

Cactoblastis cactorum 

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Lepidoptera	Pyralidae

Common name prickly pear moth (English), cactus moth (English)

Synonym *Zophodia cactorum* , Berg

Similar species *Phycitinae*

Summary *Cactoblastis cactorum* is a moth that preys specifically on cacti species. It has been introduced in various locations around the globe to provide biological control of invasive cacti species and has proved itself successful in Australia and some Caribbean islands. However, from the Caribbean it spread into Florida and has attacked non-target cacti species. It is feared that it will cause large scale losses of native cacti diversity in North America and possibly have a large economic, social and ecological impact in *Opuntia* rich areas of southwestern USA and Mexico.



[view this species on IUCN Red List](#)

Species Description

Females of *Cactoblastis cactorum* have a wingspan of 27-40mm, whilst the males wingspan is slightly smaller (23-32mm). The adult is fawn with faint dark dots and lines on the wings. It normally rests with its wings wrapped around its body. The forewings are greyish brown but whiter toward the costal margin. Distinct black antemedial and subterminal lines are present. Hindwings are white, semihyaline at base, smoky brown on outer half with a dark line along the posterior margin. The average longevity of the adult is 9 days. The incubation period of eggs depends on temperature; the shortest time being 18 days. The eggs usually hatch in 23-28 days. Larvae are gregarious in nature, initially pinkish cream coloured, with black red dots on the back of each segment. Later instars become orange and the dots coalesce to become a dark band across each segment reaching up to 1.5cm. The pupa is enclosed in a fine white silk cocoon which consists of a loose outer covering and a more compact inner cocoon. Pupation sites are usually found among debris of rotting cladodes under stones, logs, bark and just beneath the surface of the soil. The average length of the pupal period is 21-28 days. (Jordan Golubov., pers. comm., 2005).

Lifecycle Stages

When fully grown the larvae exit the cladodes and individually drop to the ground and find pupation sites, usually in the debris of rotting cladodes (Jordan Golubov., pers. comm., 2005).

Uses

Cactoblastis cactorum is a voracious feeder on cacti in the genus *Opuntia* (prickly pear cacti) and is an example of a successful weed biological control programme. It was introduced from Argentina into Australia in the mid 1920's for the biological control of invasive and non-native *Opuntia*. *C. cactorum* was then intentionally spread from Australia into other countries with prickly pear problems (Solis et al. 2004).

Habitat Description

Cactoblastis cactorum require *Opuntia* cacti species to lay their eggs upon.



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Cactoblastis cactorum*

Reproduction

Oviposition is normally at dusk or early dawn and may be responding to CO₂ concentrations around pads (Stange, 1997; Stange *et al* 1995). The number of eggs in a stick varies greatly but the average contain from 76-90 eggs. Each female can deposit several eggsticks; 3-4 but can frequently lay 8-12. In Australia, mating takes place during the early morning hours and copulation has never been documented at night, or after 2100hrs. Adults normally remain inactive during daylight hours. In South Africa, sexual activity is found on the first and second night after adult emergence. In Florida, peak periods of sexual activity begin between nautical and civil twilight and ends before sunrise (for a detailed behavioural sequence of sexual activity see Hight *et al.* 2003)

Nutrition

On hatching, all larvae from one eggstick enter the plant at one point. They tunnel freely within the cladodes, consuming the whole of the interior except the vascular bundles and leaving the undamaged cuticle as a transparent tissue. Burrowing activity usually causes secondary bacterial activity which hastens the destruction of cladodes. When one cladode has been eaten or decayed, the larvae may penetrate into the next segment. During this process the colony usually divides into two or more groups. Adults have no functional mouthparts and emerge only to reproduce (Jordan Golubov., pers. comm., 2005).

General Impacts

Stiling (2002) states that, "*Cactoblastis cactorum* oviposits by gluing sticks of about 50-90 eggs on cactus spines. The gregarious larvae bore into the pads or cladodes, devouring them from the inside. About four pads are needed for the development of the larvae from a complete egg stick." The authors also report that, "There are at least 31 species of prickly pear in the US that are likely to be attacked by *C. cactorum* and 56 species in Mexico. As well as the threat to wild cacti, there are over 250,000ha of *Opuntia* plantations in Mexico that support a thriving agricultural industry, most of which is centered on harvesting fruits or pads." Stiling (2002) reports that "As well as its commercial value, *Opuntia* is used by a whole community of organisms (109 species of invertebrates, 9 species of reptiles, 54 mammals and 25 species of birds)". Viguera and Portillo, 2001; Mellink and Rojas-Lopez, 2002).

Management Info

For details on preventative measures, chemical, physical, and biological control options of *Cactoblastis cactorum*, please see [management information compiled by ISSG](#).

Pathway

Cactoblastis cactorum was introduced to St Kitts, Nevis and Montserrat in the Caribbean (Pemberton, 1995). *Cactoblastis cactorum* in the Florida Keys may have been the result of the moth naturally dispersing across the Caribbean, or it may have been introduced unintentionally on horticultural prickly pear cacti imported into Florida (Solis *et al.*

Principal source: Stiling, 2002. Potential non-target effects of a biological control agent, prickly pear moth, *Cactoblastis cactorum* (Berg) (Lepidoptera: Pyralidae), in North America, and possible management actions. *Biological Invasions* 4: 273-281

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Dr. Jordan K. Golubov\ Profesor-Investigador Titular C\ Lab. Sistemática y Ecología Vegetal\ Departamento El Hombre y Su Ambiente\ Universidad Autónoma Metropolitana -- Xochimilco Mexico

Publication date: 2008-03-27

ALIEN RANGE

[1] AFRICA	[1] ANTIGUA AND BARBUDA
[1] AUSTRALIA	[1] BAHAMAS
[1] CAYMAN ISLANDS	[1] CUBA
[1] KENYA	[1] MONTSERRAT
[1] NEW CALEDONIA	[1] PAKISTAN
[1] PUERTO RICO	[2] SAINT HELENA
[1] SAINT KITTS AND NEVIS	[1] SOUTH AFRICA
[25] UNITED STATES	[1] VIRGIN ISLANDS, U.S.

BIBLIOGRAPHY

27 references found for *Cactoblastis cactorum*

Management information

[Bloem, S., Hight, S., Carpenter, J and Bloem, K., 2005. Development of the Most Effective Trap to Monitor the Geographical Expansion of the Cactus Moth *Cactoblastis cactorum* \(Lepidoptera: Pyralidae\) \(Submitted to: Florida Entomologist\)](#)

Summary: Interpretative summary and technical abstract available from:

http://www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=173010 [Accessed 17 May 2005]

Dodd, A. P. 1940. The biological campaign against prickly pear. Commonwealth Prickly Pear Board, Brisbane, Australia.

[Florida Entomologist December 2001 \(vol. 84, no. 4, pages 465-751\)](#)

Summary: Issue devoted to *Cactoblastis cactorum*.

Available from: <http://www.fcla.edu/FlaEnt/fe844.htm>

Online issues of Florida Entomologist from 1994 to current issues available from: <http://www.fcla.edu/FlaEnt/feissues.htm>. All articles are freely accessible in PDF format. [Accessed 17 May 2005]

[Hight, S., Carpenter, J., Bloem, S and Bloem, K., 2005. Developing a Sterile Insect Release Program for *Cactoblastis cactorum* \(BERG.\) \(Lepidoptera: Pyralidae\): Effective Overflooding Ratios and Release-Recapture Field Studies \(Submitted to: Environmental Entomology\)](#)

Summary: Interpretative summary and technical abstract available from:

http://www.ars.usda.gov/research/publications/publications.htm?SEQ_NO_115=170145 [Accessed 17 May 2005]

Hight, S. D., J. E. Carpenter, K. A. Bloem, S. Bloem, R. W. Pemberton, and P. Stiling. 2002. Expanding Geographic Range of *Cactoblastis cactorum* (Lepidoptera: Pyralidae) In North America. Florida Entomologist 85(3): 527-529.

[International Atomic Energy Agency \(IAEA\), 2002. Mitigating the Threat of *Cactoblastis cactorum* to International Agriculture and Ecological Systems and Biodiversity: Report and Recommendations of a Consultants Group Meeting organized by the Technical Co-operation Department of the IAEA and the Joint FAO/IAEA Division of Nuclear Applications in Food and Agriculture, Vienna, Austria, July 2002.](#)

Summary: Available from: http://tc.iaea.org/tcweb/abouttc/strategy/thematic/pdf/reports/Thematic_plan_cactus.pdf [Accessed 20 May 2006]

Leibee, G. L., and L. S. Osborne. 2001. Chemical control of *Cactoblastis cactorum* (Lepidoptera: Pyralidae). Florida Entomologist 84(4): 510-513.

Mahr, D. L. 2001. *Cactoblastis cactorum* (Lepidoptera: Pyralidae) in North America. A Workshop of Assessment and Planning. Florida Entomologist 84(4): 465-474.

Pemberton, R. W., and H. A. Cordo. 2001. Potential and risks of biological control of *Cactoblastis cactorum* (Lepidoptera: Pyralidae) In North America. Florida Entomologist 84(4).

Petty, F. W. 1948. The biological control of prickly pear in South Africa. Sci. Bull. Dept of Agri. Union of South Africa 271: 1-163.

Robertson, H. G. 1988. Spatial and temporal patterns of predation by ants on eggs of *Cactoblastis cactorum*. Ecological Entomology 13: 207-214.

Soberon, J., J. Golubov, and J. Sarukhan. 2001. The Importance of *Opuntia* in Mexico and routes of invasion and impact of *Cactoblastis cactorum* (Lepidoptera: Pyralidae). Florida Entomologist 84(4).

Solis, M. A., D. H. Stempfen, and D. R. Gordon. 2004. Tracking the Cactus Moth, *Cactoblastis cactorum* Berg., as it flies and eats its way westward in the U.S. News of the Lepidopterists Society.

Stange, G. 1997. Effects of changes in atmospheric carbon dioxide on the location of host by the moth *Cactoblastis cactorum*. Oecologia 110: 539-545.

Stange, G., Monro, J., Stowe, S., and Osmond, C. B. 1995. the CO₂ sense of the moth *Cactoblastis cactorum* and its probable role in the biological control of the CAM plant *Opuntia stricta*. Oecologia 102: 341-352

Stiling, P. 2002. Potential non-target effects of a biological control agent, prickly pear moth, *Cactoblastis cactorum* (Berg) (Lepidoptera: Pyralidae), in North America, and possible management actions. Biological Invasions 4: 273-281, 2002.

[Varnham, K. 2006. Non-native species in UK Overseas Territories: a review. JNCC Report 372. Peterborough: United Kingdom.](#)

Summary: This database compiles information on alien species from British Overseas Territories.

Available from: <http://www.jncc.gov.uk/page-3660> [Accessed 10 November 2009]

General information



GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: *Cactoblastis cactorum*

[CONABIO. 2008. Sistema de información sobre especies invasoras en México. Especies invasoras - Insectos. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. Fecha de acceso.](#)

Summary: English:

The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (<http://www.conabio.gob.mx/invasoras/index.php/Portada>), under the section Novedades for information on updates.

Invasive species - insects is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Insectos [Accessed 30 July 2008]

Spanish:

La lista de especies del Sistema de información sobre especies invasoras de México cuenta actualmente con información acerca de nombre científico, familia, grupo y nombre común, así como también el hábitat, estado de la invasión en México, rutas de introducción y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la página de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualización, por favor consulte la portada (<http://www.conabio.gob.mx/invasoras/index.php/Portada>), en la sección novedades, para conocer los cambios.

Especies invasoras - Insectos is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Insectos [Accessed 30 July 2008]

Evans, D. H., and S. Crossley. 2004. *Cactoblastis cactorum* (Berg, 1885) (previously known as : *Zophodia cactorum*) Prickly Pear Moth *Phycitini*, Phycitinae. Australian Caterpillars.

Habeck, D. H., and K. A. Bennett. 2002. *Cactoblastis cactorum* (Berg) (Insecta: Lepidoptera: Pyralidae). Featured Creatures: University of Florida Institute of Food and Agricultural Sciences

Heinrich, C. 1939. The cactus feeding Phycitinae: a contribution toward a revision of the American Pyralidoid moths of the family Phycitidae. Proceedings of the National Museum Smithsonian Institution 86: 331-413.

Hight, S. D., S. Bloem, K. A. Bloem, and J. A. Carpenter. 2003. *Cactoblastis cactorum* (Lepidoptera: Pyralidae): observations of courtship and mating behaviors at two locations on the Gulf coast of Florida. Florida Entomologist 86: 400-408.

Johnson, D. M., and D. S. Stiling. 1998. Distribution and dispersal of *Cactoblastis cactorum* (Lepidoptera: Pyralidae), and exotic opuntia-feeding moth. Florida Entomologist 81(1): 12-21.

Mann, J. 1969. Cactus feeding insects and mites. Bulletin 256. Smithsonian Institution Press. Washington D. C., USA

Mellink, E., and M. Rojas-Lopez. 2002. Consumption of *Platyopuntias* by wild vertebrates. In P. Nobel (ed) Cacti: Biology and Uses. Island Press, pages 109-123. California, USA.

Pemberton, R. W. 1995. *Cactoblastis cactorum* (Lepidoptera:Pyralidae) in the United States. An Immigrant biological control agent or an introduction of the nursery industry. American Entomology 41: 230-232.

Zimmermann, H. G.; V. C. Moran; J. H. Hoffmann., 2000. The renowned Cactus Moth, *Cactoblastis cactorum*: Its Natural History and Threat to Native Opuntia floras in Mexico and the United States of America. Diversity and Distributions, Vol. 6, No. 5. (Sep., 2000), pp. 259-269.