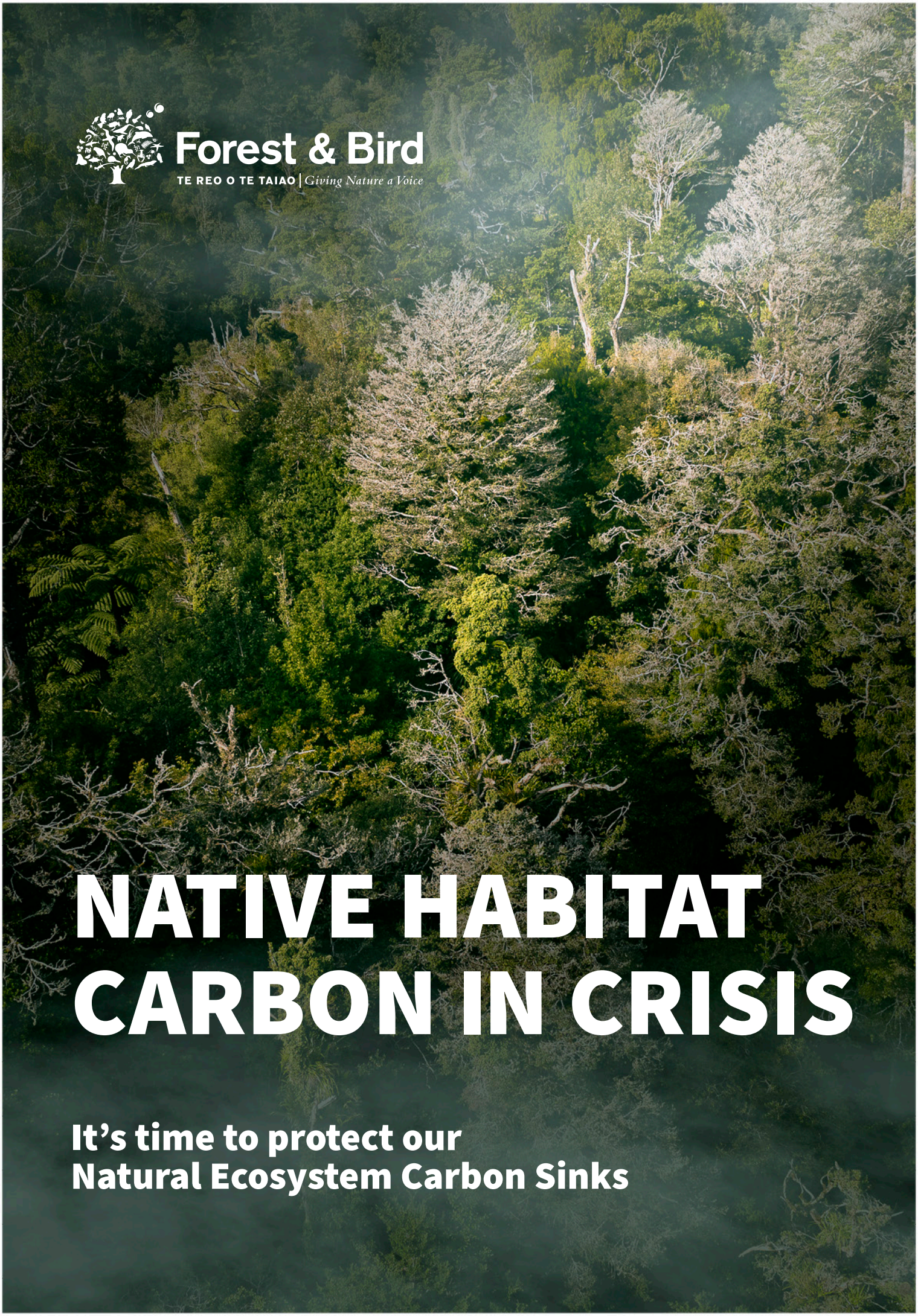
Forest & Bird
TE REO O TE TAIAO | Giving Nature a Voice
NATIVE HABITAT
CARBON IN CRISIS
It's time to protect our
Natural Ecosystem Carbon Sinks

FOREST & BIRD'S RESEARCH REPORT, PROTECTING OUR NATURAL ECOSYSTEMS' CARBON SINKS, reveals many native habitats are in crisis and have either become weak carbon sinks or are bleeding stored carbon.

The cause? Feral deer, possums, wallabies, goats, pigs, chamois and tahr. Since their introduction, these animals have been eating their way through native forests, shrubland, and tussockland. This has destroyed the natural ability of native ecosystems to be the best carbon sinks on land.

Acting now to turn around the destruction caused by browsing pests would protect and restore carbon stocks and protect nature.

THE IMPORTANCE OF CARBON SINKS

Throughout Aotearoa, native ecosystems (native forests, shrubland, and tussockland) holds around 1450 million tonnes of carbon, 74% of which is stored in native forests.

Our largest forest type is presently bleeding 3.4 million tonnes of CO_2 every year

The report estimates that the equivalent of nearly 15% of New Zealand's 2018 net greenhouse gas emissions per year — 8.4 million tonnes of CO_2 — could be locked into native ecosystem carbon sinks if we controlled feral browsing animals to the lowest possible levels.

Action needs to be taken to protect these valuable natural carbon sinks. This needs to be over and above New Zealand's climate commitments to help keep warming below 1.5 degrees. This action could also help make Aotearoa carbon-positive within a few decades.

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DAMAGE FROM INTRODUCED MAMMALS

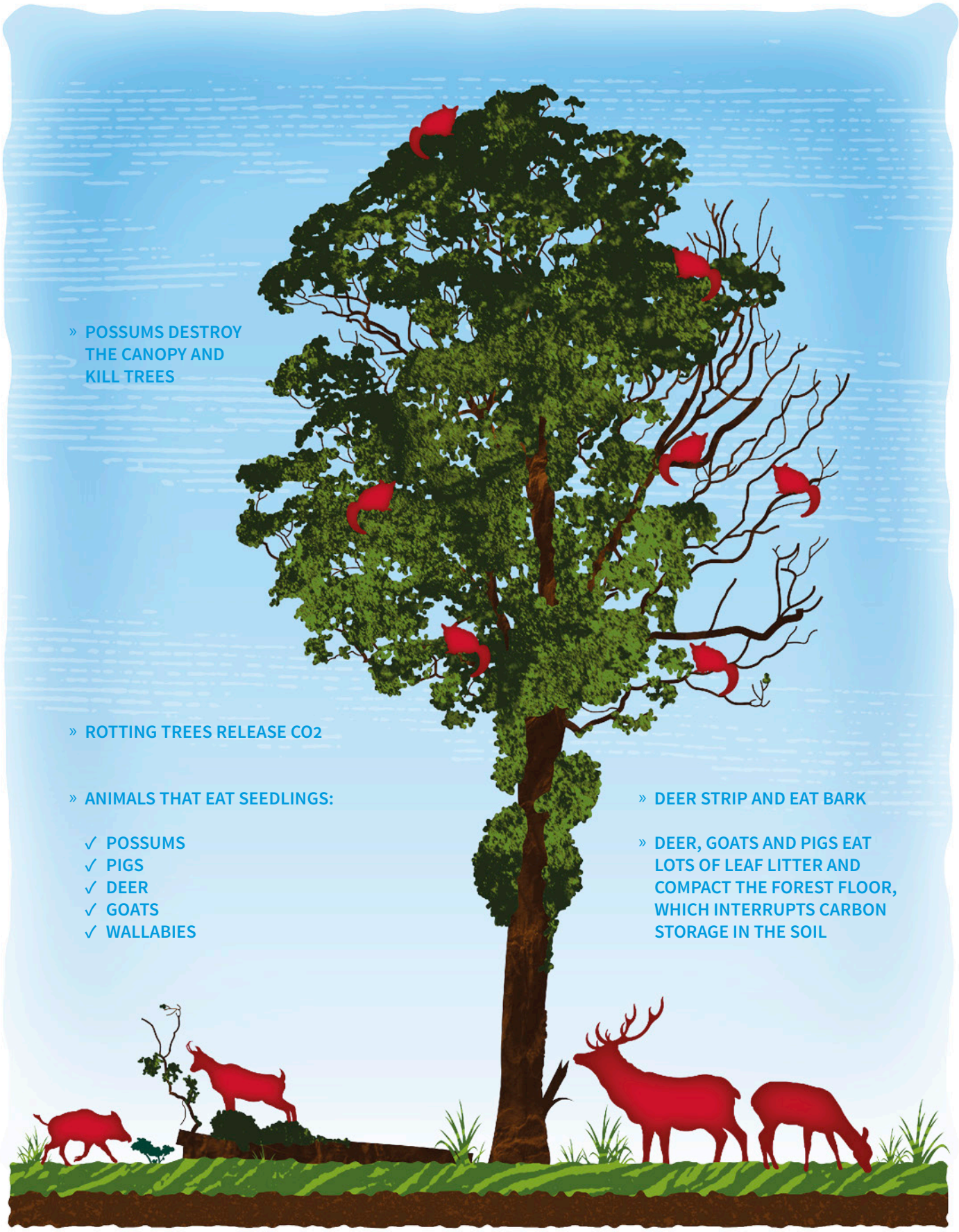
Introduced mammals, such as possums, goats, deer, pigs, tahr, chamois and wallabies, have invaded and degraded native ecosystems in nearly every corner of the country. The combined impact of these animals consuming seedlings, leaf litter, leaves, buds, bark, and branches and killing trees reduces resilience and the ability of ecosystems to lock in carbon.

The effects of introduced browsers compound over time and contribute to major impacts:

- Native ecosystems lose their ability to absorb and store carbon
- Native forests collapse due to damage from introduced herbivores which in turn release huge volumes of carbon dioxide as trees die and rot.
- By eating seedlings and killing young trees these animals consume future generations of forest, disrupting the forests' ability to absorb carbon.
- The ruminant animals produce methane, a significant greenhouse gas.
- Impacts are multiplied if more than one invasive browser is present.
- Forest & Bird's report estimates their direct consumption of vegetation and methane production is equivalent to around 3.1 million tonnes of carbon dioxide per year.

Northland pōhutukawa leaves eaten by possum. © Craig Salmon

Pōkākā trees with bark eaten by deer as they invade a Southland forest for the first time. These trees will soon be dead, releasing carbon. Few native seedlings survive the diet of deer. © Jesse Bythell



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RAPID ACTION MEANS RAPID RECOVERY

The ability of ecosystems to absorb and store carbon usually resumes if the browsing pressure is removed. In some cases, the damage already caused by browsing pests will mean these ecosystems continue to be net carbon emitters for some time, before recovering.

Farmland being retired and allowed regenerate as well as planted permanent native forest sinks will need protection from browsing mammals too.

The sooner action is taken to control and eradicate introduced pests, the sooner recovering native ecosystems can help New Zealand tackle climate change.

Beech forest in Mt Aspiring National Park, February 1970, showing the destruction of understory and seedlings by deer.

The same spot, February 1999 following decades of intensive helicopter hunting. When this site was revisited in 2007 the view from the same photo point was completely obscured due to deer numbers having been strongly suppressed by hunting. Photo courtesy of Prof, Sir Alan Mark

A Northland kohekohe tree dying, eaten by possums. © Brad Windust

Four years later, the same tree flourishes and is sinking carbon. Without ongoing pest control the same tree would be dead and releasing carbon into the atmosphere. © Brad Windust

WHAT NEEDS TO BE DONE:

Control

- Significant reduction of the number of introduced browsing species in Aotearoa (goats, possums, deer, wallabies, pigs, chamois, and thar) is a win-win outcome of both native species protection, and carbon-sinking abilities of native forest, shrubland and tussockland

- Prioritise control where evidence shows the forest is losing a significant amount of stored carbon, such as kāmahi-podocarp forests.

Coordination

- Coordinate pest control to tackle predators (rats, possums, stoats, feral cats) with work to control browsers (goat, deer, wallabies, pigs, chamois, thar) so native ecosystems can recover and be the best carbon sinks on land

- Sustained and coordinated control of introduced feral browsers on public and private land to prevent spread and re-invasion.

Research

- Carry out more long-term and comprehensive research on native ecosystems, giving a clearer picture of greenhouse gas emissions and carbon sinks, to inform management decisions

- New technologies for introduced browser control.

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Cover image: Russell State Forest overrun by possums, pigs, and a growing population of sika deer. As a native forest collapses, trees die and release carbon dioxide.

© Dean Wright Photography

This is a summary of a full-length research report Protecting Our Natural Ecosystems' Carbon Sinks commissioned by Forest & Bird and written by Kevin Hackwell and Maitland Robinson.

To download the full report, visit:
forestandbird.org.nz/carbonreport

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