cycle of a bee, be it a solitary or social species, involves the laying of an egg, the development through several moults of a legless larva, a pupation stage during which the insect undergoes complete metamorphosis, followed by the emergence of a winged adult. The number of eggs laid by a female during her lifetime can vary from eight or less in some solitary bees, to more than a million in highly social species.[55] Most solitary bees and bumble bees in temperate climates overwinter as adults or pupae and emerge in spring when increasing numbers of flowering plants come into bloom. The males usually emerge first and search for females with which to mate. Like the other members of Hymenoptera bees are haplodiploid; the sex of a bee is determined by whether or not the egg is fertilized. After mating, a female stores the sperm, and determines which sex is required at the time each individual egg is laid, fertilized eggs producing female offspring and unfertilized eggs, males. Tropical bees may have several generations in a year and no diapause stage.[56][57][58][59] The egg is generally oblong, slightly curved and tapering at one end. Solitary bees, lay each egg in a separate cell with a supply of mixed pollen and nectar next to it. This may be rolled into a pellet or placed in a pile and is known as mass provisioning. Social bee species provision progressively, that is, they feed the larva regularly while it grows. The nest varies from a hole in the ground or in wood, in solitary bees, to a substantial structure with wax combs in bumblebees and honey bees.[60] In most species, larvae are whitish grubs, roughly oval and bluntly-pointed at both ends. They have 15 segments and spiracles in each segment for breathing. They have no legs but move within the cell, helped by tubercles on their sides. They have short horns on the head, jaws for chewing food and an appendage on either side of the mouth tipped with a bristle. There is a gland under the mouth that secretes a viscous liquid which solidifies into the silk they use to produce a cocoon. The cocoon is semi-transparent and the pupa can be seen through it. Over the course of a few days, the larva undergoes metamorphosis into a winged adult. When ready to emerge, the adult splits its skin dorsally and climbs out of the exuviae and breaks out of the cell.[60] Nest of common carder bumblebee, wax canopy removed to show winged workers and pupae in irregularly placed wax cells Carpenter bee nests in a cedar wood beam (sawn open) Honeybees on brood comb with eggs and larvae in cells Honeybee in flight carrying pollen in pollen basket Further information: Insect flight Antoine Magnan's 1934 book Le vol des insectes says that he and André Sainte-Laguë had applied the equations of air resistance to insects and found that their flight could not be explained by fixed-wing calculations, but that "One shouldn't be surprised that the results of the calculations don't square with reality".[61] This has led to a common misconception that bees "violate aerodynamic theory". In fact it merely confirms that bees do not engage in fixed-wing flight, and that their flight is explained by other mechanics, such as those used by helicopters.[62] In 1996 it was shown that vortices created by many insects' wings helped to provide lift.[63] High-speed cinematography[64] and robotic mock-up of a bee wing[65] showed that lift was generated by "the unconventional combination of short, choppy wing strokes, a rapid rotation of the wing as it flops over and reverses direction, and a very fast wing-beat frequency". Wing-beat frequency normally increases as size decreases, but as the bee's wing beat covers such a small arc, it flaps approximately 230 times per second, faster than a fruitfly (200 times per second) which is 80 times smaller.[66] Karl von Frisch (1953) discovered that honey bee workers can navigate, indicating the range and direction to food to other workers with a waggle dance. Further information: Animal navigation and Waggle dance The ethologist Karl von Frisch studied navigation in the honey bee. He showed that honey bees communicate by the waggle dance, in which a worker indicates the location of a food source to other workers in the hive. He demonstrated that bees can recognize a desired compass direction in three different ways: by the Sun, by the polarization pattern of the blue sky, and by the Earth's magnetic field. He showed that the Sun is the preferred or main compass; the other mechanisms are used under cloudy skies or inside a dark beehive.[67] Bees navigate using spatial memory with a "rich, map-like organization".[68] The gut of bees is relatively simple, but multiple metabolic strategies exist in the gut microbiota.[69] Pollinating bees consume nectar and pollen, which require different digestion strategies by somewhat specialized bacteria. While nectar is a liquid of mostly monosaccharide sugars and so easily absorbed, pollen contains complex polysaccharides: branching pectin and hemicellulose.[70] Approximately five groups of bacteria are involved in digestion. Three groups specialize in simple sugars (Snodgrassella and two groups of Lactobacillus), and two other groups in complex sugars (Gilliamella and Bifidobacterium). Digestion of pectin and hemicellulose is dominated by bacterial clades Gilliamella and Bifidobacterium respectively. Bacteria that cannot digest polysaccharides obtain enzymes from their neighbors, and bacteria that lack certain amino acids do the same, creating multiple ecological niches.[71] Although most bee species are nectarivorous and palynivorous, some are not. Particularly unusual are vulture bees in the genus Trigona, which consume carrion and wasp brood, turning meat into a honey-like substance.[72] Drinking guttation drops from leaves is also a source of energy and nutrients.[73] Most bees are polylectic (generalist) meaning they collect pollen from a range of flowering plants, but some are oligoleges (specialists), in that they only gather pollen from one or a few species or genera of closely related plants.[74] In Melittidae and Apidae we also find a few genera that are highly specialized for collecting plant oils both in addition to, and instead of, nectar, which is mixed with pollen as larval food.[75] Male orchid bees in some species gather aromatic compounds from orchids, which is one of the few cases where male bees are effective pollinators. Bees are able to sense the presence of desirable flowers through ultraviolet patterning on flowers, floral odors,[76] and even electromagnetic fields.[77] Once landed, a bee then uses nectar quality[76] and pollen taste[78] to determine whether to continue visiting similar flowers. In rare cases, a plant species may only be effectively pollinated by a single bee species, and some plants are endangered at least in part because their pollinator is also threatened. But, there is a pronounced tendency for oligolectic bees to be associated with common, widespread plants visited by multiple pollinator species. For example, the creosote bush in the arid parts of the United States southwest is associated with some 40 oligoleges.[79] The bee-fly Bombylius major, a Batesian mimic of bees, taking nectar and pollinating a flower Main articles: Mimicry, Batesian mimicry, and Müllerian mimicry Bee orchid lures male bees to attempt to mate with the flower's lip, which resembles a bee perched on a pink flower. Many bees are aposematically colored, typically orange and black, warning of their ability to defend themselves with a powerful sting. As such they are models for Batesian mimicry by non-stinging insects such as bee-flies, robber flies and hoverflies,[80] all of which gain a measure of protection by superficially looking and behaving like bees.[80] Bees are themselves Müllerian mimics of other aposematic insects with the same color scheme, including wasps, lycid and other beetles, and many butterflies and moths (Lepidoptera) which are themselves distasteful, often through acquiring bitter and poisonous chemicals from their plant food. All the Müllerian mimics, including bees, benefit from the reduced risk of predation that results from their easily recognized warning coloration.[81] Bees are also mimicked by plants such as the bee orchid which imitates both the appearance and the scent of a female bee; male bees attempt to mate (pseudocopulation) with the furry lip of the flower, thus pollinating it.[82] Bombus vestalis, a brood parasite of the bumblebee Bombus terrestris Main articles: Brood parasite and Nest usurpation Brood parasites occur in several bee families including the apid subfamily Nomadinae.[83] Females of these species lack pollen collecting structures (the scopa) and do not construct their own nests. They typically enter the nests of pollen collecting species, and lay their eggs in cells provisioned by the host bee. When the "cuckoo" bee larva hatches, it consumes the host larva's pollen ball, and often the host egg also.[84] In particular, the Arctic bee species, Bombus hyperboreus is an aggressive species that attacks and enslaves other bees of the same subgenus. However, unlike many other bee brood parasites, they have pollen baskets and often collect pollen.[85] In Southern Africa, hives of African honeybees (A. mellifera scutellata) are being destroyed by parasitic workers of the Cape honeybee, A. m. capensis. These lay diploid eggs ("thelytoky"), escaping normal worker policing, leading to the colony's destruction; the parasites can then move to other hives.[86] The cuckoo bees in the Bombus subgenus Psithyrus are closely related to, and resemble, their hosts in looks and size. This common pattern gave rise to the ecological principle "Emery's rule". Others parasitize bees in different families, like Townsendiella, a nomadine apid, two species of which are cleptoparasites of the dasypodaid genus Hesperapis,[87] while the other species in the same genus attacks halictid bees.[88] Four bee families (Andrenidae, Colletidae, Halictidae, and Apidae) contain some species that are crepuscular. Most are tropical or subtropical, but some live in arid regions at higher latitudes. These bees have greatly enlarged ocelli, which are extremely sensitive to light and dark, though incapable of forming images. Some have refracting superposition compound eyes: these combine the output of many elements of their compound eyes to provide enough light for each retinal photoreceptor. Their ability to fly by night enables them to avoid many predators, and to exploit flowers that produce nectar only or also at night.[89] Further information: Diseases of the honey bee The bee-eater, Merops apiaster, specializes in feeding on bees; here a male catches a nuptial gift for his mate. Vertebrate predators of bees include bee-eaters, shrikes and flycatchers, which make short sallies to catch insects in flight.[90] Swifts and swallows[90] fly almost continually, catching insects as they go. The honey buzzard attacks bees' nests and eats the larvae.[91] The greater honeyguide interacts with humans by guiding them to the nests of wild bees. The humans break open the nests and take the honey and the bird feeds on the larvae and the wax.[92] Among mammals, predators such as the badger dig up bumblebee nests and eat both the larvae and any stored food.[93] The beewolf Philanthus triangulum paralysing a bee with its sting Specialist ambush predators of visitors to flowers include crab spiders, which wait on flowering plants for pollinating insects; predatory bugs, and praying mantises,[90] some of which (the flower mantises of the tropics) wait motionless, aggressive mimics camouflaged as flowers.[94] Beewolves are large wasps that habitually attack bees;[90] the ethologist Niko Tinbergen estimated that a single colony of the beewolf Philanthus triangulum might kill several thousand honeybees in a day: all the prey he observed were honeybees.[95] Other predatory insects that sometimes catch bees include robber flies and dragonflies.[90] Honey bees are affected by parasites including tracheal and Varroa mites.[96] However, some bees are believed to have a mutualistic relationship with mites.[26] Some mites of genus Tarsonemus are associated with bees. They live in bee nests and ride on adult bees for dispersal. They are presumed to feed on fungi, nest materials or pollen. However, the impact they have on bees remains uncertain.[97] Main article: Bees in mythology Gold plaques embossed with winged bee goddesses. Camiros, Rhodes. 7th century BC. Homer's Hymn to Hermes describes three bee-maidens with the power of divination and thus speaking truth, and identifies the food of the gods as honey. Sources associated the bee maidens with Apollo and, until the 1980s, scholars followed Gottfried Hermann (1806) in incorrectly identifying the bee-maidens with the Thriae.[98] Honey, according to a Greek myth, was discovered by a nymph called Melissa ("Bee"); and honey was offered to the Greek gods from Mycenean times. Bees were also associated with the Delphic oracle and the prophetess was sometimes called a bee.[99] The image of a community of honey bees has been used from ancient to modern times, in Aristotle and Plato; in Virgil and Seneca; in Erasmus and Shakespeare; Tolstoy, and by political and social theorists such as Bernard Mandeville and Karl Marx as a model for human society.[100] In English folklore, bees would be told of important events in the household, in a custom known as "Telling the bees".[101] Honey bees, signifying immortality and resurrection, were royal heraldic emblems of the Merovingians, revived by Napoleon.[102] Beatrix Potter's illustration of Babbity Bumble in The Tale of Mrs Tittlemouse, 1910 Some of the oldest examples of bees in art are rock paintings in Spain which have been dated to 15,000 BC.[103] W. B. Yeats's poem The Lake Isle of Innisfree (1888) contains the couplet "Nine bean rows will I have there, a hive for the honey bee, / And live alone in the bee loud glade." At the time he was living in Bedford Park in the West of London.[104] Beatrix Potter's illustrated book The Tale of Mrs Tittlemouse (1910) features Babbity Bumble and her brood (pictured). Kit Williams' treasure hunt book The Bee on the Comb (1984) uses bees and beekeeping as part of its story and puzzle. Sue Monk Kidd's The Secret Life of Bees (2004), and the 2009 film starring Dakota Fanning, tells the story of a girl who escapes her abusive home and finds her way to live with a family of beekeepers, the Boatwrights. Bees have appeared in films such as Jerry Seinfeld's animated Bee Movie,[105] or Eugene Schlusser's A Sting in the Tale (2014). The playwright Laline Paull's fantasy The Bees (2015) tells the tale of a hive bee named Flora 717 from hatching onwards.[106] Main article: Beekeeping A commercial beekeeper at work Western honey bee on a honeycomb Humans have kept honey bee colonies, commonly in hives, for millennia.[107] Depictions of humans collecting honey from wild bees date to 15,000 years ago; efforts to domesticate them are shown in Egyptian art around 4,500 years ago.[108] Simple hives and smoke were used.[109][110] Among Classical Era authors, beekeeping with the use of smoke is described in Aristotle's History of Animals Book 9.[107] The account mentions that bees die after stinging; that workers remove corpses from the hive, and guard it; castes including workers and non-working drones, but "kings" rather than queens; predators including toads and bee-eaters; and the waggle dance, with the "irresistible suggestion" of άροσειονται ("aroseiontai", it waggles) and παρακολουθούσιν ("parakolouthousin", they watch).[111][b] Beekeeping is described in detail by Virgil in his Georgics; it is mentioned in his Aeneid, and in Pliny's Natural History.[111] From the 18th century, European understanding of the colonies and biology of bees allowed the construction of the moveable comb hive so that honey could be harvested without destroying the colony.[112][113] See also: List of crop plants pollinated by bees, Pollinator decline, and Pesticide toxicity to bees Bees play an important role in pollinating flowering plants, and are the major type of pollinator in many ecosystems that contain flowering plants. It is estimated that one third of the human food supply depends on pollination by insects, birds and bats, most of which is accomplished by bees, whether wild or domesticated.[114][115] Since the 1970s, there has been a general decline in the species richness of wild bees and other pollinators, probably attributable to stress from increased parasites and disease, the use of pesticides, and a decrease in the number of wild flowers. Climate change probably exacerbates the problem.[116] This is a major cause of concern, as it can cause biodiversity loss and ecosystem degradation as well as increase climate change.[117] Contract pollination has overtaken the role of honey production for beekeepers in many countries. After the introduction of Varroa mites, feral honey bees declined dramatically in the US, though their numbers have since recovered.[118][119] The number of colonies kept by beekeepers declined slightly, through urbanization, systematic pesticide use, tracheal and Varroa mites, and the closure of beekeeping businesses. In 2006 and 2007 the rate of attrition increased, and was described as colony collapse disorder.[120] In 2010 invertebrate iridescent virus and the fungus Nosema ceranae were shown to be in every killed colony, and deadly in combination.[121][122][123][124] Winter losses increased to about 1/3.[125][126] Varroa mites were thought to be responsible for about half the losses.[127] Apart from colony collapse disorder, losses outside the US have been attributed to causes including pesticide seed dressings, using neonicotinoids such as clothianidin, imidacloprid and thiamethoxam.[128][129] From 2013 the European Union restricted some pesticides to stop bee populations from declining further.[130] In 2014 the Intergovernmental Panel on Climate Change report warned that bees faced increased risk of extinction because of global warming.[131] In 2018 the European Union decided to ban field use of all three major neonicotinoids; they remain permitted in veterinary, greenhouse, and vehicle transport usage.[132] Farmers have focused on alternative solutions to mitigate these problems. By raising native plants, they provide food for native bee pollinators like Lasioglossum vierecki[133] and L. leucozonium,[134] leading to less reliance on honey bee populations. Squash bees (Apidae) are important pollinators of squashes and cucumbers. Bee covered in pollen Honey is a natural product produced by bees and stored for their own use, but its sweetness has always appealed to humans. Before domestication of bees was even attempted, humans were raiding their nests for their honey. Smoke was often used to subdue the bees and such activities are depicted in rock paintings in Spain dated to 15,000 BC.[103] Honey bees are used commercially to produce honey.[135] Bees are considered edible insects. People in some countries eat insects, including the larvae and pupae of bees, mostly stingless species. They also gather larvae, pupae and surrounding cells, known as bee brood, for consumption.[136] In the Indonesian dish botok tawon from Central and East Java, bee larvae are eaten as a companion to rice, after being mixed with shredded coconut, wrapped in banana leaves, and steamed.[137][138] Bee brood (pupae and larvae) although low in calcium, has been found to be high in protein and carbohydrate, and a useful source of phosphorus, magnesium, potassium, and trace minerals iron, zinc, copper, and selenium. In addition, while bee brood was high in fat, it contained no fat soluble vitamins (such as A, D, and E) but it was a good source of most of the water-soluble B vitamins including choline as well as vitamin C. The fat was composed mostly of saturated and monounsaturated fatty acids with 2.0% being polyunsaturated fatty acids.[139][140] Bee larvae as food in the Javanese dish botok tawon Fried whole bees served in a Ukrainian restaurant Apitherapy is a branch of alternative medicine that uses honey bee products, including raw honey, royal jelly, pollen, propolis, beeswax and apitoxin (Bee venom).[141] The claim that apitherapy treats cancer, which some proponents of apitherapy make, remains unsupported by evidence-based medicine.[142][143] The painful stings of bees are mostly associated with the poison gland and the Dufour's gland which are abdominal exocrine glands containing various chemicals. In Lasioglossum leucozonium, the Dufour's Gland mostly contains octadecanolide as well as some eicosanolide. There is also evidence of n-triscosane, n-heptacosane,[144] and 22-docosanolide.[145] Australian native bees Fear of bees (apiphobia) Superorganism World Bee Day ^ Triassic nests in a petrified forest in Arizona, implying that bees evolved much earlier,[10] are now thought to be beetle borings.[11] ^ In D'Arcy Thompson's translation: "At early dawn they make no noise, until some one particular bee makes a buzzing noise two or three times and thereby awakes the rest; hereupon they all fly in a body to work. By and by they return and at first are noisy; ... until at last some one bee flies round about, making a buzzing noise, and apparently calling on the others to go to sleep".[107]

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"Apoidea" at All Living Things – images, identification guides, and maps of bees Bee Genera of the World Anthophila (Apoidea) – Bees – North American species of bees at BugGuide Native Bees of North America at BugGuide "Bee declines driven by combined stress from parasites, pesticides, and lack of flowers" – Science Retrieved from " Discover the enormous host of honey benefits; the myriad floral tastes and countless health applications. The versatility of honey and the goodness it can bring into your everyday practical life is WOW! Not only does this delectable liquid stimulate your taste buds and whet your appetite, its unique taste and aroma has also sprung off many time honor cooking ideas and recipes such as the cannot-be-missed honey baked ham and honey dips. But is honey really good for you? This caramel-like liquid seems to be full of calories… Sure it tastes good and has a pleasant texture that coats the irritated throat, but is it no more than just a tasty placebo? Here are the first 5 benefits of honey you must know! Though highly regarded in ancient civilizations, honey is not appreciated enough in today's modern societies. Critics quiz, "How can anything that tastes so good be of any good? Isn't honey just fancy sugar?" The liquid is so sweet and comforting that many people do not give its healing abilities a second thought. Conventional nutritional authorities claim that sugar is sugar, regardless of its source or state. They however, do not realize that the bee has added an extra goodness of their own. Honey possesses unique life-supporting qualities not found in other sugars and delivers much more than what many medical doctors could comprehend. Know that not all sugars are made equal and don't be too quick to dismiss honey as just another sugar. Honey isn't just sugar. It is more than just the sum of its sugars. There is more than meets the eye! It's baffling how some people would go about demanding for proofs that honey is good for us and yet not question a word about the processed sugars and even artificial sugars that they willingly eat. Nevertheless, today researchers are turning up more and more new evidence of honey's medical benefits in all directions. The benefits of honey don't just stop at satisfying the palate; honey also offers incredible antiseptic, antioxidant and cleansing properties that are beneficial for our health and body, valuable beauty and skin care tips for ladies, and amazing healing abilities as a head-to-toe remedy, from eye infection to athlete foot. (Refer to Health and Nutrition Resources Index Page). Its powerful healing attributes have long been used thousands of years ago and known to promote healing for cuts, cure ailments and diseases, and correct health disorders for generations after generations. 3. The Healing Power of Honey The renowned benefits of Manuka honey, perhaps the tastiest and sweetest medicine, is commonly cited in many discussions on health benefits of honey. This honey not only fights infection and aids tissue healing but also helps reduce inflammation and scarring. In addition, it is often used for treating digestive problems such as diarrhea, indigestion, stomach ulcers and gastroenteritis. The page on "In What Ways have You Experienced the Benefits of Honey?" is filled with eye-popping testimonies about the healing power of honey. I've lost count of the number of times I have accessed that page, but the stories posted there – benefits of honey for skin, benefits of honey for hair, benefits of manuka honey, all never cease to move and amaze me over and over again. With more and more health experts and theories, such as the Hibernation Diet, supporting its benefits, this oldest natural sweetener just keeps getting better. Besides its profound medicinal applications, honey also brings great synergistic health benefits when combined with other foods such as bee pollen, cinnamon, ginger and cider vinegar. Discover them all – benefits of honey and cinnamon, benefits of honey lemon water, benefits of honey and milk, benefits of honey and turmeric, one by one at Honey Cure and Tonic Concoctions and learn what people who have tried them have to say. And with the ever-growing body of research and evidence of the immense healing abilities of other wondrous bee products such as royal jelly, bee pollen and propolis, we are so overwhelmingly grateful for what the precious bees have presented to us humans. ♥ Read Accolades to Benefits of Honey ♥ The uses and benefits of honey in foods are as diverse as its floral varieties and places of origin. It is almost like acquiring wine knowledge through wine-tasting and getting information on the origin, quality and worth of the different wines. Very intriguing, satisfying, and even infectious! One of the greatest pleasure and fascination in using honey is understanding the different floral varieties of honey, their appearance and quality, and experimenting with each of their unique taste and distinct flavor, and learning about which floral variety of honey is most perfect for pairing with which food. You will realize with its bewildering number of varieties, this natural sweetener is comparable to tea, coffee, wine in its complexity, and agree that it surely doesn't deserve to be labelled as a mundane or humdrum commodity which has a homogeneous taste and flavour, like water, salt, and sugar. Besides all the pages on benefits of honey, perhaps one of the most well-received topics in this web resource is related to those exotic, tantalizing recipes which I have specially created and developed using honey. I think this is what makes the honey recipes here different from the massive number of honey recipes available out there…..exotic! Continue Prologue in Honey Health Benefits. Ruth TanAuthor and Founderwww-benefits-of-honey.com