



Our Future Flies on the Wings of Pollinators

Laurie Adams, Pollinator Partnership

Michael Ruggiero, North American Pollinator Protection Campaign

Sponsored by USDA Forest Service

UN CSD 16

New York, New York

5 May 2008

**POLLINATOR
PARTNERSHIP**



- What is pollination?
- Why is it important?
- What is the status of pollinators?
- What is being done?
- What you can do
- Questions and discussion

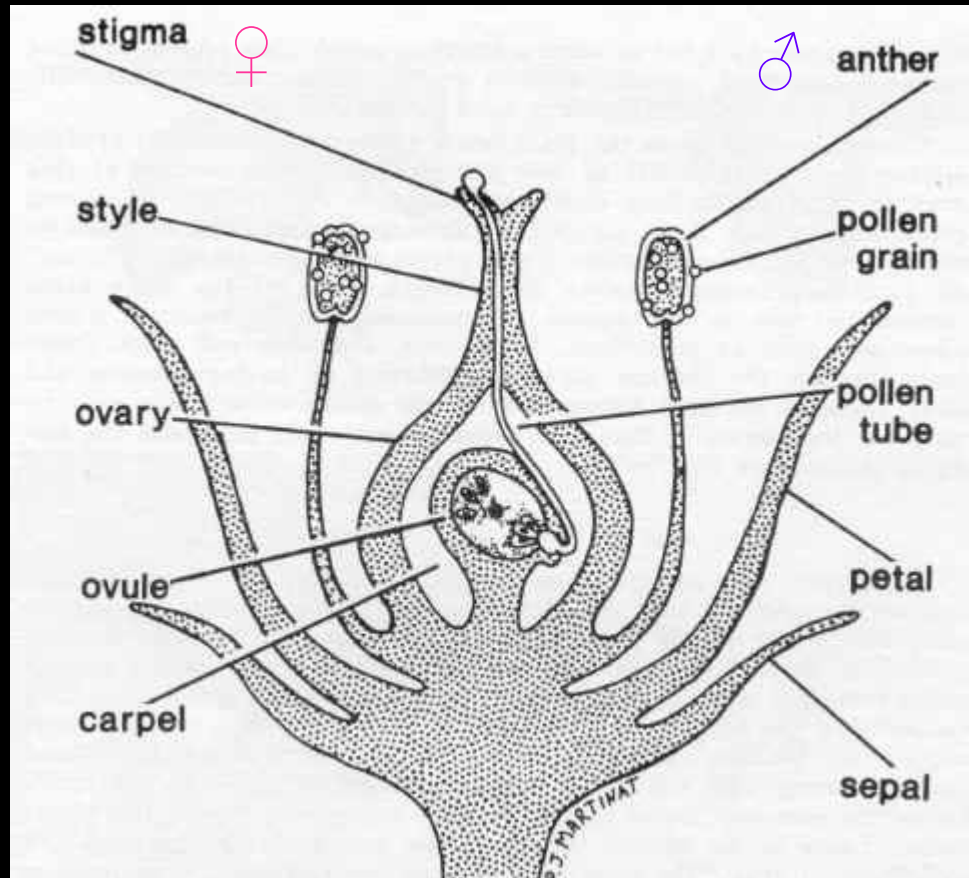


EVERY THIRD BITE



What is pollination?

Transfer of pollen from anther (male part) to stigma (female part) of plant





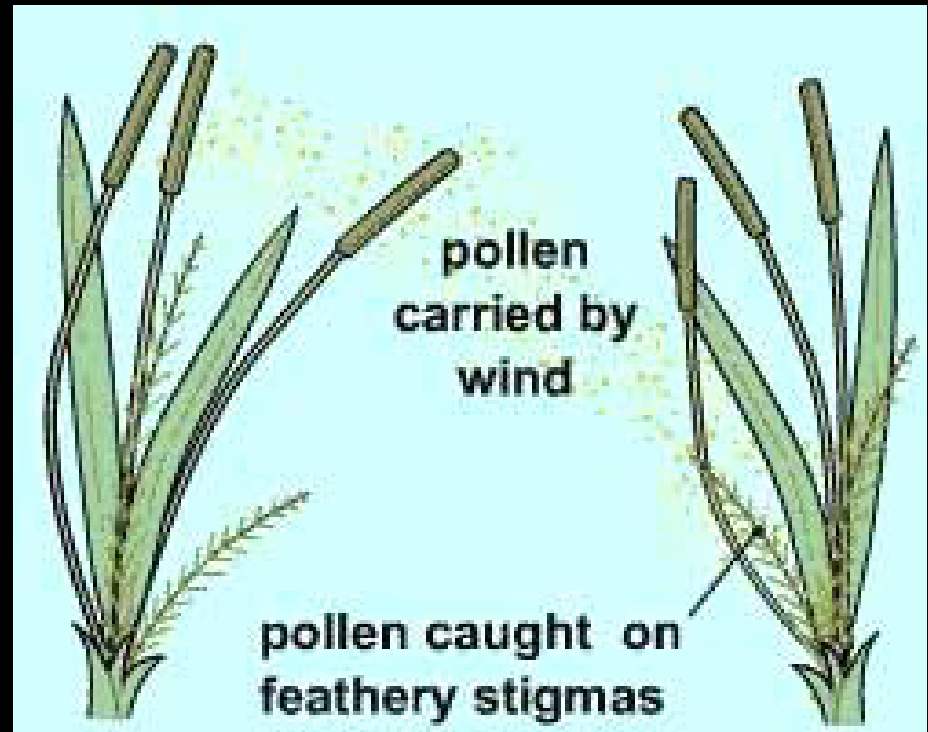
Kinds of pollination

Self
Wind
Water
Animal



Pollination by Wind

- **Wheat**
- **Corn**
- **Rice**
- **Oats**
- **Barley**

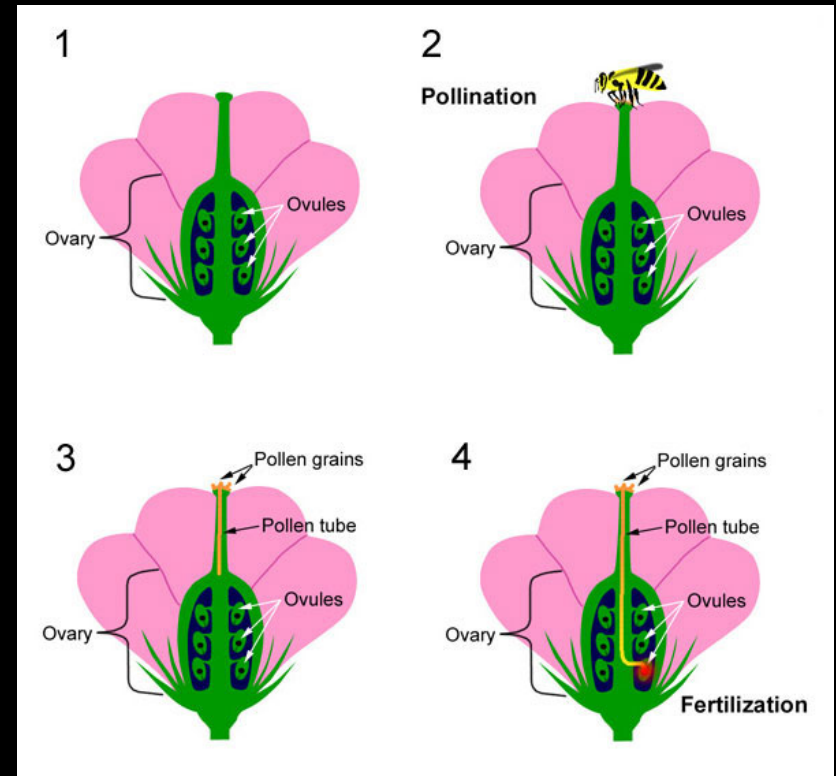




Pollination by Animals

almonds
broccoli
peppers
cashews
cauliflower
collards
cucumbers
eggplant
gourds
kale
kholrabi

lemon
lettuce
mustard
muskmelon
okra
parsley
parsnip
pumpkins
rutabaga
squashes
watermelons
and more . .





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Insect Pollinators





Vertebrate Pollinators



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Vanilla and Bees





Chocolate and Flies





Palm Oil and Beetles





Poor Pollination





If We Lose the Pollinators, We Inherit their Work





Feeding the world's human
population

Feeding and sheltering the
world's wildlife



Worldwide pollinators are showing signs of decline



DECLINE

Managed Pollinators

- Honey Bees
- Colony Collapse Disorder (CCD)

Native Pollinators

- Bumble Bees



US Annual Average Loss

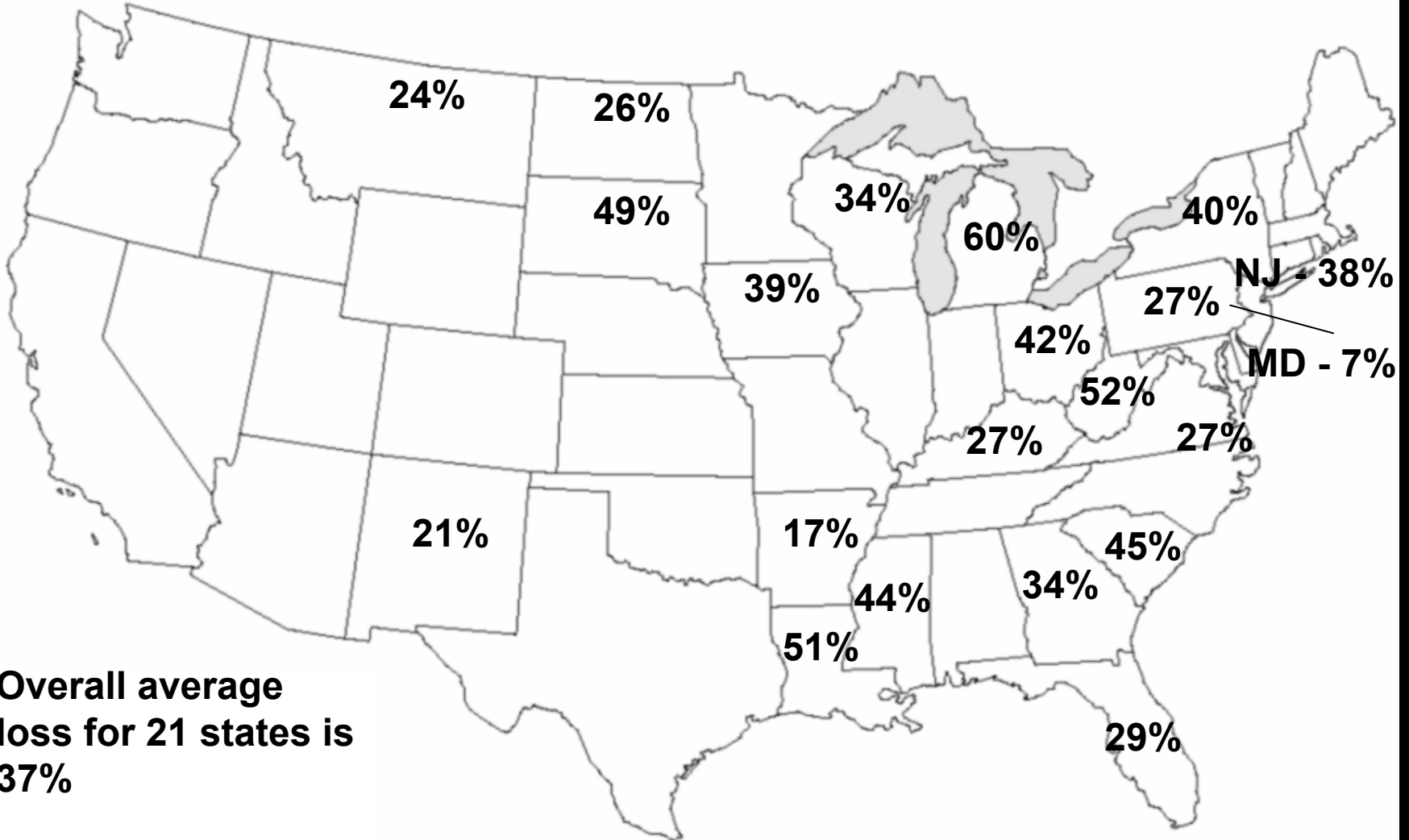
1987 – 5-10%

2006 – 25%

2007 – 31%

2008 – 35%

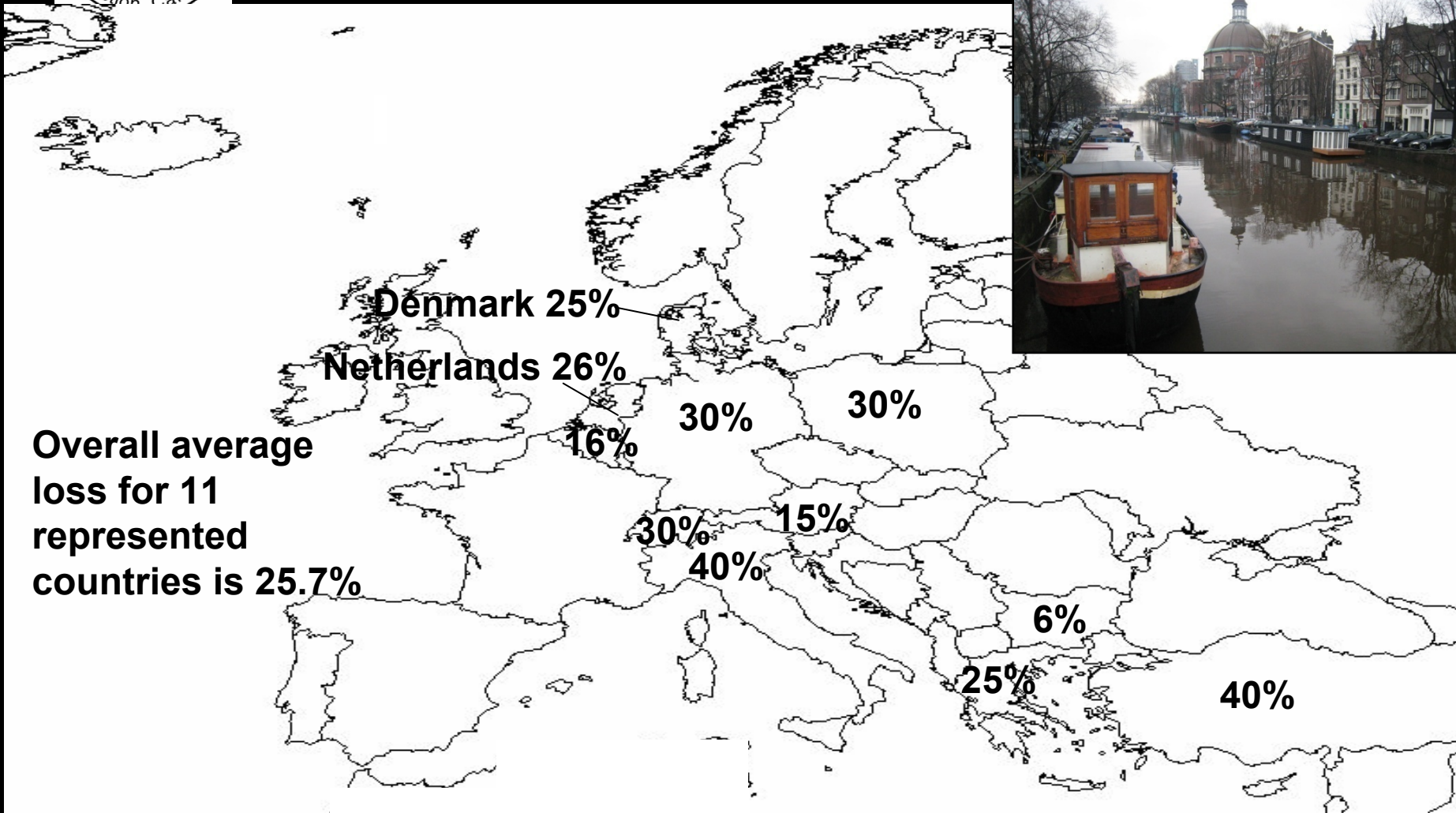




**Overall average
loss for 21 states is
37%**



European Colony Losses, Fall / Winter 2007-08





Causes: A combination of stresses

- Invasive species
- Loss of habitat
- Pesticides and herbicides
- Disease
- Nutritional deficiencies



What is being done in North America?



North American Pollinator Protection Campaign NAPPC

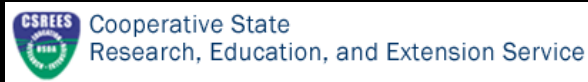


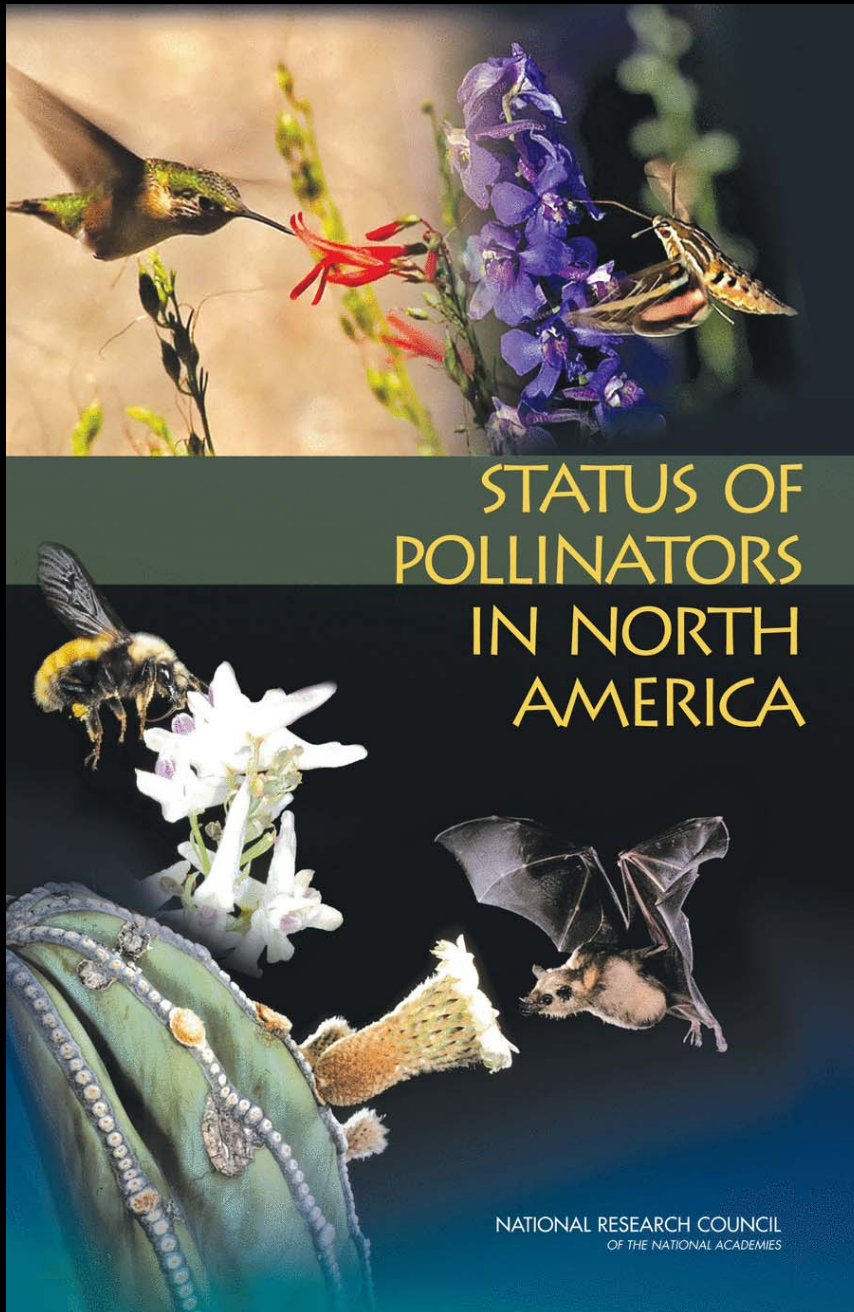
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Some NAPPCC Partners



Park Service
Department of the Interior





NAS NRC STUDY

USDA ARS

USGS

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Research

CCD Working Group –

USDA ARS, CSREES

Penn State University

Columbia University

University of California, Berkeley

Apiary Inspectors of America

American Beekeeping Federation

More





Research

7 Honey Bee Health Grants

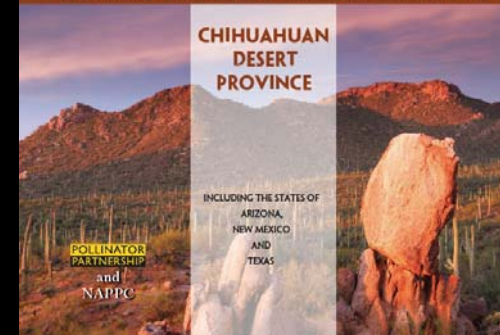
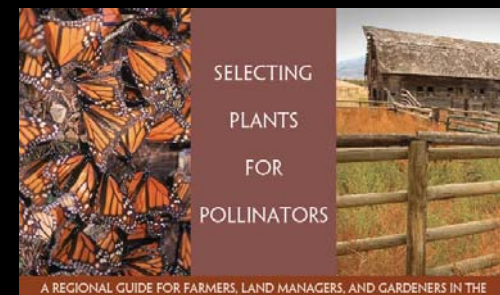
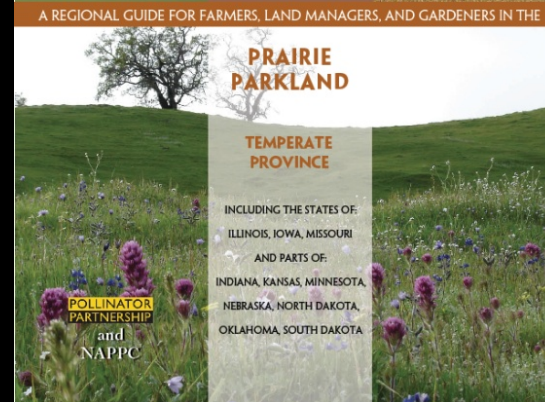
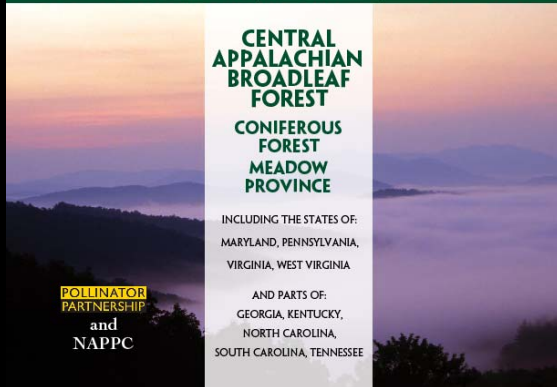
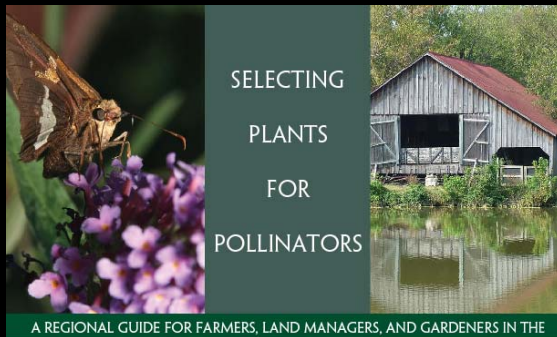




Advocacy



Online Eco-regional Planting Guides



USDA
Forest Service

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Pollinator-friendly Plantings

Native plants

Drought tolerant

Increase carbon sequestration

Prevent soil erosion

Influence crops and native environment for 2 KM

Increase productivity

Provide economic benefits for the individuals



US Postal Service Pollination Stamps

Public Education



©2006 USPS

Preliminary Design

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US Postal Service Pollination Stamps



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Preliminary Design



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US Postal Service Pollination Stamps



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Preliminary Design



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Preliminary Design

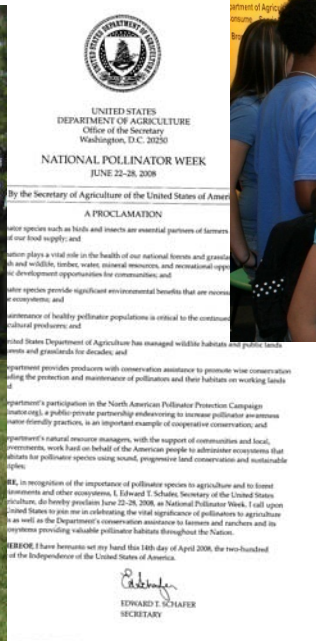


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National Pollinator Week

June 22-28, 2008



Proclamation by US
Sec. of Agriculture

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AGREEMENTS - MOU's

1.5 Billion Acres

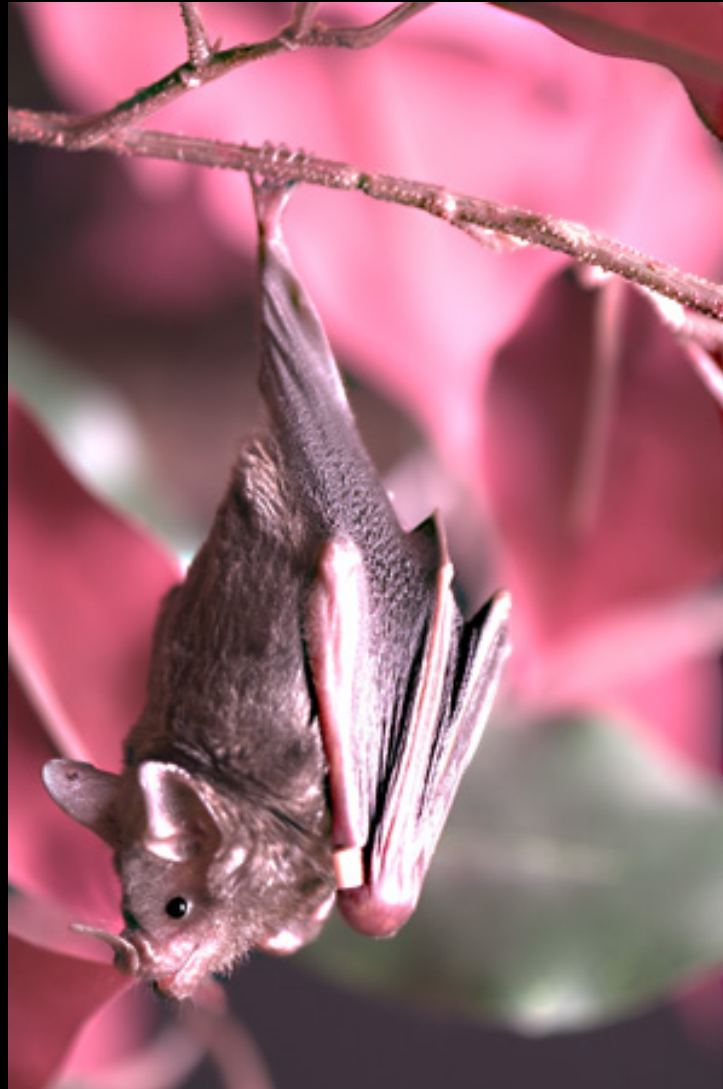




Awards



www.pollinator.org



**POLLINATOR
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www.nappcc.org



NAPPC

A PROJECT OF THE COEVOLUTION INSTITUTE

North American Pollinator Protection Campaign

Working to protect the pollinators of the North American Continent

Pollinators



Indispensable partners in an estimated 1/3 of the food consumed by humans, pollinators allow the reproduction of more than 90% of flowering plants. Today their existence is threatened. [Learn More](#)

Plans & Projects



40 affiliated organizations, working to implement, promote and support a clear, continent-wide Action Plan to encourage activities to increases in numbers and health of both resident and migratory pollinating animals. [Learn More](#)

Partners



Partners of the NAPPC are organizations representing agriculture, the environment, education, science and private industry. [Learn More](#)

Photography by Jay Cossey

Our Mission

To encourage the health of resident and migratory pollinating animals in North America.

Please join us in achieving our Goals.

Send emails to NAPPC@coevolution.org.

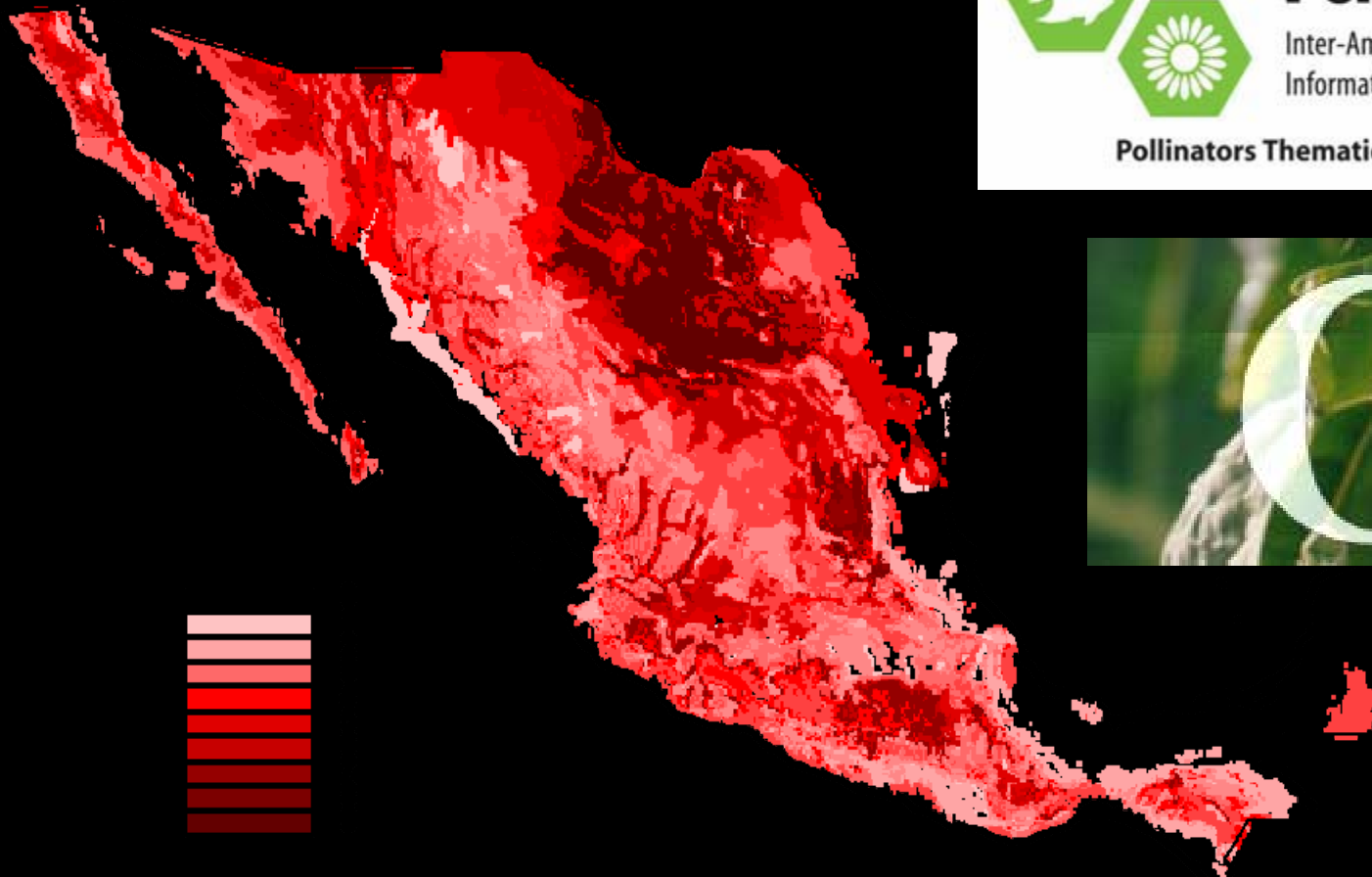
North American Pollinator Protection Campaign
A project of
the Coevolution Institute
423 Washington Street 4th Floor
San Francisco, CA 9411-2339

Phone 1-888-590-6060
Fax 1-415-362-3070

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DATA



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Pollinator Partnership Funding

- Public
- Private
- Leveraged





International Activities for Pollinators





Pollinators by the Numbers

- **80% of the world's flowering plants.**
- **90% percent of food crops for 146 countries**
- **\$200 billion annually**



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International Pollinator Initiative (IPI)

- 1996: CBD COP 3
- 1998: Sao Paulo Declaration on Pollinators
- 2002: CBD COP 6



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IPI GOALS

- Monitor Decline
- Address Taxonomic Impediment
- Assess Economic Value
- Promote Conservation and Sustainable Use





Elements of IPI Implementation

- Assessment
- Adaptive Management
- Capacity Building
- Mainstreaming



ASSESSMENT

- **Monitor Status and Trends**
- **Assess Economic Value**
- **Assess Knowledge**
- **Promote Identification Keys**



ADAPTIVE MANAGEMENT

- Conduct Case Studies
- Disseminate Information on Best Practices
- Promote Methods of Sustainable Agriculture



CAPACITY BUILDING

- Promote Awareness
- Promote Policy Improvements
- Promote Local Capabilities
- Build Taxonomic Capacity
- Exchange Regional and International Information

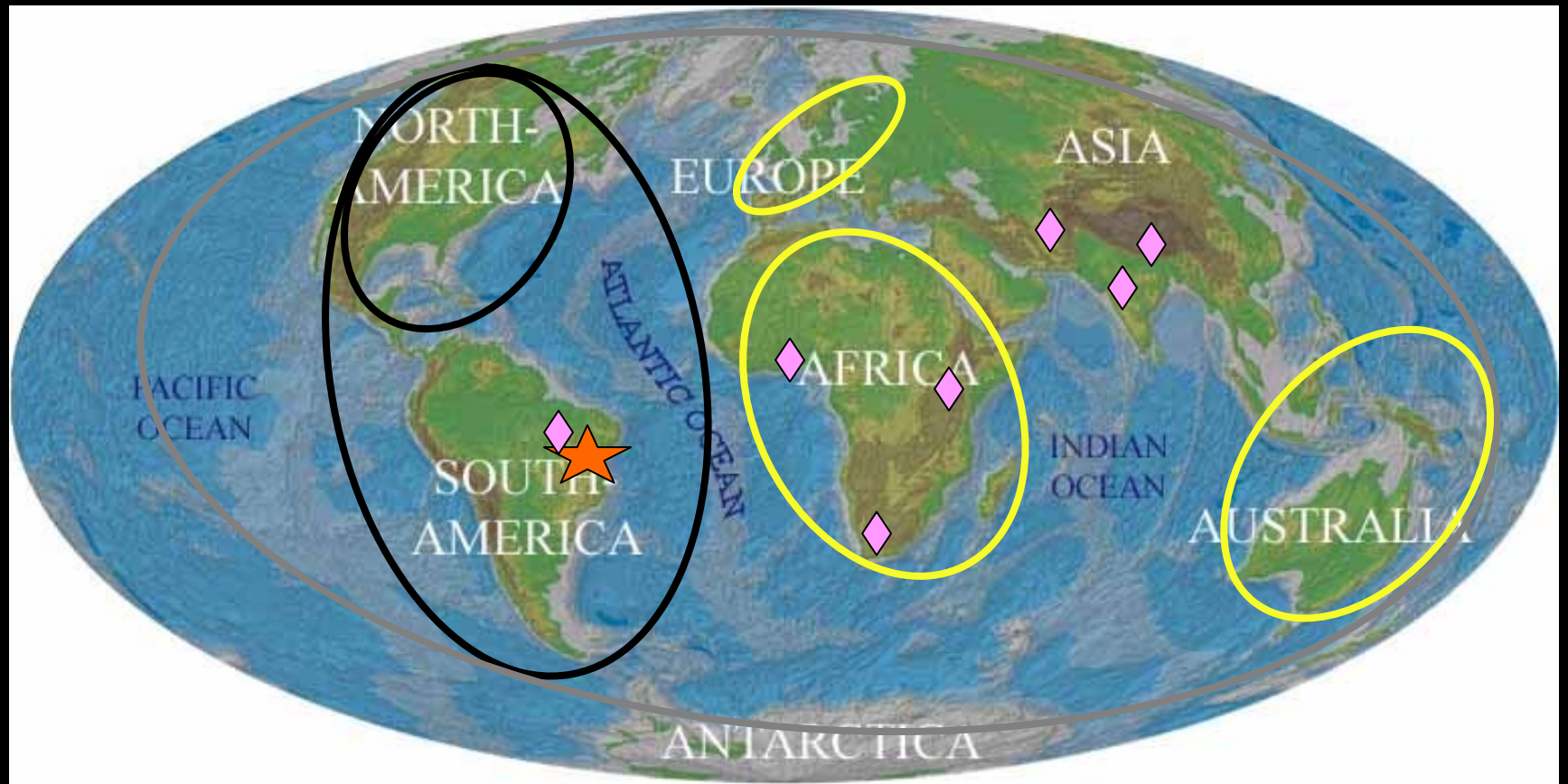


MAINSTREAMING

- Integrate Pollinator Diversity and Agricultural Biodiversity
- Strengthen Reporting Systems
- Strengthen National Institutions in Pollinator Taxonomy
- Improve Education about Pollinators



International Pollinator Activities





International Pollinator Activities

- Brazilian Pollinator Initiative
- North American Pollinator Protection Campaign
- African Pollinator Initiative
- European Pollinator Initiative
- Oceania Pollinator Initiative
- IABIN Pollinator Thematic Network
- GEF/FAO Pollinator Project
- GBIF Global Pollinator Species Campaign





IABIN PTN Vision

Pollinator Thematic Network for the Americas

- integration of information about pollinators
- efficient retrieval system





IABIN PTN Partners

- **Pollinator Partnership**
- **University of Sao Paulo**
- **Integrated Taxonomic Information System**
- **National Biological Information Infrastructure (NBII)**
- **GEF/World Bank Funded, OAS Administered**




Information Needs Assessment

CUESTIONARIO DE LA RED TEMÁTICA DE POLINIZADORES IABIN Salida >>

QUESTIONÁRIO DA REDE TEMÁTICA DE POLINIZADORES (PTN) DA IABIN Retire este exame >>

QUESTIONNAIRE DU RÉSEAU THÉMATIQUE SUR LES POLLINISATEURS (RTP) DE L'IABIN Sortie >>

IABIN POLLINATORS THEMATIC NETWORK (PTN) QUESTIONNAIRE Exit this survey >>

 **iabin**
Inter-American Biodiversity Information Network

Pollinators Thematic Network (PTN)

The Inter-American Biodiversity Information Network (IABIN) is an initiative of the countries of the Americas to promote compatible means of collection, communication, and exchange of biodiversity information relevant to decision-making and education using the Internet. IABIN is building Internet "portals," which are segmented into specific topic categories, including the Pollinators Thematic Network (PTN).

The questionnaire you have been asked to complete is the first step in the process of building the IABIN Pollinators Thematic Network (PTN), a portal for information about pollinators and plants. There are two purposes for the questionnaire:

- To discover the needs of potential users of the PTN
- To find resources for information that might be accessed through the PTN

There are five parts to the questionnaire. They are:



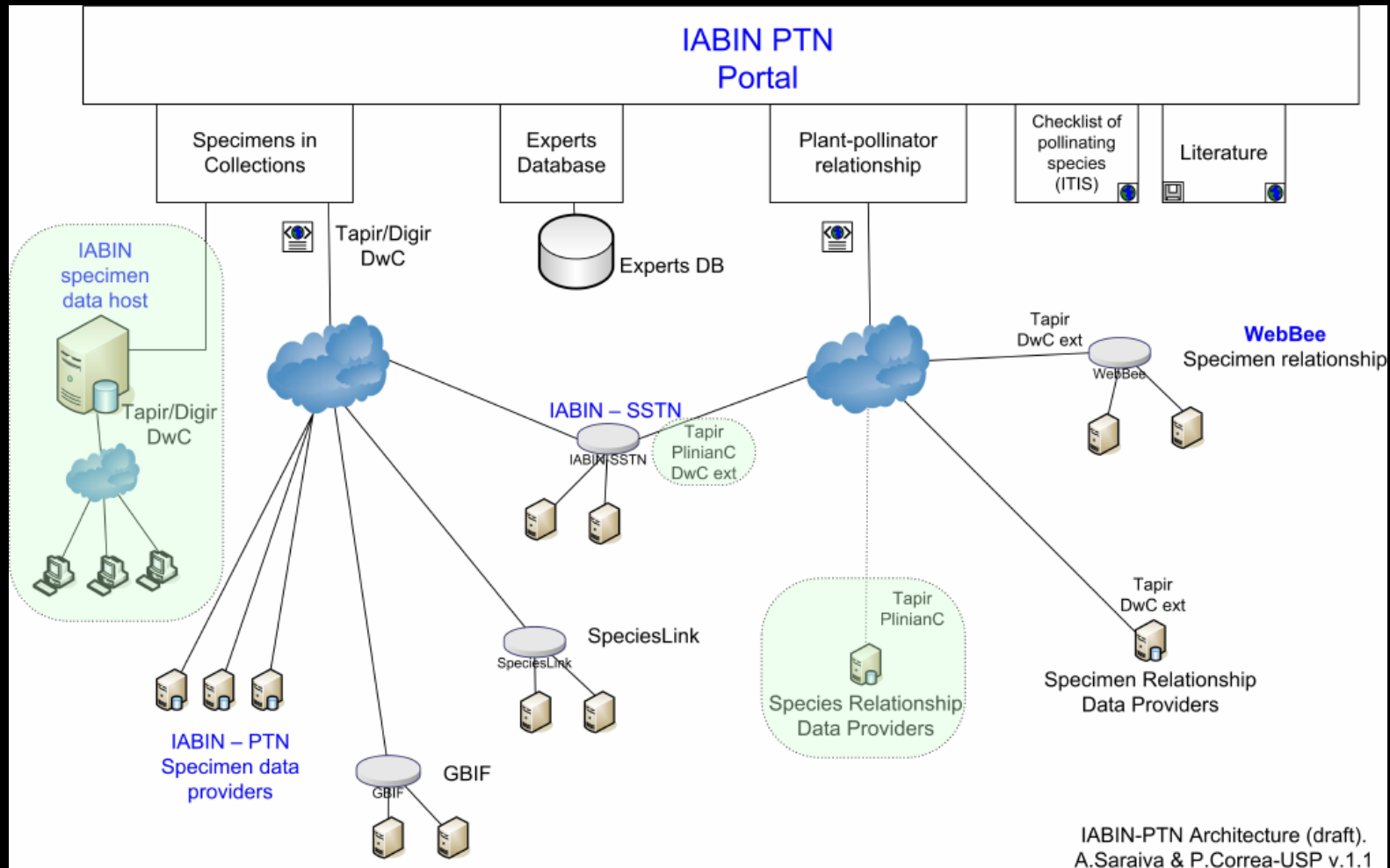
IABIN PTN Content

- **Scientific and common names**
- **Experts**
- **Specimens and observations**
- **Pollinator-plant relationships**
- **Literature**





IABIN PTN Architecture





Specimen Records

- 82 major collections of bee specimens for the Americas
- 2.8 Million bee specimens in the Americas





Experts



Inter-American Biodiversity Information Network
IABIN Pollinators Thematic Network (PTN)

Authorized Users:
Username

Password

IABIN Pollinators Thematic Network Database of Pollinator Experts

Welcome to the IABIN-PTN Database of Pollinator Experts. Use the [search criteria](#) to find pollinator experts located in or with knowledge of pollinators in South, Central, and North America, and the Caribbean. These experts have agreed to be listed in this database so that they can increase our global knowledge of pollinators by sharing their expertise in ecology, biology, taxonomy, identification, and other areas related to pollinators.

This database was designed by [The Agricultural Automation Lab](#) and the [Pollinators Thematic Network \(PTN\)](#) of the [Inter-American Biodiversity Information Network \(IABIN\)](#).

Search Experts

Other Resources for Taxonomic Experts list:

- [Taxonomic Resources and Expertise Directory \(TRED\)](#)
- [Pollinator Conservation Digital Library \(PCDL\)](#)
- [North American Pollinator Protection Campaign - NAPPC](#)
- [United States Department of Agriculture Bee Research Laboratory](#)
- [United States Geological Survey Native Bee Research Laboratory](#)

This database was designed by [The Agricultural Automation Lab](#) and the [Pollinators Thematic Network \(PTN\)](#) of the [Inter-American Biodiversity Information Network \(IABIN\)](#).

The web site is hosted by the University of Sao Paulo and hosted by Funda^ço de Amparo ^Resquisa do Estado de S^C Paulo (FAPESP).



Plant-Pollinator Relationship

br en

 **iabin**
Inter-American Biodiversity Information Network

Cadastro de Indivíduos e Observações em Espanhol

Registrar DWC Registrar DWC+Ext

Specimens

Record-Level Elements Cadastro

idinstitutioncode Outross Indispensa

idcollectioncode Outross Indispensa

Taxonomic Elements Cadastro

highertaxon Apagado

nomenclaturalcode Apagado

Collecting Elements Cadastro


collectingname Apagado

validdistributionflag Apagado

Locality Elements Cadastro



Taxonomic Checklists

 [Inicio](#) Español

Sistema Integrado de Información Taxonómica
- SIIT * América del Norte

[Canadá](#) · [Mexico](#) · [Estados Unidos](#)

[Obtener los datos siguientes en formato XML](#)

Nombre Científico: *Apoidea*
TSN: 154344

Nomenclatura y Taxonomía

Reino:	<i>Animalia</i>
Valor:	Superfamilia
Sinónimo(s):	<i>Sphecoidea</i>

Nombre(s) vernacular(es): bees [Inglés]

Estatus Taxonómico: **válido**

Data Quality Indicators:
Record Credibility Rating: verificado
Global Species Completeness: parcial
Evaluación o clasificación actual: Latest Record Review 2006

Organización taxonómica

[Obtener los datos siguientes en formato XML](#)

-hasta el Reino
[Obtener los datos siguientes en formato XML](#)

Reino	Animalia
Phylum	Arthropoda
Subphylum	Hexapoda
Clase	Insecta
Subclase	Pterygota
Infraclase	Neoptera
Orden	Hymenoptera
Suborden	Apocrita
Infraorden	Aculeata
Superfamilia	Apoidea

- incluye **5 890 taxa validado** (5 850 verificado)
- 188427 Biological records for **2 833 taxa subordinado**

-hacia abajo un nivel
[Obtener los datos siguientes en formato XML](#)

Familia	Ampulicidae
Familia	Andreidae
Familia	Angarosphecidae
Familia	Apidae
Familia	Colletidae
Familia	Crabronidae
Familia	Halictidae
Familia	Heterogynaidae
Familia	Megachilidae
Familia	Melittidae
Familia	Paleomelittidae
Familia	Sphecidae
Familia	Stenotritidae



Literature



Carl F. W. Muesebeck

This catalog is dedicated to our cherished colleague with affectionate regard for his kindness and with admiration for his distinguished scholarly contributions to our knowledge of North American Hymenoptera for more than half a century.

Catalog of Hymenoptera in America North of Mexico

Prepared cooperatively by
specialists on the various groups of Hymenoptera
under the direction of

Karl V. Krombein and Paul D. Hurd, Jr.
Smithsonian Institution

and

David R. Smith and B. D. Burks
Systematic Entomology Laboratory,
Insect Identification and Beneficial Insect Introduction Institute
Science and Education Administration,
United States Department of Agriculture

VOLUME 2

Apoerita (Aculeata)

SMITHSONIAN INSTITUTION PRESS
Washington, D.C.
1979



GBIF Global Pollinator Species Campaign

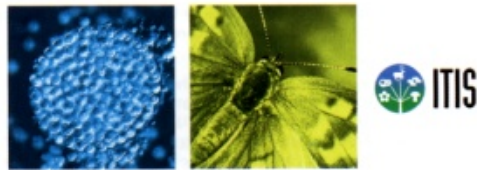
Global Extension of IABIN PTN

- **World Checklist of All Pollinating Species**
- **Searchable Records from Major Collections and Observations**
- **Plant and Pollinator Associations**
- **Identification Capability**
- **Status and Trends**



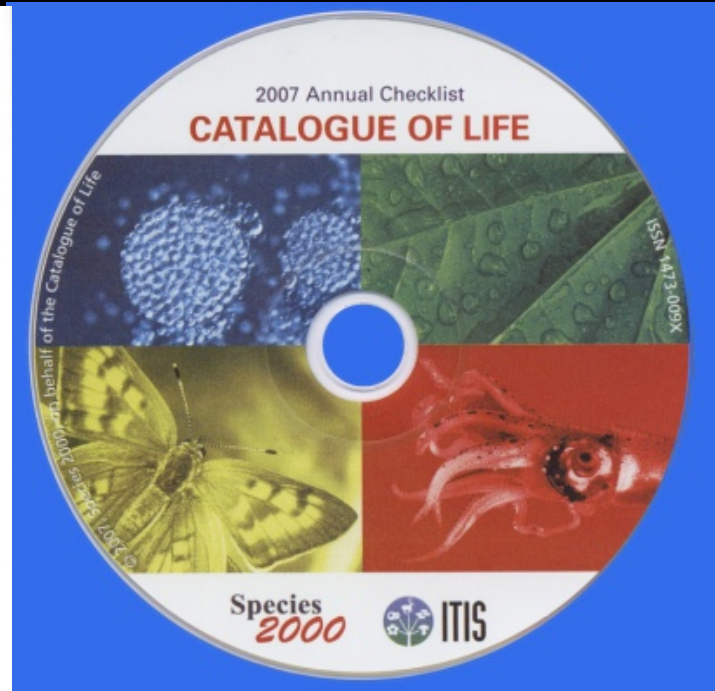
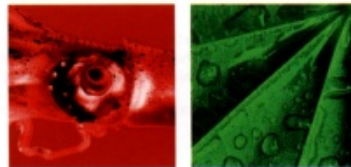
World Bee Checklist

CATALOGUE OF LIFE 2007 Annual Checklist



One Million Species

Species
2000





Important Bee Collections

Location	World	AF	AS	AU	CA	EU	NA	SA
Africa		9						
Asia			12					1
Australia				5				2
C. America					2			2
Europe	3	18	7	1	4	23	1	18
N. America	5	4	1	2	15		29	7
S. America					1			32
Global	8	31	20	8	22	23	30	64



Bees of China





Identification Keys

- Regional Keys to Genera
- Barcode of Life

BOLDSYSTEMS | Taxonomy Browser

Bombus {genus}
Species (123)

- Bombus affinis [1]
- Bombus alboanalis [4]
- Bombus anachoreta [1]
- Bombus appositus [3]
- Bombus ardens [50]
- Bombus argillaceus [1]
- Bombus ashtoni [3]
- Bombus balteatus [4]
- Bombus barbutellus [2]
- Bombus beaticola [6]
- Bombus bicoloratus [1]
- Bombus bifarius nearcticus [1]
- Bombus bimaculatus [17]
- Bombus bohemicus [4]
- Bombus borealis [8]
- Bombus caliginosus [2]
- Bombus campestris [2]
- Bombus centralis [4]
- Bombus cingulatus [5]
- Bombus citrinus [9]
- Bombus confusus [1]
- Bombus consobrinus [7]
- Bombus cryptarum [9]
- Bombus dahlbomii [1]
- Bombus dahlbomii [1]
- Bombus defector [1]
- Bombus deuteronymus [7]
- Bombus diversus [5]
- Bombus edwardsii [2]

Lineage : Arthropoda; Insecta; Hymenoptera; Apidae;
 Specimen Records : 566
 Specimens with Barcodes : 399
 Public Sequences : 276 (Download)

Barcodes :
 Species :
 Deposited in :

*Reference barcodes are a validated subset of the full database containing only those species represented by three or more individuals showing less than 2% sequence divergence.

Collected in the following 4 countries :
 ■ Belgium [1] ■ Canada [121] ■ United States [21] ■ unspecified [680]

Specimen Age Distribution



What you can do



Resource Management

Conserve habitat (e.g. marginal lands)

Protect native species

Eliminate pesticide problems

Regulate importation and movement



Education and Advocacy

Teach about pollinators

Policy incentives

Agreements





Information and Assessment

Create baseline data

Monitor

Join international groups and networks





Pollination is vital for agriculture
and ecosystems



www.pollinator.org
www.nappc.org

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