

# Eradication of Water Hyacinth from the River Murray

Water hyacinth (*Eichornia crassipes*) is a very attractive water plant but is justifiably called the world's worst aquatic weed due to its ability to rapidly cover whole waterways.

This paper sets out a summary of the eradication of water hyacinth from the River Murray over a period from 1939 to about 1955. For more information on the description, biology and impacts of water hyacinth in South Australia see:

- [https://pir.sa.gov.au/aghistory/natural\\_resources/pest-animals-weed-management/pest\\_weeds/water\\_hyacinth](https://pir.sa.gov.au/aghistory/natural_resources/pest-animals-weed-management/pest_weeds/water_hyacinth) and
- [https://www.pir.sa.gov.au/data/assets/pdf\\_file/0008/137285/water\\_hyacinth\\_policy.pdf](https://www.pir.sa.gov.au/data/assets/pdf_file/0008/137285/water_hyacinth_policy.pdf)

## How the infestation started and specific threats to the River

In the spring of 1937 a resident near Ramco with water hyacinth growing in his domestic fish pond (water hyacinth plants were at that time readily attainable in Adelaide from florists and nurseries) decided to throw several of these plants into nearby Ramco Lagoon in the hope of improving the attractiveness of the lagoon and possibly increasing tourism to the area. By the autumn of 1939 significant areas of the lagoon were covered with a dense mass of water hyacinth, so dense that the weight of a person could be supported. By this time, water hyacinth had spread from the lagoon to other lagoons and into the River Murray itself. Single plants had broken away from the main masses and had floated from its source in the lagoon, over the locks and isolated plants were found along the banks of the River all the way down to the swamps near Murray Bridge.<sup>1</sup>

Although a weed of tropical and sub-tropical climates, the infestation of water hyacinth at Ramco found the climatic conditions in the Riverland of South Australia to be so favourable that it spread very rapidly. Specifically at risk from this infestation were the following:

- the injection pipes for river boat steamers would be clogged;
- the river fishing industry would be crippled;
- the numerous pumps for the supply of water to residential homes and agricultural industries would need to be protected by strainers;
- irrigation channels would be blocked;
- ferry punts and cables would be hindered;
- locks were likely to be damaged; and
- water quality would deteriorate significantly.<sup>2</sup>

## Eradication efforts

It would appear that the alarm was first raised by the Waikerie Agricultural Bureau during the summer of 1938/39<sup>3</sup>, this being reinforced by concern from the District Council of Waikerie which decided to approach the South Australian Government for action to combat it as the waterways in which the plant grew were outside the Council's jurisdiction.<sup>4</sup> Given these approaches, water hyacinth was declared to be a noxious weed within the whole State for the purposes of the Noxious Weeds Act.<sup>5</sup> This declaration required owners of land to destroy any water hyacinth plants on their land and thereby effectively stopped the sale of the plant as well.

By May 1939, when it was known that water hyacinth had reached the River Murray proper, a survey was carried out by the Engineering and Water Supply Department and a report prepared on its distribution together with an estimate of the cost of eradicating it. The possibility that the plant could get into the Happy Valley and/or Mount Bold reservoirs was a stimulus for some form of immediate action. The Department of Agriculture also prepared a bulletin with colour illustrations for distribution all to areas where the weed might occur to facilitate the identification and destruction of any plants located.<sup>6</sup>

Within one week the survey had been completed, a report prepared and the Government had resolved to launch an immediate and vigorous eradication program upon water hyacinth in the River Murray, its lakes and lagoons.<sup>7</sup> Advice to Government was that eradication was considered feasible without undue expense, given the relatively limited size of the infestation. Although no biological control organism was known to exist, water hyacinth could be destroyed by cold water or salt water. Unfortunately, neither of these two water methods could be implemented to any practical extent in the area where the infestation occurred but it could not survive on dry land. The agreed action to eradicate the weed therefore depended on physically removing the plants from the water onto dry land where they could be dried out and then burnt. This would ensure that the seeds were also destroyed and did not return to the water.<sup>8</sup>

A further issue hindering an effective program was unusually large water flows expected down the Darling River which had necessitated the opening of the locks. This had resulted in the movement downstream of thousands of water hyacinth plants in various stages of growth.<sup>9</sup> The eradication program was to start immediately. Land owners and those who used the river, particularly fishermen, were asked to report to authorities any water hyacinth plants found. Water hyacinth was present in at least two lagoons and the resources required to remove the plants were beyond ability of the lessees of the land. However an interesting legal point was investigated as it involved whether the Government had a right to enter private property to clear the weed and whether doing so would create any precedent. It was resolved that the Government was quite within its rights to remove the hyacinth plants from the River and lakes but not the lagoons. If there ended up being a legal problem or if adjoining landowners did not destroy the growth removed from the water then legislation would be enacted to give the Government control over the whole position.<sup>10</sup>

To assist in the eradication program, adjoining land owners were asked to destroy any small infestations growing adjacent to their properties. There was no lack of ideas from the public to control the weed and prevent its spread, including treating the lagoons with chemicals to exterminate the growth<sup>11</sup>, cattle grazing on the plant<sup>12</sup> and even blowing up the cliff near the Ramco Creek so as to block the exit of the swamp to the River Murray.<sup>13</sup> Despite these suggestions, the program was restricted to raking the floating hyacinth plants to the banks from where they could be burnt.<sup>14</sup> One measure that was implemented was drawing a wire mesh net across the river to catch floating plants. Two nets were successfully used, one at Mann's Landing near Mannum<sup>15</sup> and the other above Lock 1 near Blanchetown.<sup>16</sup> A further net had been laid across the mouth of the Ramco Creek but was removed after the lagoon had been cleared.<sup>17</sup>

The eradication program commenced on Monday 22 May 1939 at Murray Bridge where a boat and crew was used to collect plants and a day or two later a gang started taking the weed from Ramco Lagoon. During the first few work days, crews experimented to determine the best method of removing the weed from water where it was floating. A variety of cutting and raking implements were tried out and the most effective method chosen.<sup>18</sup>

The plan was to scour the entire river by boat from Ramco Lagoon to Murray Bridge. Although the work of removing the plants from the river did not present much difficulty, operations are likely to be protracted because of the extent of the infestation as only the entire removal of every growth would lead to success.<sup>19</sup>

A gang of 13 men had completed the removal of water hyacinth from Ramco Creek by 15 June and then moved downstream to Leske's Lagoon, after which they continued down to Lock 2 near Waikerie. A large haze of smoke persisted throughout the area as hundreds of tons of the weed were being burnt. The large heaps lining the banks were spread out to allow them to dry before they were raked together for burning.<sup>20</sup> The system of burning small quantities at a time in large fires proved most successful.<sup>21</sup> In the more inaccessible areas, a 60 tonne barge was filled with the plants removed from the river, just a ½ mile stretch along one side of the river taking up one barge load.<sup>22</sup>

A river steamer had been hired to assist with inspections and water hyacinth removal up to Lock 1. As such, an intensive search had been made of the river, lagoons and backwaters from Murray Bridge up to Blanchetown. A few clumps of the plant had been destroyed but there did not appear to be any sign of water hyacinth below Neeta.<sup>23</sup>



A colour photograph by AD Cocks, Waite Agricultural Research Institute of the water hyacinth infestation covering Ramco Lagoon in 1939.<sup>24</sup>

Surveillance continued for the remainder of the winter and throughout the summer of 1939/40. During May 1940, the Engineering and Water Supply Department had carried out a thorough inspection along the River Murray between Waikerie and Murray Bridge to search for any further infestations of water hyacinth. The inspection revealed that the actions taken the previous year had cleaned up the main lagoons but further inspections would continue for some time. In Ramco and Leske's Lagoons small seedlings were found growing around the edges but no plants could be located. A search of the river and lagoons below Leske's did not reveal any further plants. However, some large hyacinth plants were found growing in reeds and in a backwater near Purnong Landing.<sup>25</sup>

By October 1940, the Commissioner for Public Works stated that water hyacinth had been eradicated on the River Murray and funds had been provided in the budget to deal with its possible reappearance.<sup>26</sup> Then in early 1941 water hyacinth plants were found by land owners in a channel running between the river and the main swamp a few miles above Mannum with a barrow load removed.<sup>27</sup> By August of that year the Chief Engineer of the Engineering and Water Supply Department confirmed that water hyacinth had been eradicated down to Mannum.<sup>28</sup>

After this time, inspections continued. Every Government officer, land owner and fishermen on the river was now aware of the danger of water hyacinth and were constantly on watch for stray pieces of the weed. The Government considered the river to be clear of water hyacinth and while this vigilance was maintained there was little danger of serious reinfestation.<sup>29</sup>

## Review and follow-up

The eradication of water hyacinth from the River Murray was an excellent example of effective weed control. It demonstrated that early recognition, prompt action and subsequent vigilance had saved the people of South Australia a vast sum.<sup>30</sup> It should also be noted that this program had the interest and complete support of the Premier.<sup>31</sup>

But immediate eradication had not been achieved, which was not unexpected given the biology of the plant. It would appear that isolated outbreaks continued and in April 1955 water hyacinth plants were found in Zeigler's Lagoon near the original Ramco site.<sup>32</sup> By this time, though, a new and very effective alternate control method was available in the form of a selective hormone weed killer. Methoxone was advertised as a non-poisonous, non-inflammable and economical herbicide suitable for the control of water hyacinth.<sup>33</sup> Methoxone became available in South Australia in early 1946 and this, together with other like herbicides, was used with effect to destroy water hyacinth infestations.<sup>34</sup> Persistence, the availability of the right tools and an understanding of the plant's biology enabled eventual eradication.

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<sup>1</sup> Spafford, WJ: *Water Hyacinth in South Australia*, Bulletin No. 345, Dept of Agriculture South Australia, supplement to Journal of Agriculture, June 1939.

<sup>2</sup> *Ibid*

<sup>3</sup> The Advertiser, Adelaide, Wednesday 17 May 1939, page 20

<sup>4</sup> The News, Adelaide, Wednesday 10 May 1939, page 7

<sup>5</sup> South Australian Government Gazette, Thursday 20 April 1939, page 976

<sup>6</sup> The Advertiser, Adelaide, Wednesday 10 May 1939, page 7

<sup>7</sup> The Advertiser, Adelaide, Wednesday 17 May 1939, page 20

<sup>8</sup> Spafford, WJ: *Water Hyacinth in South Australia*, Bulletin No. 345, Dept of Agriculture South Australia, supplement to Journal of Agriculture, June 1939.

<sup>9</sup> The Advertiser, Adelaide, Saturday 13 May 1939, page 26

<sup>10</sup> The Advertiser, Adelaide, Tuesday 16 May 1939, page 17

<sup>11</sup> The Advertiser, Adelaide, Wednesday 17 May 1939, page 22

<sup>12</sup> The Advertiser, Adelaide, Tuesday 30 May 1939, page 16

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- <sup>13</sup> The Advertiser, Adelaide, Wednesday 24 May 1939, page 25
- <sup>14</sup> The Advertiser, Adelaide, Wednesday 17 May 1939, page 22
- <sup>15</sup> The Advertiser, Adelaide, Tuesday 30 May 1939, page 16
- <sup>16</sup> The Advertiser, Adelaide, Thursday 10 August 1939, page 7
- <sup>17</sup> The Advertiser, Adelaide, Wednesday 21 June 1939, page 21 and River Murray Commission. Report For the Year 1938-39. National Library of Australia, Published Papers 1938/39
- <sup>18</sup> The Mail, Adelaide, Saturday 20 May 1939, page 2
- <sup>19</sup> The Chronicle, Adelaide, Thursday 25 May 1939, page 45
- <sup>20</sup> The Mail, Adelaide, Saturday 17 June 1939, page 5
- <sup>21</sup> The Advertiser, Adelaide, Friday 30 June 1939, page 27
- <sup>22</sup> The Advertiser, Adelaide, Tuesday 27 June 1939, page 12
- <sup>23</sup> The Advertiser, Adelaide, Thursday 10 August 1939, page 7
- <sup>24</sup> Spafford, WJ: *Water Hyacinth in South Australia*, Bulletin No. 345, Dept of Agriculture South Australia, supplement to Journal of Agriculture, June 1939.
- <sup>25</sup> The Advertiser, Adelaide, Tuesday 28 May 1940, page 15
- <sup>26</sup> The Advertiser, Adelaide, Wednesday 9 October 1940, page 17
- <sup>27</sup> The Mail, Adelaide, Saturday 18 January 1941, page 10
- <sup>28</sup> [https://pir.sa.gov.au/aghistory/natural\\_resources/pest-animals-weed-management/pest\\_weeds/water\\_hyacinth](https://pir.sa.gov.au/aghistory/natural_resources/pest-animals-weed-management/pest_weeds/water_hyacinth)
- <sup>29</sup> The Chronicle, Adelaide, Thursday 14 March 1946, page 7
- <sup>30</sup> *Ibid*
- <sup>31</sup> Conversation with Arthur Tidemann 29 November 2021
- <sup>32</sup> [https://pir.sa.gov.au/aghistory/natural\\_resources/pest-animals-weed-management/pest\\_weeds/water\\_hyacinth](https://pir.sa.gov.au/aghistory/natural_resources/pest-animals-weed-management/pest_weeds/water_hyacinth)
- <sup>33</sup> For example, see advertisement in The Chronicle, Adelaide, Thursday 11 November 1948, page 41
- <sup>34</sup> Conversation with Arthur Tidemann 29 November 2021