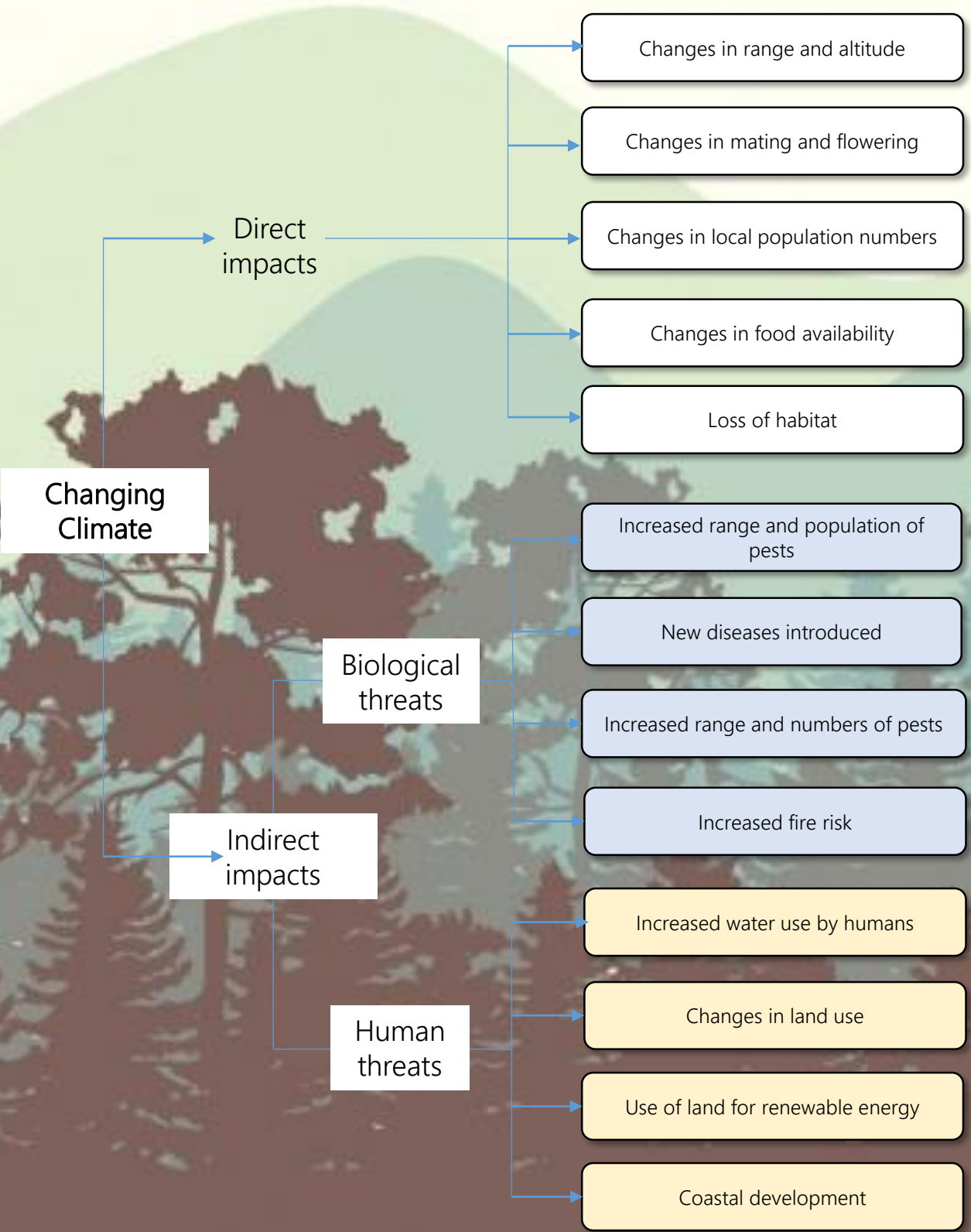


Impacts to New Zealand Species due to Climate Change

Select a species card, use the chart to determine what threats a species may face, then discuss what adaptation solutions might help, and how.



New Zealand Species Cards – All photos and information from www.arkive.org



Shore plover

This small, wading bird lives by the coast. It lays its eggs in rocks and grass close to the beach. The birds eat shoreline food found at low tide. Climate change may cause the nesting area to be covered with water due to sea level rise.



Southern rock hopper penguin

The penguin breeds in large colonies, on subantarctic islands to the south of New Zealand. The rockhopper penguin eats krill, squid, octopus, and fish, from the ocean, but climate change may shift where their food can be found, and this will affect survival of their chicks.



Wrybill

The wrybill lives in the 'braided' stony rivers of Otago and Canterbury. It lays camouflaged eggs amongst the stones, on mid river island to avoid pests. Climate change may increase spring flooding, covering the eggs which will then not hatch.



Kakapo

Adult kakapos are camouflaged with mossy green feathers. Breeding is timed with the 'mast fruiting' of the 'rimu' tree, which only occurs every two to five years. Climate change may affect when and how often this mast year occurs.

New Zealand Species Cards – All cards from www.arkive.org



Shore plover

This small, stocky wader is one of the world's most threatened coastal birds. During the breeding season from November to February, pairs will defend small [territories](#) containing their nest. The nests of the shore plover are well hidden amongst vegetation or between boulders, and both the male and female will take part in incubating the two to three eggs that are laid. Outside of the breeding season birds flock together but do not migrate. Their diet is made up of shoreline [crustaceans](#), spiders, [molluscs](#) and insects, which are foraged from the sea-shore at low tide. Climate change may cause the nesting area to be covered with water due to sea level rise.



Southern rock hopper penguin

The southern rockhopper penguin breeds in large colonies, which is found on several subantarctic islands to the south of New Zealand, that may comprise over a hundred thousand nests. Breeding pairs are monogamous, and usually return to the same nest every year. The diet of the southern rockhopper penguin is composed of a variety of oceanic species, such as krill and other crustaceans, squid, octopus and fish. Groups of southern rockhopper penguins may often feed together, diving to depths of up to 100 metres in pursuit of prey. Climate change may shift where their food can be found, and this will affect survival of their chicks.



Wrybill

The wrybill is a distinctive wading bird, which possesses a uniquely bent bill. The laying season runs between September and October; a clutch of two eggs is laid into a slight depression amongst the gravel of braided rivers in Otago and Canterbury. Both parents take it in turn to incubate the eggs that are well camouflaged against the shingle, resembling the stones around them. Birds are forced to nest on islands in the middle of braided rivers as a result of predator pressure and river-edge habitat modification. Climate change may increase spring flooding, covering the eggs which will then not hatch.



Kakapo

Adult kakapos have beautiful mossy green plumage mottled with brown and yellow, which provides excellent camouflage against the forest floor. The kakapo is the only parrot to have a lek mating system. Breeding is erratic and slow, occurring every two to five years, and is dictated by the infrequent availability of super-abundant food supplies. One such event is the 'mast fruiting' of the 'rimu' tree (*Dacrydium cupressinum*), which only occurs every two to five years. The kakapo feeds on a variety of fruits, seeds, roots, stems, leaves, nectar and fungi. Climate change may affect when and how often this mast year occurs.

New Zealand Species Cards – All cards from www.arkive.org



Tuatara

The 'living fossil' lives in burrows, where the female tuatara also lays her eggs. The sex of the tuatara is determined by the temperature at which the eggs are incubated, with higher temperatures producing males and lower temperatures producing females. Climate change is causing a temperature increase.



Takahe

This flightless bird prefer alpine tussock grasslands, and feeds mainly on the leaf bases and seeds of tussocks and other grasses. Habitat changes and the introduction of predators, such as stoats, can harm these birds. Climate change can impact survival of this species.



Lesser short-tailed Bat

This bat is more at home on the forest floor than flying through the treetops, and active in winter. Warmer winters, caused by climate change, makes bats need more insects for food when there may not be that many. The bats are important pollinator of the endangered woodrose, a parasitic plant of roots on the forest floor.



Archey's frog

This small frog (3-4 cm) lives in damp forest habitats, in only a few small locations. Archey's frogs make a tasty meal for rats, pigs, stoats, hedgehogs, possums, cats and introduced frogs. These rare frogs are at risk from Climate change effects.

New Zealand Species Cards – All cards from www.arkive.org



Tuatara

An unusual and unique reptile found only in New Zealand, the tuatara (*Sphenodon punctatus*) has been dubbed a 'living fossil' as it is the only surviving member of an ancient group of reptiles that flourished during the time of the dinosaurs. The tuatara lives in burrows, either digging one itself or sharing the burrow of a nesting seabird. The female tuatara lays her eggs in spring, covered up by dirt, which do not hatch until 11-16 months later. The sex of the tuatara is determined by the temperature at which the eggs are incubated, with higher temperatures producing males and lower temperatures producing females. Climate change is causing a temperature increase.



Takahe

This unique flightless bird is roughly the size of a hen, making it the world's largest rail. Once thought to be extinct, the birds are still very rare. Mainland populations prefer alpine tussock grasslands although they are also found in forest and sub-alpine shrublands. Island populations are found mainly on modified grassland habitat. The takahe feeds mainly on the leaf bases and seeds of tussocks and other grasses. Habitat changes and the introduction of predators, such as stoats, can harm these birds. Climate change causes an increase in Extreme weather events that can impact survival of young,



Lesser short-tailed Bat

The New Zealand lesser short-tailed bat is remarkable for the fact that it is the most terrestrial bat in the world; more at home on the forest floor than flying through the treetops. New Zealand bats are unusually active in winter compared with other temperate bats, and are therefore sensitive to warmer winters, caused by climate change, becoming more active and thus experiencing an increased demand for insect food at a time when it may be scarce. This species is an important pollinator of the endangered woodrose, a parasitic plant of roots on the forest floor.



Archey's frog

Archey's frog is our smallest native frog, growing up to 37 mm long. It occupies damp forest habitats above 400 m, but has been found as low as 100-200 m above sea level in the Coromandel. Mottled colours of red, green and brown make up the colour of the Archey's skin. Archey's frogs are modern-day dinosaurs. Almost unchanged from their 150 million-year old fossilised relatives, these little battlers are among the world's oldest frogs and in desperate need of help. Archey's frogs make a tasty meal for rats, pigs, stoats, hedgehogs, possums, cats and introduced frogs. These rare frogs are at risk from Climate change effects.

Climate Change Adaptation solutions

Supplementary
feeding of
species

Changing their
environment
with plantings
and building

Translocation –
moving species
to another area

Captive
breeding
programmes

Increased Pest
control in their
habitat

Design and
make new pest
proof protected
areas

Manage and
restore
ecosystem areas

keep human
roads and
buildings away
from their
habitat