RIVER TAY DISTRICT INVASIVE PLANTS SURVEY 2006

C. Brodie, K. Birkeland, P. Fishlock and D. Summers

Japanese knotweed

Himalayan balsam

Introduction

During the summer of 2006 a survey was undertaken in the Tay Salmon Fishery District to identify the distribution and abundance of three invasive plants, namely Japanese knotweed, giant hogweed and Himalayan balsam, with the purpose of guiding an eradication project of these species in the coming years.

The work was conducted by staff of the Tay District Salmon Fisheries Board on behalf of the Tay Foundation. Most of the fieldwork was performed by Chris Brodie, a student from the University of Stirling during the summer vacation.

The above mentioned plants are aggressive and spread rapidly, crowding out native plant species and have a general detrimental effect on biodiversity and river ecology. A survey of selected sites conducted by Scottish Natural Heritage in 2003 showed that Himalayan balsam especially had considerably expanded its distribution over the previous decade. Therefore, before these species become even more dominant than they currently are, management is urgently required. For a control programme to be successful however it must be conducted in a systematic and coordinated manner, starting from the top of the catchment and working downstream, otherwise these plants will merely re-colonise. Before any treatment will take place it is therefore crucial to identify all areas where these plants are found in the Tay catchment, and to determine their upstream boundaries.

Methods

The survey commenced in July, by which time Himalayan balsam was in flower and easily identifiable. The approach taken was to commence surveying the lower reaches of major tributaries where some of these plants were known to occur and then to proceed upstream following the plants until upstream limits were detected. Where possible river banks were walked, but because of the large extent of the Tay catchment and the difficulties of access in some areas, surveys were generally done from road bridge to road bridge on many of the smaller streams. The survey was only conducted in the Tay upstream of Perth Harbour, in the Earn from Bridge of Earn and the Eden from the tidal limit at Guardbridge. The Firth of Tay was not surveyed, although it is known that invasive species are common in some localities.

At each site the presence or absence of the three species was noted and an approximate estimate of the area of plant stands was made. Grid references of each site were obtained by a hand-held GPS and the data were then inserted into a Geographical Information System (G.I.S.) program (Arcview).

Results

The 2006 survey showed that these three invasive plant species have a widespread distribution and there are now in the region of 200,000m^2 of these plants in the Tay District, upstream of Perth harbour (Figure 1).

Himalayan Balsam is by far the most widespread plant and it is estimated there is approximately 175.000 m^2 of Himalayan Balsam throughout the Tay District (Figure 2). Himalayan balsam plants were practically ubiquitous along the main stem of the Tay from Perth up to the junction of the River Lyon just upstream of Aberfeldy, although their incidence was sparser for several miles below Aberfeldy. It is also profuse on the Earn almost up to Loch Earn, the lower Isla and the Eden. As yet, balsam is absent from the highland tributaries. While it is widely found on the larger lowland tributaries it has still to colonise many of the smaller lowland tributaries. For example, it occurs on very few of the tributaries of the Isla, but judging by the situation on the lower Earn, it is only a matter of time before it spreads into every ditch in Strathmore.

Japanese Knotweed has only really formed extensive stands on the Earn and in the Tay downstream of Perth Bridge and in Perth Harbour (Figure 3). Elsewhere it largely occurs in small pockets. The most frequent of these were in the Loch Tay area. A number of the records shown merely consist of individual plants. In total there is approximately 25,000m^2 of Japanese Knotweed within the Tay District.

Giant Hogweed is the least common invasive plant species within the Tay District (approximately 500m^2) and was only found in the lower reaches of the District (Figure 4). Of any site, it was most abundant at Perth Harbour, a notable hotspot for all three species.

Factors helping spread

During the course of the survey a number of observations were made which may help explain the distribution.

Knotweed and, for example, often tended be associated with properties, indicating that the sporadic distribution still reflects its introduction as a garden plant. Its introduction to the Tummel, for example, has undoubtedly occurred as a garden escapee in Pitlochry, where it is present along a stream in the middle of the town, backed on to by gardens. Similarly two isolated pockets of giant hogweed were traced to gardens at Farleyer (near Aberfeldy) and Meikleour.

In most instances knotweed did not show extensive signs of spread, but on parts of the Earn its spread has been rapid and extensive. At Kinkell, for example, the ghillie reports that four years ago there was none and now there are stands up to 15 m wide extending for hundreds of metres. Similarly, on the Bervie Water, near Stonehaven, it is noticeable from the A90 road that thick stands of knotweed now extend for several miles.

We speculate that the rapid spread on the Earn has been caused inadvertently through inappropriate attempts at management. For example, evidence of strimming of knotweed was apparent at the village of St Fillans at the outlet of Loch Earn. Perhaps floating stems then root further downstream. This is a well known method of transmitting knotweed and failing, slashing, strimming or mowing is not recommended.

Balsam, however, spreads rapidly as the seeds disperse very readily. It was noticeable that balsam was mostly present in areas where river banks were either fenced or usually where arable crops grew up to the water side. Where river banks were grazed balsam was scarce, although there were other issues relating to bankside ecology at some such sites. Balsam is a very succulent plant and is clearly eaten readily by livestock. It has very shallow roots and is very easily uprooted.

Proposed management

To prevent the further spread of these plants and eventually eliminate them the following course of action is recommended.

1) A campaign of public awareness is required. Those who are actively involved in riparian management – fishery owners, anglers, bankside householders – must be targeted and made aware of the dangers. They must receive appropriate management information. For example, those who currently cut knotweed must be made aware this is only exacerbating the problem.

2) In collaboration with land owners, fishery owners, Perth and Kinross Council, Scottish Natural Heritage, SEPA and other interested bodies, a plan must be formulated to tackle all the knotweed in the district and to commence to manage balsam from its upper limits on the various tributaries. To this end, the Tayside Biodiversity Partnership's Water and Wetland's group have been awaiting the production of this report.

3) Meetings with the above parties are being arranged. But in the meantime, a proposal has now been submitted to the Esmee Fairbairn Foundation, through Rivers and Fisheries Trusts of Scotland (RAFTS) for a grant to eradicate these invasives from the Tay District. If successful, the eradication work will start in early 2008, continuing through 2010. The aim is to treat all areas containing Japanese knotweed and Giant hogweed during this three-year period. Due to the extensive labour and costs associated with Himalayan Balsam eradication it will not be feasible to clear large areas and control will therefore be targeted to avoid colonisation to any new areas.

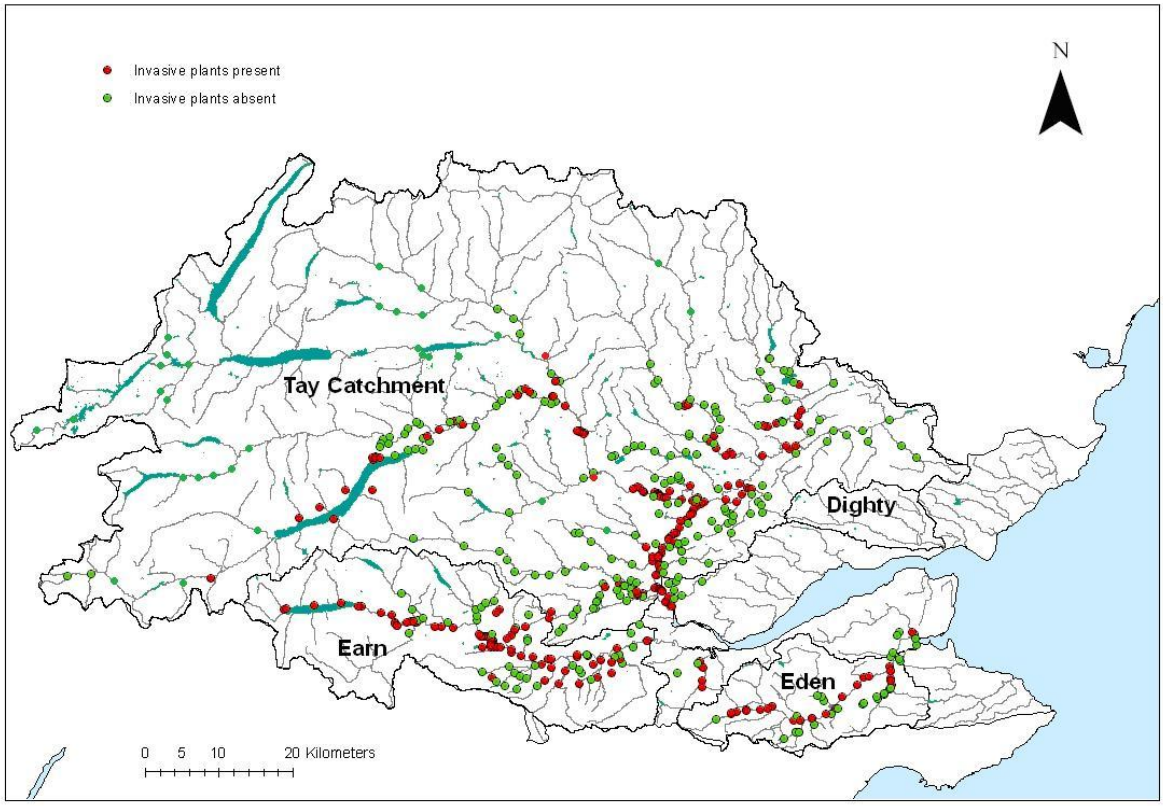

Fig. 1. Invasive plants survey sites and sites where either Himalayan Balsam, Japanese knotweed or giant hogweed were found.

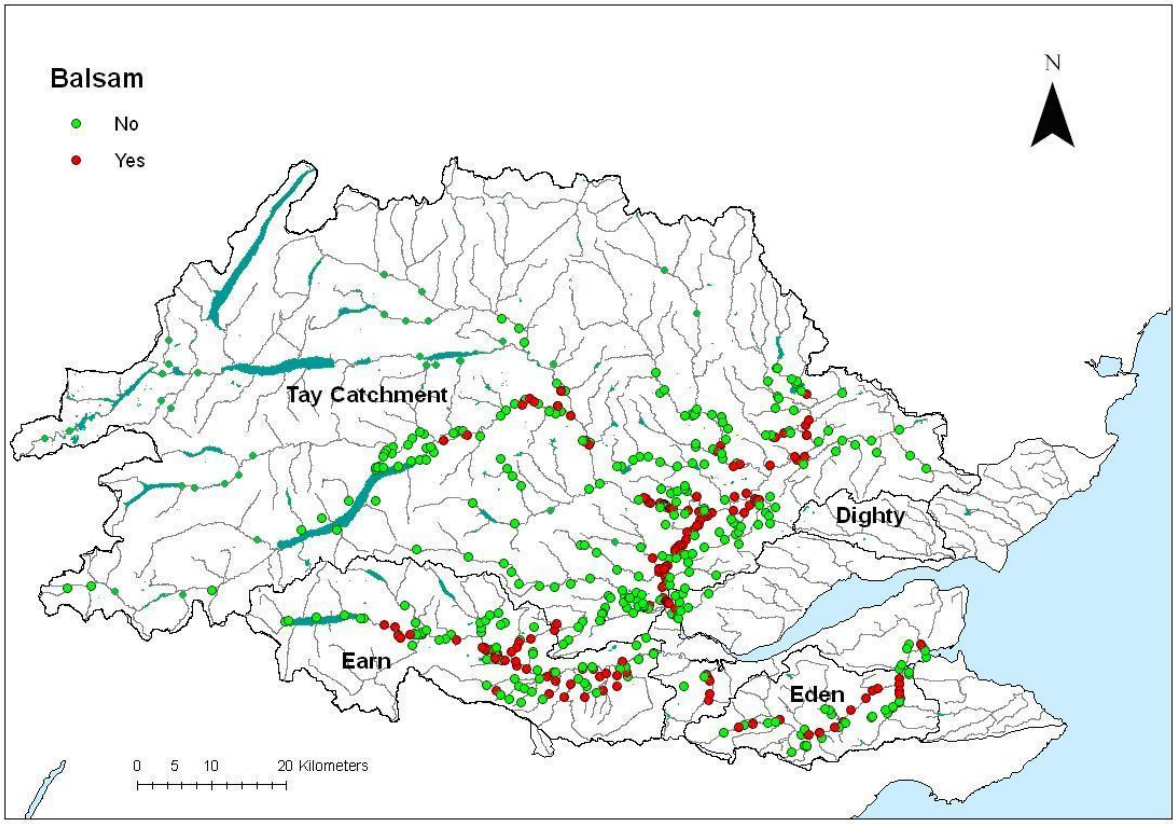

Fig. 2: Invasive plants survey sites and presence of Himalayan balsam.

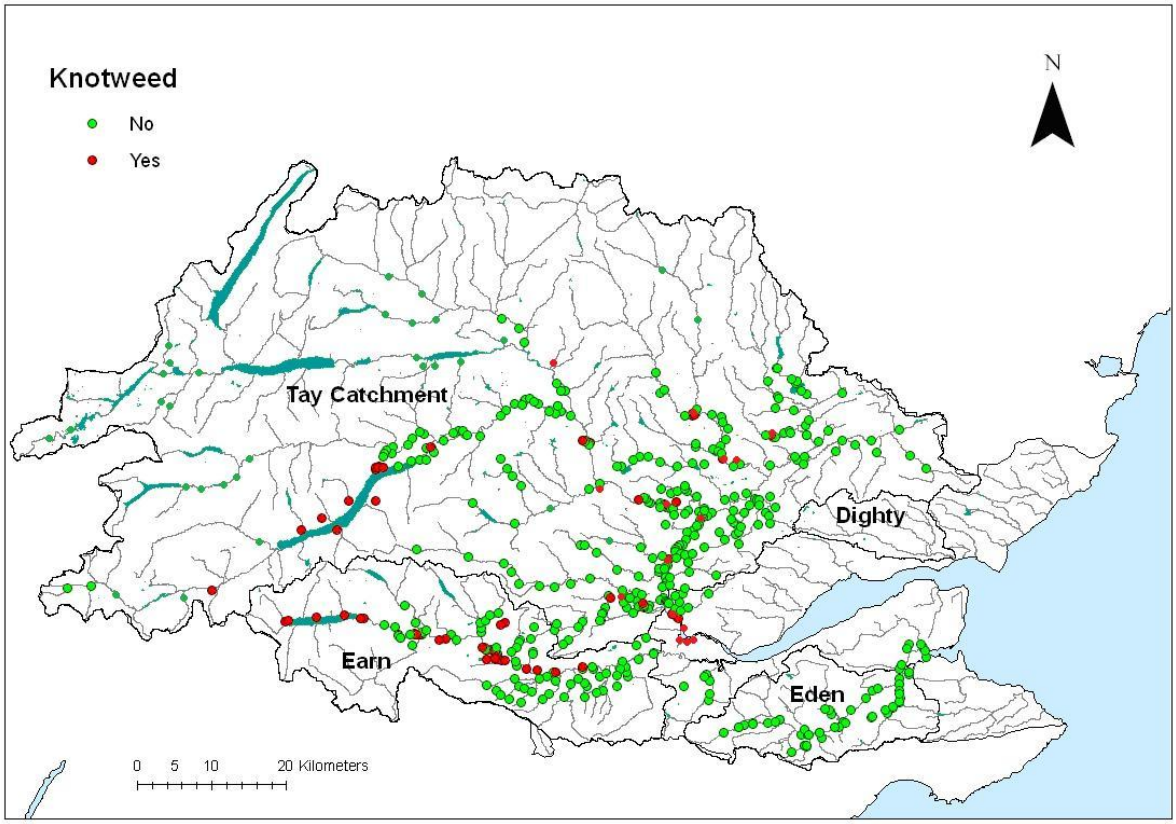

Fig. 3: Invasive plants survey sites and presence of Japanese knotweed.

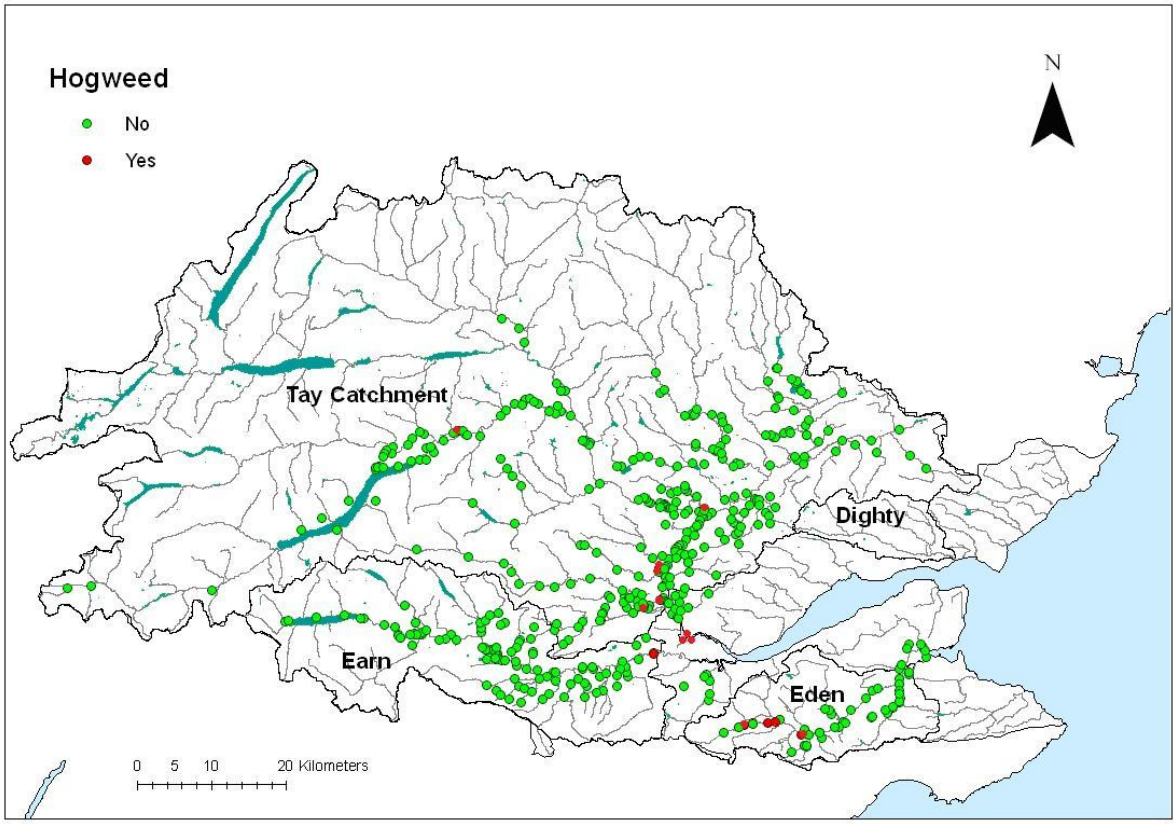

Fig. 4: Invasive plants survey sites and presence of giant hogweed.