

*Phragmites karka* is forming very large areas of impenetrable mono culture within the Manawatu Region. Rivers, streams, swamps, native wetland forests, estuaries, stock banks, sand dunes, bogs etc. are being impacted.

As far as we are aware *Phragmites karka* was first registered under Landcare in 2006 in the Rangitikei River and Himatangi estuary. In 2011 Horizons Regional council were aware of its existence. In 2015 they started, but didn't finish, mapping infested sites. No publication or awareness or education around this weed have been actioned. Those affected by this weed do not know what it is or how to manage it, particularly in aquatic and sensitive habitats.

### **Background**

*Phragmites karka* is the indigenous Asian version of the better known indigenous European *Phragmites australis*. Both of these species are in NZ. *Phragmites karka* was first recorded in the Rangitikei river near Himatangi in 2006.

*Phragmites australis* is listed as an Unwanted Organism, National Pest Plant Accord, managed for eradication as a NIPR species by MPI Biosecurity New Zealand. *P. Australis* was also rated in 2020 by NIWA to be the worst aquatic weed in NZ under the aquatic weed assessment model.

*Phragmites karka* in contrast has quietly gone under the radar both within NZ and internationally yet its impact in this region is the same if not worse than *P. Australis*. There are four existing known sites confirmed with the Landcare and an additional one with MPI Biosecurity. There are another three reported sites still to be confirmed by Landcare. Each site is being turned into a mono culture with a dense impenetrable swathes of above ground reeds ranging from 2meters to 8meters tall and thick mats of impenetrable rhizomes. Some of the swathes of *P. karka* are covering kilometres of river banks and many hectares of estuary and bog lands and now encroaching into paddocks and indigenous wetland forests.

### **Range of spread in the Manawatu.**

The Whangaehu River has three a 3km infestation. - Confirmed Landcare

The Rangitikei River has 7km spread down steam to Himatangi. In the Himatangi estuary township and sand dunes -Confirmed Landcare

The Makino stream from Feilding township to the Oroua confluence. (possibly beyond.)-confirmed Landcare

The Awahuri Forest/Kitchener park. -Confirmed (with MPI bio security October 2020.)

Waitarere Beach - a stream feeding down to the beach- confirmed Landcare

Horowhenua from the lakes spreading toward the coast -(to be confirmed)

Foxton two sites -(to be confirmed )

There are several other sites within the Manawatu Region that we have been told about, but haven't yet been checked out. *Arundo donax* is also present in the Manawatu and at certain times in the growth cycle the two weeds can easily be confused. There are only a few people locally who can tell the difference this is why reports all have to be checked and if thought to be *P.karka* it is sent to the Landcare for verification.

*Phragmites karka* has only been identified in one other region that we are aware of. The Auckland Regional Council identified 3 non sensitive sites in 2011. In 2012 they with the assistance of DOC started a regional eradication strategy. We understand this was not an easy process and one site still has the weed present.

Potential spread through out NZ is highly viable. *Phragmites karka* is not frost sensitive it can survive in Northland and probably viable in coastal areas all the way to the bottom of the South Island. The rhizomes have greater mass than the above ground reeds becoming moisture storage that allows the weed to survive drought and dry period.

### **Habitats *Phragmites karka* has been found in the Manawatu**

1. River and stream banks kilometres of continuous mono culture reducing access to the water and smothering all other plant life.
2. On stock banks in expanding monoculture swathes starting to encroach on farmland. Some of these are now nearly 500metres long continuous swathes.
3. Paddocks. in low land damp depressions. Establishing in moist areas then expanding out to higher ground.
4. Estuaries increasingly blocking the estuary creating a mono culture.
5. By boat ramps on roadways to boat ramps.
6. Sand dunes. Less dense reed structures and only grows to about 2meters tall, but still has dense mated rhizomes.
7. Back gardens large clumps seen in Himatangi village and Feilding township gardens.
8. Indigenous wetland national scenic forest reserve. In oxbows. Choking large mature indigenous trees competing for light growing up to 8 meters tall. Smothering sedges shrubs and understory plants. Expanding along tracks and all open areas. Approximately 2 hectares of the forest has now been compromised.

### **How is *Phragmites karka* being spread**

#### **Stem fragments.**

*P. karka* is a very tall reed grass that has sections on the stem where leaf emerges from the reed. Broken pieces of reed containing a leaf section nodule can generate new viable roots and leaf in 8 days if in water or on boggy land. From one fragment a new infestation can start.

#### **The roots**

*P.Karka* roots are thick rhizome's that are dense water storage systems. These form impenetrable mats just below the top layer of soil and silt. Vertical root shoots penetrate downwards to the water table. E.G., in sand dunes 2 metre depth identified and on edge of a bog 0.5 metre.

Rhizomes also travel from 5-7 metres underground and emerge creating a new clump. At ground level stolen can also travel 5-7 metres sending up new reeds and roots along the stem.

**Flowers.** No flowering to date has been observed in the Manawatu. (This has flowered in the Auckland region unknown if viable seeds are set).

Once in a river or stream the spread occurs every time there is high fast water flow, Fragments of stems and rhizomes break off and establish new colonies downstream.

The flows downstream in river systems and water ways is the main form of spreading from one location to another, but it doesn't explain how it migrates from one river system to another within the Manawatu. It is more likely this is being done by human activity via machinery, boats etc. Because people don't know what it is and often think it is bamboo there is no caution about its movement or management. Two known identified human mechanisms have been flail mowing of stock banks hastened the spread in some areas. Small pieces of viable stem and roots have washed down stream and multiple new infestations are now expanding. Removing river gravel from an area with *Phragmites karka* on the stock banks and dumping in a paddock has now produced new infestation across the paddock. River gravel being used on the road way to the Himatangi boat ramp may have started an infestation in the road construction, or it may have come from boats and fishing gear being cleaned.

### **Strategy to manage *Phragmites karka*.**

This is a three-pronged approach to achieve the listing of this plant as a national unwanted with a nationwide eradication strategy just like its sister species *Phragmites Australis*. The underlying issues are this is highly invasive and not just a threat to Manawatu but to the rest of NZ as well. The second issue is we have no real knowledge on how to successfully manage this very resilient weed. *Phragmites karka* resilience is compounded by the fact that there are some very sensitive habitats that also need to be protected from its expansion and through eradication processes. The land owners river accords etc have no idea what they are seeing and we need to create awareness so we do not spread it further without realising.

#### Actions

1. Compile an application and aquatic plant assessment for NPPA. This will allow a wider across NZ awareness of this weed and hopefully feed more knowledge and information back to understand how we can manage it. We don't believe this weed is being sold through nurseries at this point but we don't want it to ever find its way into being sold. – This is almost complete and is about to start the grammar editing and then move onto the technical editing. We are now starting consultation informing and creating awareness of the plant with affected River Accords, TLAs, QE 2, Fish and game, farmers, iwi across the region, river contractors etc
2. Approach MPI to instigate the process for a national strategy review. This means the management and resources are heavily supported by MPI and DOC nationally. – Have just managed to connect with the right department they have started looking at this. They have not knocked us back and have asked for further information for consideration
3. Find and use every avenue possible to educate the public as to what it is and how it is spread. When the structure of this weed is looked at logically its spread from one catchment area to another can only be by human activity.

Yours sincerely

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