GORSE ON HINEWAI RESERVE

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Gorse (*Ulex europaeus*) occupies a lot of ground and a lot of our time in managing Hinewai Reserve in the south east corner of Banks Peninsula. Because of this, and because it is the number one noxious weed on the peninsula, we are preparing an illustrated display describing the role of gorse in the overall plan for the reserve.

The following is the text for the display:

1. Gorse
Ulex europaeus is a horribly prickly, yellow-flowered member of the legume family. It was introduced from Europe last century as a hedge and fodder plant, but soon became wild.

Few visitors to Hinewai fail to notice how abundant gorse is here. Some ask 'Is it taking over?'

2. The bad news - gorse as a weed
Gorse is an appalling weed of pastoral farming. It invades and destroys pasture. It quickly produces vast quantities of seed which remain viable in the ground for many decades and which readily germinate if the gorse canopy is cleared by burning, spraying, slashing or bulldozing. A great deal of effort, money and careful management is needed to subdue it.

3. The good news - gorse as a nurse canopy
Gorse is a very useful, soil-enriching, fast-growing shelter for regenerating native forest. Native trees establish much more successfully into ungrazed gorse than into ungrazed pasture.

4. Gorse versus mahoe and fuchsia
In our climate, if left undisturbed, gorse grows vigorously for its first few years, but after about 10 years it slows to a relative standstill. The once dense canopy begins to open up. Because it needs full light to grow well, gorse cannot regenerate significantly under its own shade. Shade-tolerant native species can do so easily, however, so long as they are not grazed off by farm stock or wild animals. Birds (and wind) spread native seed abundantly into gorse. Plants such as mahoe, fuchsia, wineberry, lemonwood and fivefinger grow up through the ageing gorse canopy, overtop it, and smother it.

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5. Gorse versus kanuka
In many places on Hinewai kanuka and gorse have started life together. Both grow fast. Both need full light. For a year or two the struggle seems well-matched. But in a few years gorse is slowing down. In about 6 years it reaches 3 m or so and stops upward growth. But the kanuka is still gathering speed. If it has kept its head above the gorse in the first 3 years it goes on growing steadily upwards, eventually shading and killing the gorse. 20 years later it is 10 m tall and the gorse is history.

6. More bad news - fire favours gorse
Both gorse and kanuka are highly flammable. If they burn, gorse gains ground for a while, chiefly because the fire lets light on to the ground again, stimulating millions of the waiting gorse seeds into germination and growth. Kanuka has no seed bank in the soil. Fire through young gorse sets the regeneration of Hinewai back for a few years, fire through 'old man' gorse sets us back 10 or 15 years, and fire through maturing kanuka can set us back many decades. If mature beech or podocarps are also killed, forest regeneration on Hinewai loses ground by several centuries.

7. More good news - some natives are hard to burn
Second-growth forest of mahoe, fuchsia, fivefinger, etc, that has already suppressed gorse is fortunately <u>not</u> very flammable. Nor is red beech. Totara also has <u>some</u> resilience against fire, with ability to resprout from charred trunks.

8. Beyond 2000 - beeches and podocarps rule
If fire can be prevented, eventually both kanuka and mixed second-growth bush are replaced in their turn by taller trees. Totara and matai can regenerate even when the understorey is browsed, but kahikatea needs a minimum of animal pressure. Red beech regenerates less readily under mixed canopies than under kanuka canopies, so that although red beech forest will be the end result of plant succession over most of Hinewai, there are patches where podocarp/hardwood forest will persist for a long time.

9. Gorse for how long?
Replacement of gorse by natives will be faster on some sites than on others. This is influenced by many factors such as altitude, aspect, dampness, topography (e.g., whether the site is on a ridge crest, hill-face, gully, rock outcrop or hollow), proximity to seed sources, and browsing pressure. Some sites will see native trees suppress gorse within a decade; on others the process may take three times as long. But if we do succeed in excluding fire, gorse will be an uncommon plant here in 30 years.

10. Meanwhile, will our gorse spread on to neighbouring farms?
There is already plenty of gorse on all the surrounding properties. Still, we don't want to provide additional seed sources. The primary way gorse disperses seed is by the explosive opening of its pods on hot days. This hurls the seed a few metres from the parent bush. We spend lots of time and energy keeping gorse 10 m back inside our boundary fence, and planting

the cleared strips in fast-growing, hardy natives. We also work hard keeping gorse off our tracks. Transport of seed down Narbey Stream is not a problem, and transport by farm animals, the chief means by which gorse seed is widely spread, is also not a problem from an ungrazed reserve.

11. Mites and weevils - biological control

In countries where gorse is native, it is kept in check by many predatory organisms. Scientists have released some of them onto gorse in New Zealand in efforts to curb its aggressive growth. Successful biological control of gorse is likely to be advantageous to Hinewai's goals as well as to farmers, in lessening gorse's competitive edge against kanuka and other natives in the early stages of plant successions.