



Burrowing Owl

*The Burrowing Owl's
grassland habitat
is being lost to
agriculture and
urban development.*





Why are Burrowing Owls at risk?

This diminutive owl has a very restricted distribution and small population in British Columbia. The overall abundance of Burrowing Owls is limited by the availability of suitable habitat. The grasslands in which they live are restricted to the dry valley bottoms of the Southern Interior and comprise less than one percent of the area of the province. This already small area of natural grassland is being further diminished by expanding towns, intensive agriculture and urbanisation, especially in the Okanagan Valley and the Thompson-Nicola region.

In addition to causing habitat loss, human activities have also contributed indirectly to the decline of the Burrowing Owl in many parts of its range. Modification of native plant communities, and control programs aimed at Badgers and ground squirrels have reduced the populations of these burrowing mammals, leading to a lack of burrows for owls. Without sufficient burrows, they are more vulnerable to inclement weather and predators, such as Coyotes, hawks, other larger owls and weasels.

Use of crop pesticides may reduce the abundance of important prey, including grasshoppers and mice. In the past, agricultural chemicals such as DDT may have adversely affected Burrowing Owl reproduction. It is not known how significant these factors presently are in British Columbia.

Some owls are also killed by highway traffic. Naive juveniles that feed on road-killed animals or on insects attracted by warm pavement at night, are particularly susceptible.

What is their status?

Although information on the historical occurrence of Burrowing Owls in British Columbia is limited, we know there were several small nesting colonies present in the Okanagan and Thompson valleys from 1900 to 1928. Numbers dwindled after that, with only four nesting sites being recorded between 1928 and 1980, at which time they were thought to be extirpated as a breeding species in the province. Historical nesting areas include Osoyoos, Oliver, Penticton, White Lake, lower Similkameen Valley, Coldstream, Vernon Commonage, Okanagan Landing, Knutsford, Savona, Kamloops and Douglas Lake. As well, one or two pairs nested on Lulu Island in the Fraser Delta during most years

from 1939 to 1976, and birds may still be nesting in that area. Stragglers, probably non-breeders, have been seen intermittently over a slightly wider area in southern British Columbia: east to the Kootenay River valley, north to

COSEWIC upgraded the Burrowing Owl's national status from Threatened to Endangered in 1996.

Horsefly in the Interior, and north to Comox and Campbell River on the coast.

Because of its low numbers and restricted distribution, the Burrowing Owl has been placed on British Columbia's Red List and is also legally designated under the Wildlife Act as an Endangered species in this province. Elsewhere in Canada, the Burrowing Owl breeds across the grassland region of the prairie provinces, where there are an estimated 1000 breeding pairs. The prairie population has been declining since at least 1930 due to grassland

modification, pesticide use, traffic mortality and related factors. Recent declines in eastern Saskatchewan and in Manitoba, where it may now be extinct, are particularly alarming. As a result of these trends, the owl's national status was upgraded from Threatened to Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in 1996.

The Burrowing Owl is widely distributed outside of Canada, occurring in all states west of the Mississippi, in Florida, and south into Mexico, Central America and South America. Populations have declined in many of these areas due to the loss or alteration of habitat.

What do they look like?

Commonly seen perching on the ground or on fenceposts, the often comical-looking Burrowing Owl (*Athene cunicularia*) has been aptly described as a short, fat owl on stilts. With its long, almost bare legs, stubby tail and plump body, it is indeed distinctive. It is similar in size to the American Robin, with a total length from head to tail of about 24 centimetres. In the wild, adults weigh between 175 and 260 grams. Long legs help this "ground owl" see over the low "short-grass" prairie vegetation in a landscape with few elevated perches, and also aid in running down insect prey. Female Burrowing Owls are slightly smaller than males, an uncommon occurrence for birds of prey. This may be an adaptation for squeezing into narrow burrows.

Adults are a rich sandy-brown colour, thickly spotted with white and buff markings on the back; the underparts are whitish, barred with brown. This colouring provides good camouflage in dry grassland habitats. The sexes have similar colouring, although males often appear faded during the breeding season, possibly from spending more time exposed to the sun. Other



features include a rounded head without ear tufts, yellow eyes, white eye-brows and a white throat with a dark brown half-collar. Juveniles have buffy underparts without bars during the first few weeks after emergence from the burrow.

What makes them unique?

Within the owl family, Burrowing Owls are unusual, differing from most other species in many respects: they nest in underground burrows rather than in cavities or in the branches of trees; they are often active in broad daylight; and they eat insects as well as rodents. These adaptations for life in a grassland environment set them apart from other owls, which are mostly forest-dwellers.

The focus of activity for this owl is the burrow. Its main use is for nesting, but burrows also provide refuge from many predators and protection from extreme heat or cold. Although capable of digging their own burrows in suitable soils, Burrowing Owls in British Columbia occupy the abandoned burrows of Badgers, Coyotes, ground squirrels or marmots. One or more “satellite” burrows can usually be found near the nest burrow. These are used by adult males during the nesting period and by juveniles for a few weeks after they emerge from the nest.

Burrowing Owls have often been reported to nest in loose colonies. Such groupings may be a response to local

abundance of burrows and food, or an adaptation for mutual defence. Colony members can alert each other to the approach of predators and join in harassing them.

In British Columbia, the Burrowing Owl is legally designated as an Endangered Species.

During the nesting season, adult males forage over home ranges that are two to three square kilometres in size. The ranges of neighbouring males may overlap considerably, but a small area

around the nest burrow is aggressively defended against intrusions by other Burrowing Owls and predators.

Burrowing Owls are often seen standing about in daylight, giving rise to the belief that they are largely active during the day. However, recent radio-tracking studies indicate that most hunting activity occurs from dusk to sunrise. Daytime activity mostly involves loafing within 50 metres of the nest or a satellite burrow, although juveniles engage in some daytime feeding near the burrow when insects become abundant in mid-summer.

An amazing repertoire of about 17 vocalisations has been described for Burrowing Owls. The “primary song” is a two-syllable “who-who.” This call is given only by adult males when near the burrow and is associated with pair formation, breeding and territory defence. Other sounds include the “rasp,” “chuck,” “chatter,” and “scream.” Juveniles make a rattlesnake-like buzz when threatened in the burrow. When adults spot approaching predators, they give warning with a short, low-level “chuck” call, usually accompanied by vertical head-bobbing.

An endearing feature of Burrowing Owls is their tolerance of non-threatening human activity. Nests are sometimes found in cow pastures near farm buildings, at airports or on road rights-of-way. This tolerance, together with their habit of loafing around the nest burrow or perching on fenceposts in daylight, make this one of the most observable of all owl species.

Most Burrowing Owls that reside in British Columbia during summer, migrate south for the winter. They

have been recorded in the Okanagan Valley as early as March, but the majority arrive in April. Autumn migration is a gradual process extending from July to October. Wintering locations of birds from the Interior are not completely known, but recent records indicate they can travel as far south as the San Francisco area in California.

How do they reproduce?

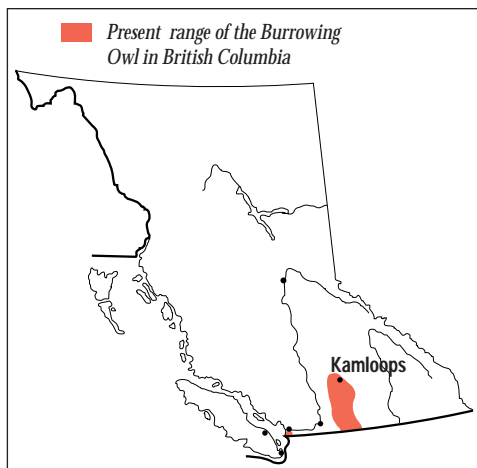
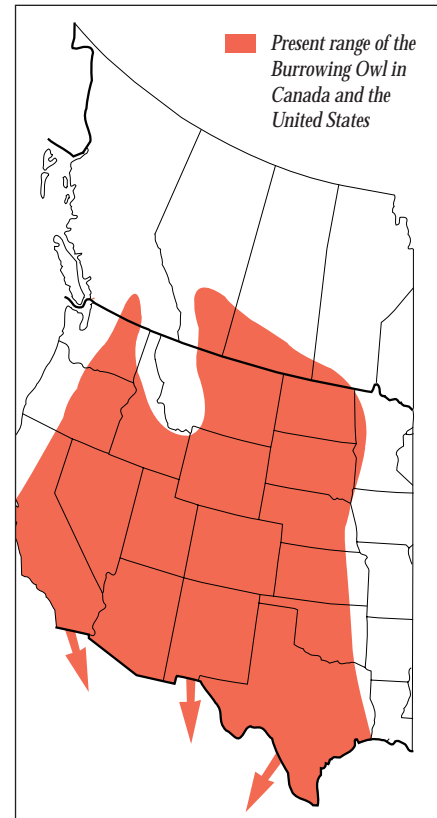
Recorded nesting sites in British Columbia include burrows of the Yellow-bellied Marmot, Badger, Coyote, Striped Skunk and Belted Kingfisher, as well as a natural crevice in a railway embankment and an old drain pipe. Nest burrows are usually 1 to 3 m long, with a downward slope of about 15 degrees, a J- or U-shaped bend, and an enlarged nest chamber at the end. Adults show high fidelity to their breeding sites and usually return each year to the same burrow or one nearby.

Pair formation is believed to begin when the owls arrive at their nest sites. Males try to attract a female with their “primary song,” which is given at the entrance of a promising burrow.

Once a female is enticed to the site, courtship antics involving various postures, vocalisations and displays are undertaken by both sexes, usually within 15 m of the burrow.

Both sexes prepare the

burrow for nesting, using feet, beaks and wings to scrape dirt out of it. They often begin these renovations at several burrows, eventually selecting the best one as a nest site. This is then lined with horse or cow dung or other material. Suggestions about the



purpose of the lining material include: serving as an absorbent; attracting dung beetles eaten by the owls; masking odours produced by the birds, thereby making detection by predators more difficult; and producing heat by decomposition to aid in the incubation of the eggs.

Egg-laying in the interior of British Columbia begins in late April and early May, but may be earlier on the coast. In the wild, clutch size normally consists of six to ten white eggs. However, clutches as low as three and as high as eleven have resulted from captive breeding efforts. The female incubates the eggs for 23 to 27 days. The male brings food to his mate during incubation and stands guard near the burrow by day. Hatched young stay in the nest chamber for about two weeks. By this time the young are large and the burrow is very crowded, so they often stand at the burrow entrance eagerly waiting for the parents to bring food. The young owls begin flying at four weeks and can fly

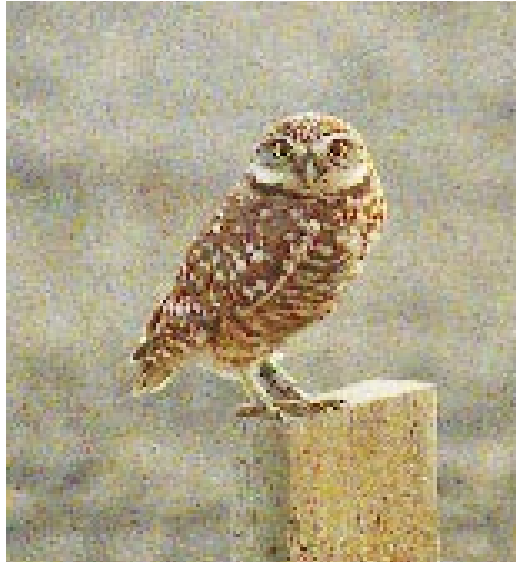
quite well when six weeks old. They start to hunt for themselves seven or eight weeks after hatching, but can catch insects on the ground even before they can fly. During this period the female remains near the burrow and helps to distribute food brought in by her mate. Once the young owls are active above ground, the family often uses several burrows in the immediate area.

What do they eat?

Burrowing Owls consume about 15 percent of their body weight daily. Undigested food remains – mostly hair, bones and insect parts – are regurgitated in the form of pellets, which are cylindrical in shape, 3 to 4 cm long and about 1.5 cm thick. Produced at a rate of two or three per day, these pellets accumulate around the burrow and provide an indication of what has been eaten.

The staple foods of Burrowing Owls throughout their range are small rodents and insects, although they will eat other prey if available. Remains of a variety of small birds, reptiles, amphibians, fish and crustaceans have been recorded at nest sites. In British Columbia, recorded prey items include the Great Basin Pocket Mouse, Deer Mouse, Western Harvest Mouse, voles, frogs, toads, birds, crickets, beetles, scorpions and grasshoppers.

Burrowing Owls are versatile in their methods of capturing prey. They chase down grasshoppers and beetles on the ground, use their talons to catch large insects on the wing and hover in mid-air before swooping down on unsuspecting prey. They also watch patiently from perches, then glide silently toward their target. Like other owls, this species probably relies on acute hearing as much as eyesight for capturing prey at night.



BURROWING OWLS ARE COMMONLY SEEN IN DAYLIGHT RESTING ON FENCEPOSTS OR TALL VEGETATION. Ernest Leupin photo

Where do they live?

The major habitat needs of Burrowing Owls are prairie-like terrain with low herbaceous vegetation, deep soil for burrows, the presence of mammals that excavate burrows, and a food supply.

Burrowing Owls are adapted to open, usually dry country with short vegetation. Being ground-dwellers, it is difficult for them to detect approaching predators or find prey in brushland or forest. They are well adapted to grazed rangelands, but find croplands less suitable. Their preferred terrain is often flat, but rugged landscapes are also used. The extent of suitable habitat is quite restricted in British Columbia.

Over much of its North American range, this owl is most abundant in active colonies of ground squirrels or prairie dogs, where numerous nesting and satellite burrows are available. This indicates that the availability of burrows is a major factor controlling the abundance of Burrowing Owls. Burrows dug by Badgers are also important in many areas. In British Columbia, habitats that are otherwise suitable for this owl have relatively few burrowing mammals.

What can we do?

In 1983, BC Environment, with the financial support of the Habitat Conservation Fund, began an ambitious program to increase Burrowing Owl abundance in British Columbia. Thanks to outstanding co-operation from Washington State wildlife officials, 82 adults and 348 three-week-old juveniles were transplanted as family units from Washington to recovery areas near Vaseux and Osoyoos lakes from 1983 to 1990. Broods were placed in artificial burrows made from plastic pipe, with an inverted bucket at the end for a nest chamber.

Adult owls showed a strong attachment to their broods and continued to care for them despite the disruption of the move. The program also included construction of satellite burrows to provide cover for adult males and to give the developing young space to spread out.

The South Okanagan recovery program was initially encouraging. Between 1986 and 1992, 87 introduced owls returned as adults and produced a total of about 90 fledged young. Similar but smaller introduction programs have also been carried out at Cache Creek and Douglas Lake, using juvenile owls hatched in captivity at the Owl Rehabilitation Centre in Ontario. The long-term success of these programs will be judged by whether self-sustaining wild populations become established.

The emphasis of the Burrowing Owl recovery program is now on captive breeding in wildlife rehabilitation centres at the Kamloops Wildlife Park and in White Rock (the latter having been moved from Stanley Park in 1997 but still maintained by the Stanley Park Ecology Society). Owls raised in these facilities will mostly be released



TYPICAL BURROWING OWL HABITAT IN THE SOUTHERN INTERIOR.
Ernest Leupin photo



BURROWING OWL AT ENTRANCE TO ARTIFICIAL BURROW.
Ernest Leupin photo



YOUNG BURROWING OWLS FROM THE CAPTIVE BREEDING PROGRAM.
Ernest Leupin photo


as yearlings, thus avoiding the high mortality faced by hatchlings in the wild.

From 1992 to 1997, 108 captive-bred owls were released into the wild. These, in turn, successfully raised 30 young. Criteria for choosing release sites included historic and current owl sightings, overall grassland condition, availability of rodent habitat, grazing regimes, land ownership, feasibility and the long-term availability of habitat. Some of the sites were on private land. In addition to releasing the owls, biologists have been conducting research on habitat quality, prey availability, fledging success and return rates.

The long-term goal of the BC Ministry of Environment, Lands and Parks is to establish self-sustaining populations of at least ten breeding pairs of Burrowing Owls in each of five different locations in the Southern Interior. This program is part of the National Recovery Plan developed in collaboration with Alberta, Saskatchewan, Manitoba, the Canadian Wildlife Service and the World Wildlife Fund.

The outlook for Burrowing Owls in British Columbia is still unknown. Although habitat loss is an on-going problem, many human-caused impacts are less severe now than in previous years. As most of the grasslands used by these owls are on private lands, the key to the recovery is ensuring the

co-operation of the land owners and establishing stewardship agreements. With public support, these curious lit-

tle ground-owls may become firmly and permanently established in our southern grasslands. 

FOR MORE INFORMATION ON BURROWING OWLS, CONTACT:

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