NATIONAL RECOVERY PLAN FOR THE

GOVE CROW BUTTERFLY

Euploea alcathoe enastri

Male Gove Crow Butterfly. Photo: © M.F. Braby

Australian Government

Northern Territory Government
Department of Natural Resources, Environment and the Arts

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Note: This recovery plan sets out the actions necessary to stop the decline of, and support the recovery of, the Gove Crow Butterfly. The Australian Government is committed to acting in accordance with the plan and to implementing the plan as it applies to Commonwealth areas.

This Territory approved recovery plan was prepared with financial support from the Australian Government and has been adopted as a national recovery plan under the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*

The plan has been developed with the involvement and cooperation of a broad range of stakeholders, but individual stakeholders have not necessarily committed to undertaking specific actions. The attainment of objectives and the provision of funds may be subject to budgetary and other constraints affecting the parties involved. Proposed actions may be subject to modification over the life of the plan due to changes in knowledge.

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Copies of the plan are available from the Australian Government Department of the Environment and Water Resources website at:
http://www.environment.gov.au/biodiversity/threatened/recovery-list-common.html

or from the Department's Community Information Unit
Email: ciu@environment.gov.au
Freecall: 1800 803 772

SUMMARY

The Gove Crow Butterfly, *Euploea alcathoe enastri*, is classified as Endangered under both the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Northern Territory *Territory Parks and Wildlife Conservation Act 2000*. It is restricted to the Gove Peninsula in far north-eastern Arnhem Land of the Top End, NT, where it occurs in relatively small patches of monsoon forest and mixed paperbark swampland with rainforest elements in the understorey adjacent to monsoon forest. Both habitats are associated with perennial groundwater seepages in wet lowland coastal areas. The Gove Crow Butterfly is currently known only from seven discrete populations, and is potentially threatened by a number of processes. This plan outlines the measures necessary to ensure recovery of the subspecies and how to improve its conservation status over the longer term. More detailed information on the identity, taxonomy, ecology, distribution, population size, habitat, conservation status, threats, management and costs of recovery of the Gove Crow Butterfly can be found in the background document appended to this plan. This document is the first recovery plan for the Gove Crow Butterfly.

SPECIES INFORMATION

Taxonomy

The Gove Crow Butterfly is a subspecies of the No-brand Crow Butterfly, *Euploea alcathoe*, a polytypic species with several subspecies currently recognised throughout its broad geographical range. Three of these subspecies occur in Australia: *E. a. eichhorni*, *E. a. misenus* and *E. a. enastri*. Only *E. a. enastri*, the subject of this recovery plan, occurs in the NT. Further information on the taxonomy is contained in the background document appended to this recovery plan.

Distribution

The Gove Crow Butterfly is restricted to the Gove Peninsula in north-eastern Arnhem Land, NT. Within this area, the subspecies is known from 10 sites in seven disjunct locations (Fig. 1).

The known locations comprise seven discrete populations, as follows:

(1) near Gapuwiyak airstrip, Arnhem Bay (1 site);

(2) Baralminar River, near Gapuwiyak, Arnhem Bay (3 sites);

(3) Gurrumuru outstation, Arnhem Bay (3 sites);

(4) 5.6 km NW of Mt Bonner (1 site);

(5) Yanungbi, Melville Bay (1 site);

(6) Mosquito Creek, Port Bradshaw (1 site); and

(7) about 5 km S of Yirrkala, Rocky Bay (2 sites).

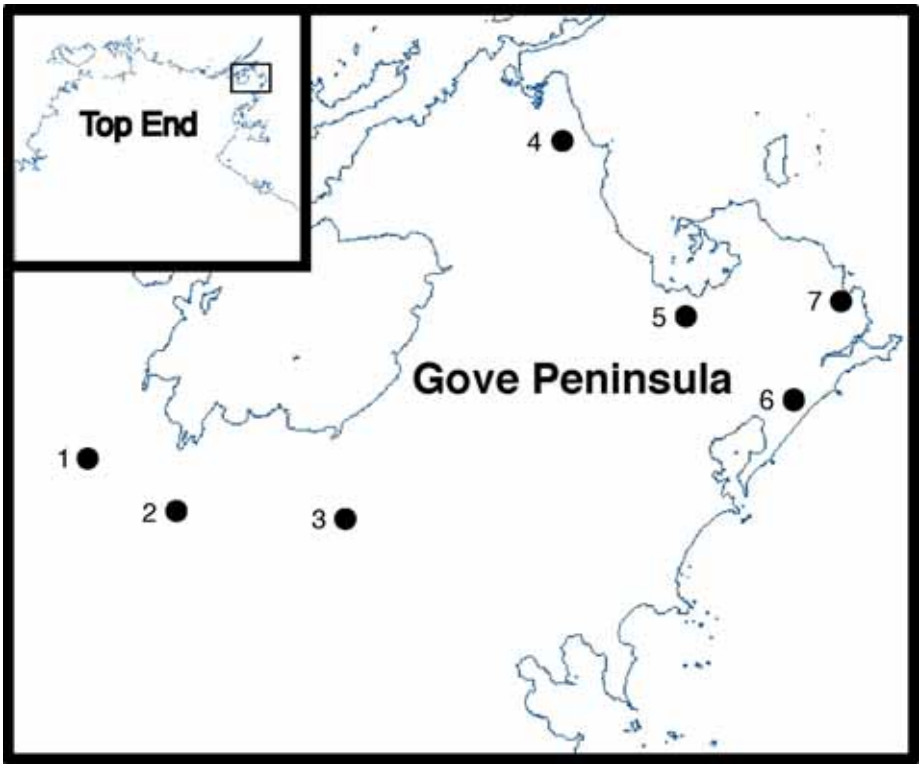

Figure 1. Distribution map of the Gove Crow Butterfly showing locations of extant populations (numbered 1–7) on the Gove Peninsula in north-eastern Arnhem Land, NT.

Available data suggests the Gove Crow Butterfly has a very limited spatial distribution, with an extremely restricted geographical range (Fig. 1). The extent of occurrence is approximately 2,200km^2, but the area of occupancy of most sites comprises only a few hectares. An exception is population 2, which appears to be distributed over a much larger area, with three sites recorded approximately 15km apart along the Baralminar River and its tributaries. Because the preferred habitat of the Gove Crow Butterfly occurs patchily in the landscape of north-eastern Arnhem Land, the butterfly has a very patchy distribution, occurring in widely dispersed areas.

All populations occur on private Aboriginal land managed by the Dhimurru Land Management Aboriginal Corporation, Yirralka Laynhapuy Rangers, and Gapuwiyak Aboriginal Community. Further information on distribution and relative abundance is provided in the background document.

Population

There have been no quantitative estimates of population size of the Gove Crow Butterfly. Within habitat patches, adults are very local, residing within or close to the putative breeding areas where they are generally encountered in small numbers. Typically no more than 10-15 individuals are recorded at each site. In contrast, adults of two sympatric species of *Euploea* (*E. sylvester*, *E. darchia*), which occur in the same habitat patches as the Gove Crow Butterfly, were encountered more abundantly (typically > 100). These observations suggest the Gove

Crow Butterfly is rare in terms of its relative abundance, rare in habitat preference and rare in spatial distribution.

There is probably a single metapopulation, which comprises a number of widely dispersed but local subpopulations. The most critical population(s) has not yet been identified. However, in terms of extent of available habitat, population 2 is the largest and therefore probably supports the most important population (see background document). All populations are currently considered to be important for long-term survival.

Habitat critical to survival

The habitat of the Gove Crow Butterfly comprises relatively small patches of monsoon forest (evergreen vine-forest) and mixed tall paperbark swampland or mixed paperbark open swampland (dominated by *Melaleuca* spp.) with rainforest elements in the understorey that occurs patchily along the edge of the monsoon forest; both habitats are associated with perennial groundwater seepages in wet lowland coastal areas. The paperbark swamplands in juxtaposition to monsoon forest appear to comprise the breeding habitat of the subspecies, that is, where the larval food plants grow and the early stages complete development.

All known locations where the Gove Crow Butterfly occurs are considered locations of habitat critical to survival. Habitat critical to survival occurs very patchily in the landscape of north-eastern Arnhem Land, but this habitat has not yet been comprehensively surveyed and mapped. Although monsoon forest patches can be readily identified and mapped from aerial photos, it is not known if all habitat of this type is critical to survival.

THREATS

Most of the potential threats, whilst not having an immediate impact on the populations at each location, are operating at the landscape level on the Gove Peninsula such that, if neglected or left uncontrolled in the long-term, may result in the complete loss of the habitat of the subspecies. Threats and their abatement are discussed in more detail in the background document appended to this plan.

Habitat modification through weed invasion

This potential threat is very likely to occur through establishment and spread of introduced pasture grasses, particularly Perennial Mission Grass and Gamba Grass.

Habitat loss through altered fire regime

This potential threat is likely to arise through a combination of loss of traditional knowledge and land management practices and/or spread of tropical weeds, particularly the introduced pasture grasses.

Invasion by tramp ants

This potential threat is likely to contribute to habitat modification and increased mortality (i.e. predation of early stages of development) due to establishment of supercolonies of the Yellow Crazy Ant on the Gove Peninsula. Infestations of this tramp ant have recently been detected in part of the habitat at Rocky Bay (population 7).

Habitat disturbance by feral animals

Habitat degradation and disturbance is an identified threat occurring through the activities of water buffalo and feral pigs.

RECOVERY INFORMATION

Overall Objective

The overall objective is to improve the long-term conservation status of the subspecies and its habitat. Specific objectives to be achieved within the life of this recovery plan are to:

1. Develop and involve local indigenous rangers.
2. Educate landholders and increase community awareness.
3. Monitor and assess threats to determine appropriate abatement activities.
4. Manage exotic species to reduce the extent of areas affected.
5. Determine ecological requirements.
6. Identify areas critical to survival.

Objectives, Performance Criteria and Actions

Objective	Performance Criteria	Actions
1. Develop and involve local indigenous rangers.	1. Four local indigenous rangers established at Gapuwiyak after completing 18 month training programme.	1. Involve stakeholders (DLMAC, Yirralka Laynhapuy Rangers, Gapuwiyak Aboriginal Community) in recovery plan. 2. Establish ranger training programme at Gapuwiyak.
2. Educate landholders and increase community awareness.	2. Four workshops held each year. 3. All local school children participated in at least one workshop.	3. Consult with local Aboriginal community to develop workshops for promotion of Yolngu culture, especially traditional land management practices. 4. One workshop to be linked with Garma Festival.
3. Monitor and assess threats to determine appropriate abatement activities.	4. All sites visited each year. 5. Vegetation photographed at strategic points at each site. 6. Impact of buffalo and pigs on habitat critical to survival has been determined.	5. Survey all sites for new or potential threats every 6 months. 6. Develop a photo recording scheme to monitor habitat change at all sites. 7. Undertake surveys to determine impact of feral animals on critical habitat.
4. Manage exotic species to reduce the extent of areas affected.	7. A measurable reduction in the incidence and extent of invasive grassy weeds has been achieved. 8. The number of sites occupied by Yellow Crazy Ant on the Gove Peninsula has been contained or reduced. 9. The population of feral animals has been significantly reduced.	8. Undertake control and eradication programme of grassy weeds, using methods such as hand removal, slashing and spraying. 9. Develop a survey, monitoring and eradication programme for Yellow Crazy Ant at all sites. 10. Develop and implement a feral animal survey and control strategy.
5. Determine ecological requirements.	10. Breeding sites have been located. 11. Larval food plants have been identified. 12. Information on general biology, behaviour, longevity and reproductive ecology has been collected and documented.	11. Conduct field surveys to collect biological and ecological information.
6. Identify areas critical to survival.	13. Field surveys undertaken to investigate potential sites. 14. Additional populations, if found to exist, have been identified and recorded. 15. Areas of habitat critical to survival have been identified and mapped. 16. Extent of breeding area, estimated as a proportion of the habitat patch, estimated.	12. Integrate aerial photos and topographic maps to identify areas of potential habitat. 13. Undertake field surveys to verify areas of potential and important habitat. 14. Measure extent of breeding areas.

Costs

The total cost required to implement the recovery plan is $973,120 over a five year period. Estimated costs are divided into the management actions identified above, and include costs associated with a ranger development and training programme for the Gapuwiyak Aboriginal Community ($445,070), an education and community awareness programme ($200,000), on-going costs for monitoring to assess threats ($21,575) and control of exotic species ($253,975), a plan to fill critical information gaps, specifically to determine ecological requirements and identify critical populations ($30,000), and administration and evaluation ($22,500). A more detailed budget of the management actions in the recovery plan is provided in the background document.

Management Action	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**TOTAL**
Development of indigenous rangers	$445,070					$445,070
Education and community awareness	$40,000	$40,000	$40,000	$40,000	$40,000	$200,000
Monitoring to assess threats	$5,975	$3,900	$3,900	$3,900	$3,900	$21,575
Control of exotic species	$70,415	$45,890	$45,890	$45,890	$45,890	$253,975
Information gaps	$30,000					$30,000
Administration and evaluation	$2,500	$2,500	$2,500	$2,500	$12,500	$22,500
Total required	$593,960	$92,290	$92,290	$92,290	$102,290	**$973,120**

Programme Evaluation

Dhimurru Land Management Aboriginal Corporation (DLMAC), Yirralka Laynhapuy Rangers and the Gapuwiyak Community Council will be involved in evaluating objectives 1–4 on a regular basis. The NT Government's Department of NRETA will be involved in evaluating objectives 5–6 in collaboration with the above mentioned stakeholders, within five years of implementation of the recovery plan.

Performance of the recovery plan will be evaluated by the NT Government each year to assess progress on abatement of specific threats and a plan to fill critical information gaps. A full review of the plan will be undertaken by the NT Department of NRETA within five years from the date of its adoption. Further details of specific management actions are given in the background document appended to this plan.

Management Practices

Successful conservation management of the monsoon forests and mixed paperbark swamplands will only be achieved if it involves the Yolngu landowners and local community groups. Actions that need to be implemented to achieve successful conservation management include the development and involvement of local indigenous rangers, education and community awareness, monitoring to assess threats and management of introduced species.

Biodiversity Benefits

Benefits to biodiversity include protection of the wet coastal monsoon forest community, The Gove Peninsula in north-eastern Arnhem Land of the Northern Territory represents a unique and remote part of Australia, an area that is still relatively pristine and rich in biodiversity and indigenous culture. Protection and management of this habitat will ensure the continued survival of the butterfly in the long term. The habitats are floristically diverse and contain a number of species not found elsewhere in the Northern Territory or indeed Australia; as such, the patches of monsoon forest comprise a critical ecological community for their continued survival. Detailed surveys and inventory of the invertebrates associated with these habitats have not been undertaken, but it is likely that other endemic taxa occur in the region.

The monsoon forests on Gove Peninsula also contain a suite of resources that are of cultural significance to the Yolngu community, the indigenous Aboriginal landowners of these habitats. These resources include food, timber, fibre, medicine and spears, but the forests also comprise an important entity for stories and spirits.

The Gove Crow Butterfly can be used as a flagship taxon for the conservation of a large suite of species restricted to this particular ecological community in north-eastern Arnhem Land. In addition, management of the threats identified in the plan will contribute to protection and ecological maintenance of the savannah woodland habitat or matrix that surrounds the monsoon forest patches which comprise the wider landscape of Gove Peninsula. The butterfly also has the potential to be used as an indicator taxon through long-term monitoring programmes. Although the subspecies is rare and ecologically specialised, adults are large, spectacular and readily identified in the field. Changes in its distribution and abundance may indicate adverse changes to the general health of the ecological community as a whole.

It is anticipated that there will be no negative impacts to non-target species arising from the implementation of this plan.

Interests that will be affected by the recovery plan's implementation

DLMAC is the major stakeholder that will be largely responsible for implementation of the recovery plan, Two other stakeholders, Yirralka Laynhapuy Rangers and the Gapuwiyak Community Council, will also be involved in its implementation. The NT Government's Parks and Wildlife Service, which includes the Biodiversity Conservation Division of NRETA, will also be involved in implementation of the recovery plan.

Social and economic impacts

No adverse impacts are anticipated as a result of implementation of the recovery plan. Social benefits include team-building, on-the-ground experience, and applying traditional knowledge in practical conservation and land management.

Indigenous consultation

The following indigenous stakeholders were consulted during the preparation of this recovery plan:

(1) Dhimurru Land Management Aboriginal Corporation (DLMAC);

(2) Yirralka Laynhapuy Rangers; and

(3) Gapuwiyak Community Council.

DLMAC and Yirralka Laynhapuy Rangers are the two indigenous community based natural resource management agencies for the Gove Peninsula, and are responsible for the management and conservation of Australia's biodiversity in north-eastern Arnhem Land of the NT. DLMAC was established by the Yolngu traditional owners and is the principle stakeholder that will implement actions of the recovery plan. Several meetings were held with both ranger groups during visits to Gove Peninsula to discuss development of the recovery plan. Both groups indicated enthusiastic interest in being involved with its implementation.

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