

U.S. FISH AND WILDLIFE SERVICE SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

Scientific Name:

Hypolimnas octocula mariannensis

Common Name:

Mariana Eight-Spot butterfly

Lead region:

Region 1 (Pacific Region)

Information current as of:

04/15/2012

Status/Action

☐ Funding provided for a proposed rule. Assessment not updated.

☐ Species Assessment - determined species did not meet the definition of the endangered or threatened under the Act and, therefore, was not elevated to the Candidate status.

☐ New Candidate

☒ Continuing Candidate

☐ Candidate Removal

☐ Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status

☐ Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species

☐ Range is no longer a U.S. territory

☐ Insufficient information exists on biological vulnerability and threats to support listing

☐ Taxon mistakenly included in past notice of review

☐ Taxon does not meet the definition of "species"

☐ Taxon believed to be extinct

☐ Conservation efforts have removed or reduced threats

___ More abundant than believed, diminished threats, or threats eliminated.

Petition Information

___ Non-Petitioned

X Petitioned - Date petition received: 05/11/2004

90-Day Positive:05/11/2005

12 Month Positive:10/26/2011

Did the Petition request a reclassification? **No**

For Petitioned Candidate species:

Is the listing warranted(if yes, see summary threats below) **Yes**

To Date, has publication of the proposal to list been precluded by other higher priority listing?
Yes

Explanation of why precluded:

Higher priority listing actions, including court-approved settlements, court-ordered and statutory deadlines for petition findings and listing determinations, emergency listing determinations, and responses to litigation, continue to preclude the proposed and final listing rules for this species. We continue to monitor populations and will change its status or implement an emergency listing if necessary. The Progress on Revising the Lists section of the current CNOR (<http://endangered.fws.gov/>) provides information on listing actions taken during the last 12 months.

Historical States/Territories/Countries of Occurrence:

- **States/US Territories:** Guam, Northern Mariana Islands
- **US Counties:** Guam, GU, Saipan, MP
- **Countries:**Country information not available

Current States/Counties/Territories/Countries of Occurrence:

- **States/US Territories:** Guam, Northern Mariana Islands
- **US Counties:** Guam, GU, Saipan, MP
- **Countries:** United States

Land Ownership:

The lands that support populations of this butterfly are privately owned (three populations), the Government of Guam (one population), and the U.S. Department of Defense (DOD)(six populations).

Lead Region Contact:

ARD-ECOL SVCS, Marilet Zablan, 503-231-6131, marilet_zablan@fws.gov

Lead Field Office Contact:

PACIFIC ISLANDS FISH AND WILDL OFC, Christa Russell, (808) 792-9451, christa_russell@fws.gov

Biological Information

Species Description:

The Mariana eight spot butterfly (*Hypolimnys octocula marianensis*) is endemic to the islands of Guam and Saipan in the Mariana archipelago. Like most nymphalid butterflies, orange and black are the two primary colors exhibited by this subspecies. The males are smaller than the females by at least a third or more in size. Males are predominantly black with an orange stripe running vertically on each wing. The stripe on the hindwings exhibits small black dots in a vertical row. Overall, the females appear more orange in color than the males, and black bands across the apical (top) margins of both pair of wings are exhibited. Along the inner margin of these black bands, large white spots are exhibited across the entire length of the wings (Swezey 1942).

Taxonomy:

This subspecies was originally described by Butler and is recognized as a distinct taxon (Swezey 1942). Swezey (1942) is the most recent and accepted taxonomy for this species.

Habitat/Life History:

The larvae of this butterfly feed on two native plants, *Procris pedunculata* and *Elatostema calcareum*. Both of these forest herbs (Family Urticaceae) grow only on karst limestone (Schreiner and Nafus 1996).

Historical Range/Distribution:

The Mariana eight spot butterfly is historically known from limestone forests on Saipan and Guam.

Current Range Distribution:

The last known surveys for the Mariana eight spot butterfly was in 1995 (Schreiner and Nafus 1996). On Saipan, several areas were found that supported good populations of the host plants, but no individuals of the Mariana eight spot butterfly were seen and it may be extirpated on Saipan (Schreiner and Nafus 1996; Schreiner and Nafus 1997). Surveys on the island of Guam located 10 populations (Fadian Cove, Hilaan (2 populations), Mangilao golf course (2 populations), Orote, Pagat (2 populations), and Tweeds Cove (2 populations) of the Mariana eight spot butterfly (Schreiner and Nafus 1996).

Population Estimates/Status:

No quantitative estimates are given for the subspecies as a whole, however, Schreiner and Nafus (1996) noted on their surveys that the most butterflies seen in one day numbered six. In July of 2009 a survey of the Pagat Route 15 in Guam found one adult, likely a male (Campora and Lee 2009, p. 5). In 2011, 5 individual adult butterflies were spotted. Also, larvae and eggs were found in areas where the host plant was present (Janeke in litt. 2011). In July of 2011, 1 adult male and 1 adult female were spotted at Rte. 15S Guam International raceway site (1.5km N of trailhead to Pagat Cave). 9 eggs were also located on various types of *Procris* (Rubinoff, D. and Kawahara, A.Y. in litt., 2011).

Threats

A. The present or threatened destruction, modification, or curtailment of its habitat or range:

None known.

B. Overutilization for commercial, recreational, scientific, or educational purposes:

We are currently unaware if this species is being collected for commercial, recreational, scientific, or educational purposes. However, rare butterflies and moths are highly prized by collectors (Morris et al. 1991), who often take all individuals obtainable (59 FR 18350; United States Department of Justice (DOJ), in litt. 1993). The listing of butterflies as federally endangered may increase their attractiveness to collectors of rare species (DOJ, in litt. 1993). Unrestricted collecting and handling are known to impact populations of other species of rare Lepidoptera (Murphy 1988).

C. Disease or predation:

Numerous alien predators and parasitoids of Lepidoptera have become established, purposefully or adventitiously, in the Mariana Islands, including Guam and Saipan, and these have been documented to attack and significantly impact other species of native butterflies (Peterson 1957; Schreiner and Nafus 1986; Nafus 1989, 1992, 1993a, b, c). Schreiner and Nafus (1996) found that egg predation by ants and egg parasitism killed the majority of Mariana eight spot butterflies studied for a year on Guam.

In the one year study, Schreiner and Nafus (1996) documented parasitism of eggs of the Mariana eight spot butterfly by two native parasitoids *Telenomus* sp.(NCN) and *Ooencyrtus* sp.(NCN) on Guam.

Nafus (1993a) found ants to be major predators of both eggs and larvae of the common eggfly (*Hypolimnas bolina*), a closely related butterfly. The most commonly observed ants were dwarf peccidicel ants (*Tapinoma minutum*), tropical fire ants (*Solenopsis geminate*), white-footed ants (*Technomyrmex albipes*), and bi-colored trailing ants (*Monomorium floricola*). Ants prey on all immature stages of Lepidoptera and can completely exterminate populations (Zimmerman 1958). In the one year study, Schreiner and Nafus (1996) found predation by alien ants to be one of the primary causes of mortality (>90 percent) in the Mariana eight spot butterfly.

D. The inadequacy of existing regulatory mechanisms:

The Mariana eight spot butterfly currently receives no protection under the federal Endangered Species Act (16 U.S.C. §1531-1544) or the CNMI Endangered Species List (Public Law 2-51 CMC 5108b). It does receive protection under the Guam Endangered Species Act (5GCA Section 63205.(c)).

E. Other natural or manmade factors affecting its continued existence:

The Mariana eight spot butterfly persists in extremely low numbers on Guam. This circumstance makes it vulnerable to extinction due to a variety of natural processes. Small populations are particularly vulnerable to reduced reproductive vigor caused by inbreeding depression, and they may suffer a loss of genetic variability over time due to random genetic drift, resulting in decreased evolutionary potential and ability to cope with environmental change (Lande 1988; Pimm et al. 1988; Center for Conservation Biology 1994; Mangel and Tier 1994). Small populations are also demographically vulnerable to extinction caused by random fluctuations in population size and sex ratio, and to catastrophes such as typhoons (Lande 1988).

Conservation Measures Planned or Implemented :

In 2009, we provided field information sheets with color pictures and descriptions of the Mariana eight spot butterfly and its host plants to over 20 professional staff currently working in the field on the islands of Rota, Tinian, and Saipan. The sheets request that pictures, GPS points and field notes be provided to the U.S. Fish and Wildlife Service (Service) in an effort to obtain information on this species (Nate Hawley, formerly with the Service, in litt. 2009).

A survey led by the Service was conducted on the island of Tinian, CNMI from June through October, 2008, to determine the presence or absence of two butterfly species, Mariana wandering butterfly (*Vagrans egistina*) and the Mariana eight spot butterfly. While Tinian is not known to be part of either species' historical range the likelihood of introduced pests arriving on Tinian due to an increase in sea and air transports to this island is a concern for a suite of native butterfly species, including the Mariana eight spot butterfly. Additionally, any reduction of host plant sites for these two species may be of conservation concern if translocation to Tinian is considered in future recovery or enhancement plans. While four host plant areas were identified and monitored on Tinian, no life stages of either butterfly were found (Hawley 2009).

Surveys on Guam insect biodiversity are currently underway (C. Aguon, Guam Division of Aquatic and Wildlife Resources, in litt. 2009). In addition, a survey for the butterfly in Pagat was conducted between July 15 and July 24, 2009. While the survey was only able to confirm the presence of one adult male, they did find eggs, larvae, one viable chrysalis, and three empty chrysalides of *Hypolimnas*. Unfortunately, immature life stages are difficult to distinguish and therefore unless reared to adult form cannot be confirmed (Campora and Lee 2009, pp. 3-5).

The Service has recently contracted a University of Hawaii lepidopterist to conduct surveys for the butterfly in all previously known locations. These surveys are expected to begin in June, 2011.

Summary of Threats :

Based on our evaluation of predation and parasitism we conclude there is sufficient information to develop a proposed rule for this species due to the threat of predation by ants and parasitism by small wasps. The likely extirpation of this species from Saipan and its reduction to low numbers on Guam makes it vulnerable to random demographic and environmental events. We find that this species is warranted for listing throughout all of its range, and, therefore, find that it is unnecessary to analyze whether it is threatened or endangered in a significant portion of its range.

For species that are being removed from candidate status:

_____ Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions(PECE)?

Recommended Conservation Measures :

- Develop and implement monitoring surveys for the Mariana eight spot butterfly
- Conduct parasite control
- Conduct ant control

Priority Table

Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/Population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/Population	6
Moderate to Low	Imminent	Monotype genus	7
		Species	8
		Subspecies/Population	9
	Non-Imminent	Monotype genus	10
		Species	11
		Subspecies/Population	12

Rationale for Change in Listing Priority Number:

Magnitude:

The threat to the Mariana eight spot butterfly from predation by nonnative ants and parasitism by small wasps are of high magnitude. Nonnative ants and parasitic wasps occur rangewide. The small number of individuals also make this species very susceptible to the negative effects of randomly occurring natural events such as typhoons and storms.

Imminence :

The primary threat of predation by nonnative ants and parasitism by small wasps is imminent because it is ongoing.

 Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determination whether emergency listing is needed?

Emergency Listing Review

 No Is Emergency Listing Warranted?

The species is not considered for emergency listing at this time because the immediacy of the threats is not so great as to imperil the species within the time frame of the routine listing process. If it becomes apparent that the routine listing process is not sufficient to prevent large losses that may result in this species' extinction, then the emergency rule process for this species will be initiated. We will continue to monitor the status of the Mariana eight spot butterfly as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures.

Description of Monitoring:

We conducted literature searches for recent articles on this species and attempted to contact relevant species experts regarding the current status of this species. No new information on this species was found, and there is no new information on the numbers of individuals or populations, or on threats to the species.

This level of monitoring is appropriate to update the status of the species because a thorough literature search was conducted as well as relevant experts contacted. Information contained in this assessment form was verified and any updated information incorporated.

The Mariana eight spot butterfly is included in the list of species in the Guam Comprehensive Wildlife Conservation Strategy (Guam Division of Aquatic Wildlife and Resources 2005).

Indicate which State(s) (within the range of the species) provided information or comments on the species or latest species assessment:

none

Indicate which State(s) did not provide any information or comment:

Guam, Northern Mariana Islands

State Coordination:

On February 10, 2012, we sent a letter to the Guam Division of Aquatic Wildlife and Resources (DAWR) and to the CNMI Division of Fish and Wildlife (DFW) requesting their review and comments on our most recent candidate assessment of this species. No additional information or comments were received.

Literature Cited:

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Zimmerman, E.C. 1958. Macrolepidoptera. Insects of Hawaii. Vol. 7. University of Hawaii Press, Honolulu.

Personal Communications and in litt.

Aguon, C., Guam Division of Aquatic and Wildlife Resources, Letter regarding DAWR's response to request for information on candidate assessment forms. March 20, 2009.

Hawley, N. U.S. Fish and Wildlife Service. Email dated February 2, 2009.

Igisomar, S.O. CNMI Division of Fish and Wildlife, Letter regarding CNMI's response to request for information on candidate assessment forms. February 27, 2008

Janeke, D. S., HDR Environmental, Operations and Construction, Inc. Email dated November 4, 2011.

Rubinoff, D., University of Hawaii at Manoa. and A.Y. Kawahara, University of Maryland, Notes regarding 2011 Guam and Saipan butterfly survey. Notes from July 17, 2011- July 22 2011.

Approval/Concurrence:

Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve:

Ther E. Rabin

05/25/2012

Date

Concur:

Ronnie Gould

11/06/2012

Date

Did not concur:

Date

Director's Remarks: