WILDLIFE IN BRITISH COLUMBIA AT RISK

Rare Butterflies of Southeastern Vancouver Island and the Gulf Islands

The disappearance of critical food plants threatens this region's butterfly diversity.

BRITISH COLUMBIA
Ministry of Environment, Lands and Parks

Where have all the butterflies gone?

If you think you aren't seeing as many butterflies these days as you did when you were a kid, you're right. Southern Vancouver Island and the Gulf Islands used to be far more colourful as butterflies, big and small, fluttered above flower-studded carpets of green. More than 64 different types of butterflies once flourished in the diverse habitats of this region. Forty species could be spotted in the Victoria area alone.

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As a butterfly hotspot, Vancouver Island drew naturalists from far and wide in the late 1800s and early 1900s. Proof of these butterfly glory days is preserved in the British Museum of Natural History, the American Museum of Natural History and the Smithsonian Institute, as well as in local collections at the Royal British Columbia Museum and the University of British Columbia's Spencer Entomological Museum.

In 1994, two of the province's leading lepidopterists (butterfly biologists) published a paper on the status of British Columbia's butterflies. Based on historical records and their own field notes, they concluded that at least 10 Vancouver Island species were in serious jeopardy or extinct, and an additional 6 warranted investigation. An intensive field survey in the summer of 1995 confirmed that the butterflies were as badly off as they expected, or even worse.

Why are they at risk?

Rapid and relentless development of the open, lowland habitats where many of these butterflies live has put them at risk due to habitat fragmentation and the disappearance of their nectar flowers and larval food plants.

Under normal circumstances, non-migratory butterflies spend their lives in pockets of open habitat. In times of environmental stress, smaller populations in second-rate habitat may die out. In good years, butterflies from larger, more vigorous colonies fan out and re-populate vacant areas. Over the past few decades, natural recolonization has diminished because butterfly populations are declining as their habitat declines, and because areas of suitable habitat are becoming more widely separated.

Human activities that have taken a toll on butterflies and their habitat include urban and suburban development, overgrazing by livestock, fire suppression and the introduction of invasive plants from Europe and Asia.

Fires are important to butterflies because they keep trees and shrubs from filling in meadows. Historically, on southern Vancouver Island and the Gulf Islands, First Nations peoples set fires to regenerate the camas plants which they harvested for their starchy bulbs. Butterflies incidentally benefited too. Lightning strikes also periodically burned openings in the forest, creating clearings where flowers and other herbaceous plants sprang up.

Of all the alien plant species that have been introduced to this region, the most detrimental for butterflies has been an invasive, yellow-flowered shrub called Scotch broom. In 1849, a homesick Scotsman planted 12 Scotch broom plants near Sooke. Only three plants survived, but this sentimental move has spelled disaster for butterflies ever since. Broom has spread rapidly across Vancouver Island and the southern Gulf Islands, taking over natural meadows and crowding out most of the native flora.

Butterfly basics

Butterflies go through four distinct developmental stages during their lives – egg, larva (caterpillar), pupa and adult. For most butterflies, the adult flying stage lasts only a week or so. Because of this brief moment of opportunity, adult behaviour is strongly focused on reproduction. Clouds of butterflies gather around their favourite flowers as they fly about in search of food and mates.

Each butterfly species has a strong association with certain plants that provide nectar for adults or solid food for their leaf-eating larvae. Food plants may be the same or different species for the two life stages. Butterfly larvae are so specific about their food preferences that they often cannot eat anything else, even if their requisite food plant is unavailable. When females are ready to lay their eggs, they find the appropriate larval food plants by tasting them with their feet and antennae.

The emergence of adult butterflies is timed to coincide with the presence of their species' larval food plants. The presence of nectar-producing flowers at this time is also essential. The adults refuel at flowers as they fly in search of breeding partners. Abundant nectar is especially critical to females because it determines how many eggs they can lay. If nectar and females are plentiful, males will mate often.

Each butterfly species has a strong association with certain food plants.

What makes them unique?

Butterflies are more than nature's *objets d'art*. They play an important role in their ecosystems by fluttering from flower to flower and cross-pollinating as they go. For many birds, and

some amphibians and reptiles, butterflies are an important source of food.

The loss of viable breeding populations of various butterfly species on southeastern Vancouver Island and the Gulf Islands is not a trivial matter. Historical records clearly indicate that the species that are declining or have disappeared were once a significant part of the butterfly fauna. Furthermore, a number of the species or subspecies in question are found nowhere else in the world and have apparently evolved in this region since the end of the last glacial period.

What are the rare butterflies of this region?

The following species and subspecies have been identified as being either threatened, extirpated from the region (no longer found here) or extinct. Information about their current status comes primarily from the 1995 survey mentioned in the introduction, which was initiated by the BC Conservation Data Centre and funded by the Habitat Conservation Trust Fund.

Propertius Duskywing
(*Erynnis propertius* Scudder and Burgess)

Propertius Duskywings are still around in moderate numbers. These black-and-grey speckled butterflies are most often seen circling around hill tops near Garry oaks, but they are fast-flying and difficult to approach. The caterpillars feed exclusively on oak leaves and the pupae are found in the leaf litter below. Adult duskywings sip nectar from a variety of meadow flowers, including camas, vetch and Hooker's onion.

People with Garry oaks on their land can help Propertius Duskywings by leaving leaf litter beneath the trees unraked, avoiding pesticide sprays and leaving the surrounding grasslands in a natural state. Most important to the survival of this species is the preservation of large Garry oak woodlands where broom and invasive grasses are kept at bay.

Edith's Checkerspot
(*Euphydryas editha taylori* Edwards)

During the 1995 survey, biologists found only one healthy population of this striking, red-and-black checkered butterfly. This was on Hornby Island, in a large clearing where there were several

species of plantain, the larval food plant. Spring gold, the early-season nectar source, was also abundant.

So far broom has not taken hold on Hornby Island. A few horticultural plants grow in some islanders' gardens, however, and could spread. The demise of this checkerspot at all other sites has most likely been caused by the invasion of broom and other weeds, and the lack of fire and grazing which would encourage plantain and wild nectar sources.

A number of these species or subspecies are found nowhere else in the world.

With a little bit of help, Edith's Checkerspot might survive. This last remaining population of the coastal subspecies could provide breeding stock for other areas with appropriate habitats. Uplands Park in Victoria is a good potential site for re-establishing these butterflies, especially if the growth of plantain and spring gold is encouraged.

Icarioides Blue
(*Icaricia icarioides blackmorei* Barnes and McDunnough)

Although the females are brown, Icarioides males are as blue as the lupines on which they feed. In the early days of chasing butterflies, naturalists commonly took the train to Goldstream station and disembarked for a day's collecting. At that time, Icarioides Blues were widespread and easy to find. One simply looked for lupines.

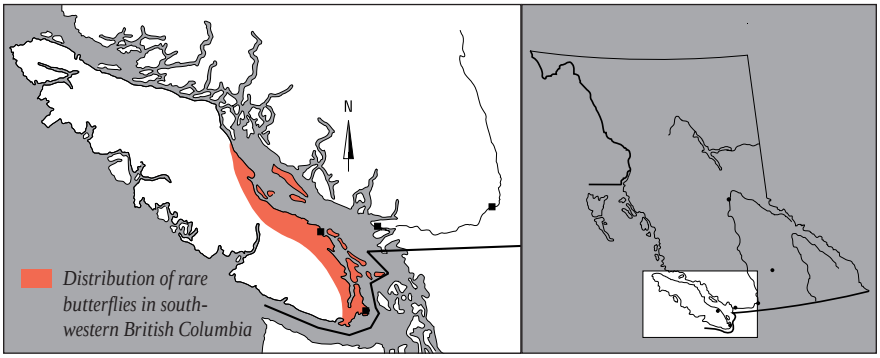
Today, all the surviving populations of the Icarioides Blue on Vancouver Island are found in recently logged subalpine areas. At lower elevations, open areas have been eliminated by urban development, fire suppression and the encroachment of broom.

Controlled clearing of subalpine areas would be the only management strategy necessary to revive this species. By logging smaller subalpine areas every few years, rather than huge tracts every few decades, a patchwork of clearings with plants vital to butterflies would be created. Seeding native lupines along roads, skid trails and other disturbed areas would also help. Trees would also benefit since lupines fix nitrogen and promote better tree growth.

Zerene Fritillary
(*Speyeria zerene bremneri* Edwards)

Zerene Fritillaries congregate around violets, their larval food plant. The males patrol for females all day and are strong, fast fliers. The search for this large, orange-brown fritillary turned up nothing until biologists

finally found a thriving population on Saltspring Island. Historically, fire probably prevented this area from being colonized by Douglas-fir. Now it appears that grazing by sheep may be keeping some meadows free of trees. If habitat that is suitable yet not occupied by the Zerene Fritillary can be located, then populations could be re-established from the Saltspring population. The



Saltspring Island site should be monitored to ensure it is not overrun by trees, shrubs or tall grasses which would eliminate the violets and this last population of Zerene Fritillaries.

Ringlet
(*Coenonympha tullia insulana* McDunnough)

Ringlets bounce through the air on tan wings marked with a tiny, round eyespot which is the source of their name. Ringlet caterpillars eat native grasses. Originally, this little butterfly was known only from the Victoria region, but as roads and development spread, it nibbled its way up Vancouver Island, eating succulent grasses on road shoulders. By 1955, Ringlets were the most abundant butterflies on Vancouver Island. Now, as natural grasses are replaced by broom and brush, its numbers are

dwindling. Yet Ringlets could still flourish if broom were cut and small areas were burned to encourage the recovery of native grasses.

Moss' Elfin
(*Incisalia mossii mossii* Hy. Edwards)

Moss' Elfin can be easily overlooked. These tiny, brown butterflies rapidly skim the ground as they search for a succulent plant called stonecrop which grows on dry bluffs and rocky outcrops. When they find it they sip nectar from its flowers and lay their eggs on

its leaves. Although the habitat of Moss' Elfin does not seem more fragmented than it would have been prior to European settlement, there have been some negative impacts. Stonecrop beds are destroyed by heavy grazing by deer, house construction, road construction, residential landscaping and crowding out by broom. The actual status of this butterfly is still uncertain.

Control of Scotch broom in natural or rehabilitated landscapes is essential.

Dun Skipper
(*Euphyes vestris metacomet* Harris)

In the past, the Dun Skipper – a dull-coloured butterfly with fast, erratic

flight – was always spotted alone or in groups of two or three. During the 1995 survey it was not found anywhere and in recent years there have been only a couple of sightings: one in lush grass alongside the E&N Railway line at Cobble Hill and another along a powerline near Malahat Station. Before they can begin to plan a conservation strategy, biologists need to learn more about this species. It is hoped that future sightings will make this possible.

Greenish Blue
(*Plebejus saepiolus insulanus* Blackmore)

This butterfly derives its name from the colour of the males, which are blue with a shiny, greenish blue base to each wing. The females are mostly brown, with only a touch of blue on their wings. The reason for the demise of the Greenish Blue on Vancouver Island is uncertain. Its larval

food plants – native and introduced clovers – are in good supply, yet there are no recorded observations of this butterfly since it was last seen on the Malahat in the 1960s. Although it may be too late for Vancouver Island's Greenish Blue butterflies, it is worth continuing to search for this species.

Chalcedon Checkerspot (*Euphydryas chalcedona perdiccas* Edwards)

The Chalcedon Checkerspot has not been seen on Vancouver Island since 1919 and is probably extinct, though future surveys may yet turn up this butterfly. At one time it was found

on Mount Finlayson and in the Duncan area, possibly on Mount Tzuhalem. Chalcedon Checkerspot caterpillars eat flowering plants called penstemons, which grow extensively in alpine areas of Mount Arrowsmith and Strathcona Provincial Park, but there is no indication that this checkerspot is present in those areas.

Large Marble (*Euchloe ausonides* – undescribed subspecies)

This subspecies of medium-sized, white butterfly with green "marbling" on the undersides of its wings is probably extirpated from Canada. The last recorded Canadian sighting was on Gabriola Island in 1908. Although the biologists conducting the 1995 survey searched for the Large Marble throughout its adult flight period in late April and May, it was not seen. They suspect that overgrazing during early European settlement eliminated certain plants in the mustard family that are eaten by

the caterpillars of this species. It is also possible that *Pieris rapae*, a non-native butterfly that has been introduced to this area, may have overutilized the Large Marbles' larval food plants.

Actually, butterfly experts believed that this subspecies was extinct, until two populations of Large Marble were recently located on San Juan Island, Washington. If these prove to be the Vancouver Island subspecies, this discovery opens the possibility of reintroducing Large Marbles from San Juan Island to the nearby Gulf Islands and Vancouver Island.

What can we do?

Habitat loss is a direct, though unintentional, result of human activities. We prevent forest fires, which are the natural creators of diverse and open habitats. We introduce foreign plants with disastrous impacts on native ones. We build houses and "civilize" the surroundings, eliminating native plants. And we spray to control pest insects, forgetting about all the others that may be affected.

The best thing we can do for butterflies is to preserve and manage their remaining fragments of natural habitat on both public and private land. Areas such as decommissioned roads on public forest lands could be turned into patches of native grassland through seeding with grasses, lupines, vetches, violets and other native species. Wildflowers seeded in open areas and roadsides, if not native to British Columbia, may result in the introduction of more alien plants that outcompete the native host plants of butterflies. Seeding with equally beautiful plants native to southern Vancouver Island should be done instead.

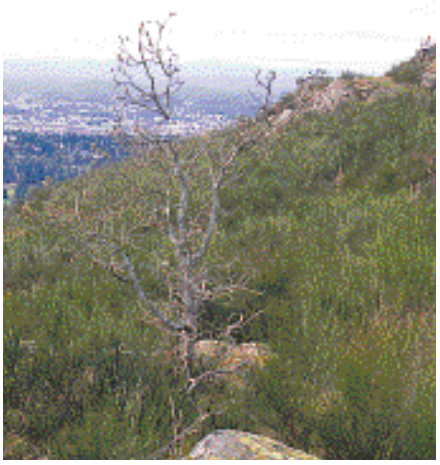
Control of Scotch broom in natural or rehabilitated habitats is essential. If broom is not brought under control, huge areas of natural habitat will be destroyed and many more insects and plants will face extinction, but there is no easy solution to this problem. Broom cutting is too labour intensive to be more than a temporary measure in limited areas. Some biologists believe Scotch broom poses such a significant threat that it should be biologically controlled by insects. The nursery industry is opposed to this idea, because ornamental broom varieties would also be attacked.

Private landowners can also make a contribution by removing broom, reintroducing native plant species and preserving remaining natural habitats on their properties. Even city-dwellers can improve conditions for butterflies by planting nectar flowers and larval food plants. Information about butterfly gardens is available from Naturescape British Columbia.

Voluntary private land managment could help maintain known surviving butterfly populations and restore natural habitat where populations could be reintroduced. Government and non-government organizations including the BC Conservation Data

Centre, the Nature Trust of BC, the Nature Conservancy of Canada, the Land Conservancy, and the Habitat Acquisition Trust are all working to identify and secure key habitats on Vancouver Island, but your help is needed.

Wildlife species need you looking out for their interests. You can voice their needs in public processes where decisions are made about land use plans and legislation. The first step is learning more about butterflies and their environmental requirements. Local butterfly monitoring groups and naturalist associations are a good place to start. With your care and attention, native butterflies can continue to enrich the landscapes of southern Vancouver Island and the Gulf Islands. Their future is perched in your hands.



MUCH BUTTERFLY HABITAT HAS BEEN LOST DUE TO THE ENCROACHMENT OF SCOTCH BROOM.
David F. Fraser photo

OPEN MEADOWS WITH NATIVE WILDFLOWERS AND GARRY OAKS PROVIDE GOOD HABITAT FOR BUTTERFLIES.
Syd Cannings photo

FOR MORE INFORMATION ON RARE BUTTERFLIES, CONTACT:

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FOR INFORMATION ON WHAT YOU CAN DO TO RESTORE, PRESERVE OR IMPROVE WILDLIFE HABITAT, AND FOR INFORMATION ON NATIVE PLANT LANDSCAPING, CONTACT:

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