

A photograph showing several dark, segmented flatworms (Arthurdendyus triangulatus) crawling on a large, light-colored leaf. The worms are thick and have a distinct head region. The leaf has prominent veins and some reddish-brown spots.

Management Measures for Widely Spread Species (WSS) in Northern Ireland New Zealand flatworm (*Arthurdendyus triangulatus*)

As per Article 19 requirement of EU Regulation 1143/2014
*on the prevention and management of the introduction and spread of
invasive alien species*

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New Zealand flatworm <i>Arthurdendyus triangulatus</i>	
Description	A large terrestrial flatworm measuring up to 10 mm wide and 200 mm in length when fully extended. Unlike the well-known native earthworm, the invasive New Zealand flatworm does not have a segmented body. Colour can vary but in general specimens are grey, or brown, with a pale yellow margin and underside covered by specks.
NI Status	Widespread throughout Northern Ireland, particularly within populated areas. For current distribution visit NBN Atlas Northern Ireland .
Pathways	Inadvertently introduced with horticultural and garden plants, first recorded outside of New Zealand in Belfast 1963. Given the slow speed of natural movement, subsequent spread has been through the transport of plants, topsoil, manure and baled silage.
Aim	Prevent new introductions and spread into unaffected areas.
Objectives	<ol style="list-style-type: none"> 1. Ensure strict biosecurity when working in areas of established <i>A. triangulatus</i> populations to avoid further spread. 2. Raise awareness of section 4.2 of the horticultural COP (section 4.2) and European and Mediterranean Plant Protection Organisation (EPPO) standards (PM1) to public to plant traders and importers. 3. Assist DAERA Plant Health Inspectors to conduct <i>A. triangulatus</i> inspections in premises of plant traders and importers, alongside their duties under The Plant Health (Official Controls and Miscellaneous Provisions) Regulations (Northern Ireland) 2019.
Prevention	
Border and pathway actions	<ul style="list-style-type: none"> - <i>A. triangulatus</i> is already established in Northern Ireland. - Under the EU Invasive Alien Species Regulation 1143/2014, it is an offence to import into the EU, keep, breed, transport (to, from or within the EU; except to facilitate eradication), place on the market, use or exchange this species. - ID sheet developed and deployed to border staff – Border Force, Portal Inspectors (DAERA), Plant Health Inspectorate (DAERA/FS), etc. Also distribute to plant traders and importers. - Liaison with Wildlife Crime Northern Ireland (PAWNI) to ensure species is not being traded.



<p>Stakeholder communications</p>	<ul style="list-style-type: none"> - Provide advice to gardeners on best practice, such as; inspect incoming plants, use fresh compost, avoid creating piles of leaves/soil and regularly check mats and pots in direct contact with the ground. Also provide guidance to gardeners on how to eradicate once established. - Traders are not permitted to purchase or sell this species however due to the ‘hitch-hiking’ nature of <i>A. triangulatus</i> target traders, importers and gardeners to raise awareness of the EPPO specific phytosanitary measures (PM1) for plants imported from countries where New Zealand flatworm occurs. https://www.eppo.int/media/uploaded_images/RESOURCES/epo_standards/pm1/pm1-03-1-en.pdf - Provide advice/training to garden centre/nursery staff on good practice and request that plant traders and importers follow section 4.2 of the horticulture code of practice https://invasivespeciesireland.com/wp-content/uploads/2010/07/Horticulture-Code-Final.pdf - Gardeners, farmers and land owners in an area with an established population must act responsibly and not allow or encourage New Zealand flatworm to spread outside their land-holding, i.e. do not move soil or manure long distances or into non-affected area.
<p>Early detection and rapid response</p>	
<p>Surveillance</p>	<ul style="list-style-type: none"> - A new, dedicated surveillance mechanism is not necessary as a number of existing recording schemes allow reporting of this species; - In Northern Ireland species records are entered to CEDaR online recording via www2.habitas.org.uk/records/ISI or via the Invasive Species Ireland website - http://invasivespeciesireland.com/report-sighting/. Entering a record generates an email to the Northern Ireland Environment Agency (NIEA) Invasive Non-Native Species (INNS) Team. - The Botanical Society of the British Isles Map Scheme compiles comprehensive distribution maps for plants across the UK. - The Biological Records Centre (www.brc.ac.uk) collects presence records of all wildlife species in the UK through a network of voluntary recorders on iRecord online or by the iRecord app. The BRC provides the opportunity to download distribution data and visualise it as customisable maps, via the National Biodiversity Network Atlas Northern Ireland (https://northernireland.nbnatlas.org/). - Relevant Government agencies such as DfI Roads/Rivers, AFBI, Forest Service and Northern Ireland Environment Agency record the presence of invasive non-native species as a part of

	<p>their work and will then initiate management measures for WSS on their own sites.</p> <ul style="list-style-type: none"> - Non-Governmental Organisations (e.g. Wildlife Trusts) undertake surveys of and report incidental sightings of invasive non-native species and will then initiate management measures for WSS on their own sites. - All N.I. Councils to also record and report presence of invasive non-native species on their estates and initiate management measures for WSS on their own sites.
Rapid response	<ul style="list-style-type: none"> - Attempt small scale or localised eradication in an areas where new populations are discovered. - If <i>A. triangulatus</i> is recorded on plant traders or importers premises, steps should be taken to prevent the spread of and eradicate immediately (follow guidance in section 4.2 of Invasive Species Ireland Horticultural Code of Practice). Also consider; establishing an effected demarcated area, destroying or treating any effected plant or plant material, conducting a full inspection of potentially effected plants or plant material, prioritising trade of bare root plants, or using inorganic growing media. Contact customers who may have already purchased effected plants.
Long-term management	
<ul style="list-style-type: none"> - As there is no effective wider control methods for New Zealand flatworm, eradication in Northern Ireland is extremely unlikely. Therefore efforts should be focused on the prevention of the further spread of <i>A. triangulatus</i>. - Localised control (infected premises) may be feasible through trapping (individuals should be disposed of by dropping into hot water (<40°C), or by sprinkling with salt) and/or steam treatment, however it is time consuming and full eradication is unlikely. - Enhancing earthworm populations through the provision of soil organic matter (manure) may provide some mitigation against earthworm predation. - Guidance on the management of the New Zealand flatworm is available on the Invasive Species Ireland website - https://invasivespeciesireland.com/species-accounts/established/freshwater/new-zealand-flatworm 	
Research	
<ul style="list-style-type: none"> - No known current research. 	

Photos: © The Food and Environment Research Agency (Fera)



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