



Forestry Commission

Research Information Note 274

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Noxious weeds

by Ian Willoughby



Abstract

Some weeds growing within woodlands are covered by legislation that may require managers to take measures to control them. This Note lists such weeds, discusses any practical impact that relevant legislation may have on woodland management, and gives help in identifying and controlling the problem species.

Introduction

A weed can be defined as a plant growing where people judge it to be undesirable – almost all species could fall into this category in certain circumstances. There are some plants however that create particular problems because they are poisonous or invasive; agricultural land might be affected, amenity might be impaired, and desirable flora might be suppressed or destroyed.

Legislation

The Weeds Act 1959

The Weeds Act 1959 consolidated earlier legislation relating to certain noxious weeds. The Act empowers the Minister for Agriculture, Fisheries and Food or the Secretary of State for Scotland (or approved officials within MAFF, the Welsh Office Agriculture Department or the Scottish Office Agriculture, Environment and Fisheries Department) to request that an occupier of land takes action to prevent the spread of the following weeds:

spear thistle (*Cirsium vulgare*)
creeping or field thistle (*Cirsium arvense*)
curled dock (*Rumex crispus*)
broadleaved dock (*Rumex obtusifolius*)
common ragwort (*Senecio jacobaea*).

If the occupiers do not take the action requested, they may be fined up to £75 for a first offence, or £150 for a repeated offence. Alternatively, the agriculture departments may arrange for a third party to undertake the action requested and then recover the cost of the operations from the occupier or owner of the land.

The Wildlife and Countryside Act 1981

Section 14 of the Wildlife and Countryside Act 1981 makes it an offence to plant or otherwise cause to grow in the wild the following plants:

giant hogweed (*Heracleum mantegazzianum*)
Japanese knotweed (*Polygonum cuspidatum*).

Anyone found guilty of an offence under this Act may be liable to a fine. However, it may be a defence to prove that all reasonable steps were taken and all due diligence was exercised to prevent the plants growing in the wild.

The Town and Country Planning Act 1990 / Town and Country Planning Act (Scotland) 1972

Although it does not make reference to specific noxious weeds, Section 215 of the Town and Country Planning Act (England and Wales) or Section 63 of the Town and Country Planning Act (Scotland) provides local authorities with powers to serve notices on owners or occupiers of land to control weeds that may be harming the amenity of the surrounding area. If the owners or occupiers fail to remedy the situation, they may be liable to a fine, or have to repay the costs of action taken by the local authority to control the weeds.

Practical application of the legislation

Investigations involving weeds covered by the Weeds Act are made by the local offices of the agriculture departments, and their policy is only to become involved where the weeds may prove a clear threat to agricultural production. Problems involving threats to non-agricultural land and with those weeds covered by the Wildlife and Countryside Act are usually dealt with by local authorities.

This legislation is most likely to have a practical impact on woodland managers if representations are made by owners of land adjacent to woodland, or by recreational users of the woodland itself. Three main types of problem can be identified.

Weeds covered by the Weeds Act 1959 threatening:

agricultural production

Noxious weeds specified in the Weeds Act may threaten agricultural production if they spread into neighbouring farmland. If the concerns of a neighbouring farmer are not satisfactorily resolved, agriculture department officials may serve a notice on the woodland owner requiring action to prevent the noxious weeds from spreading. In effect, this means controlling the weeds.

non-agricultural land

Problems could arise, for example, where ragwort growing on a woodland edge spreads to neighbouring land where horses are paddocked. Similarly, ragwort growing on a woodland ride which is used for horse riding or by school children may be regarded as a threat to the amenity value of the land. In both instances, it is likely that complaints from neighbours or woodland users will be referred to the relevant local authority; the agriculture departments will only take action if agricultural land is being threatened. Local authorities may, under the provisions of the Weeds Act 1959, Section 215 of the Town and Country Planning Act, or specific byelaws, request that weeds be controlled. If necessary, a legal notice may be served.

Weeds not covered by the Weeds Act 1959

Under the Wildlife and Countryside Act 1981, it can be an offence to plant or cause to grow in the wild

Japanese knotweed or giant hogweed. Local authorities have the power to request that these weeds are destroyed to prevent them spreading. Local authorities can also take action under the Town and Country Planning Act, or local byelaws, if they feel these or any other weeds threaten the amenity value of an area.

General

In any of the above situations, agriculture departments or local authorities are only likely to be contacted by concerned parties, such as neighbouring landowners or recreation users of a woodland, if their direct approaches to the woodland owner are unsuccessful. Even when government bodies become involved, they are unlikely to invoke legal proceedings without first discussing the situation and requesting reasonable action to control the noxious weeds. Nevertheless, **in all situations** it is sensible to deal with noxious weeds growing within a woodland **before** they become a problem and complaints are made. Such action will minimize adverse publicity, and controlling weeds immediately they appear will be far cheaper than dealing with a larger problem at a later date.

Japanese knotweed spreads rapidly along watercourses and waste ground – controlling the weed immediately it is identified should be a high priority.

Both ragwort and giant hogweed spread rapidly and can be poisonous to animals and people and, additionally, ragwort can threaten agricultural production. Their control should be viewed as a relatively high priority, particularly if the affected area is heavily used for recreation or if agricultural land is threatened.

For Japanese knotweed, ragwort and giant hogweed, priority should be given to controlling growth in areas which have recently become infested. When these plants are well established along watercourses, control should start in the uppermost reaches. To prevent re-colonisation, the establishment of an alternative desirable ground cover should be considered.

Spear thistle, creeping or field thistle, curled dock or broadleaved dock are likely to be a lower priority unless they are growing adjacent to productive agricultural land, and a representation has been made by a neighbour concerned about their spread.

With all mechanical or herbicide methods, rhizomes or seeds that remain in the soil may make repeated treatments necessary.

Control measures

Successful control depends on two things: identifying the problem species and deciding what control, if any, is needed. The descriptions and illustrations of the injurious weeds covered in this Note will aid correct identification.

Weed descriptions

Spear thistle (*Cirsium vulgare*)

Spear thistle threatens grassland by competing with crop species for water, light and nutrients. Leaves are

ovate and spined, and flowers are purple to red. The species is biennial and mature plants are normally 30-150 cm in height. Spear thistle flowers from July to October, and spreads by producing large quantities of wind-borne seed.



Creeping or field thistle (*Cirsium arvense*)

Creeping or field thistle can quickly dominate cultivated vegetation, forming dense patches that suppress crop plants. The plants reach 30–120 cm in height and flower from July to September. Leaves are light green, lance shaped and spiny; the flowers are purple, in clusters on top of tall stems. Creeping thistle is perennial and can spread through seeds, but normally it spreads through fragmentation of roots after cultivation: the more that above-ground shoots are cut, the more vigorous is the new growth of roots, causing further spread.



Curled dock (*Rumex crispus*) and broadleaved dock (*R. obtusifolius*)

Broadleaved docks thrive in areas of high nitrogen or where there is heavy treading by stock, and can compete strongly with crop plants. Docks have large lower leaves, with curled dock leaves having a narrow lance shape. Docks reach 50–120 cm high, and produce clusters of small, greenish-red flowers from June to August. Both species are perennial and spread by seed that can remain dormant but viable in the soil for many years. They can also spread by root fragments created through cultivation.



Ragwort (*Senecio jacobaea*)

Ragwort is a tall perennial weed, preferring light soils of low fertility. It reaches 30–150 cm in height, produces large clusters of golden flowers from July to the end of September, and spreads through seed. Ragwort is poisonous, and cattle and horses are particularly susceptible. The plant becomes increasingly palatable after being cut or treated with herbicides; stock must be excluded or all remains must be removed.

Plants which have been dead for a period of time still remain poisonous, but palatability is reduced, and animals are less likely to eat them if alternative food sources are available.



Giant hogweed (*Heracleum mantegazzianum*)

Giant hogweed is an introduced perennial, easily identified by its size – individual stems can reach 3–4 m tall, with divided leaves 1 m or more wide. The stem and leaf stalks are reddish and covered with bristles. In its second and subsequent years the plant sends up a wide spread of white flowers on a tall stem. It may produce up to 5000 seeds before dying.



Giant hogweed causes particular problems because it rapidly swamps native flora. In addition, its spectacular growth can make it attractive to children, who try to use its hollow stems as blowpipes, etc. However, the sap that is readily released from the stems when cut, contains toxic substances (furocoumarins) which can cause severe inflammation and blistering when contaminated skin is exposed to bright sunlight.

Japanese knotweed (*Polygonum cuspidatum*)

Japanese knotweed is a vigorously growing perennial. Red-brown stems can grow up to 2 m tall, and creamy white flowers may be produced from late summer to early autumn. The plant spreads through lateral growth of rhizomes. It can also spread to non-adjacent areas if rhizomes are transported when soil is moved in building works, if cut stems are dumped, or if rhizomes from stands on watercourses are eroded and washed downstream. Japanese knotweed is visually intrusive, suppresses and kills native vegetation, can reduce the carrying capacity of watercourses, and can overgrow footpaths and recreation areas.



Mechanical control

Mowing

Regular mowing slows down the spread of weeds, but it might take several years to eradicate species such as spear thistle and dock. Cutting below ground level kills giant hogweed, but cutting at or above ground level simply makes the species more vigorous. Mowing creeping thistle makes plants more vigorous and encourages them to spread. Regular mowing may weaken Japanese knotweed, but plants might not be killed, and cut material can spread infestation. Cutting ragwort reduces seed production, but it will not kill the plant. Cut ragwort stems remain poisonous to mammals.

Cultivation

Ploughing or rotovating gives some control of spear thistle, ragwort and giant hogweed. Cultivation is not suitable for creeping thistle, docks or Japanese knotweed, because these weeds can spread through broken fragments of roots or rhizomes.

Pulling

Pulling can control ragwort, but it is extremely time-consuming and, if livestock is present, dead plants must be removed from site because they remain poisonous.

General

Dumping cut stems or soil containing plant fragments may spread the weed elsewhere. All vehicles, equipment and clothing should be cleared of plant material before leaving a site.

Cut plant material, or soil contaminated with seed or plant fragments, which is subsequently discarded is regarded as waste under the Environmental Protection Act 1990. In these instances, waste can only be dumped on a licensed waste disposal site. Regulation 30 of the Waste Management Licensing Regulations 1994 permits the burning of cut plant material, on land where it is produced, as long as the quantity of material does not exceed 10 tonnes. Refer to Moffat (1994) or your local authority for further guidance.

Herbicides

In many instances, herbicides may be the most cost-effective method of controlling the noxious weeds listed in this Note.

Herbicides may only be used in the manner specified on the individual product labels, or in an off-label approval. Users MUST refer to the product label.

All the products listed have on-label or off-label approval for use in forestry.

Users are strongly advised to refer to Forestry Commission Field Book 8, *The use of herbicides in the forest* (1995), for further information on using herbicides in forests and woodlands, and for

Table 1. Weed control options

Common name Latin name	<u>Mechanical control</u>			<u>Herbicide control</u>					
	Cutting	Cultivation	Pulling	Asulam	2,4-D/ dicamba/ triclopyr	Clopyralid	Glyphosate	Imazapyr	Triclopyr
Spear thistle <i>Cirsium vulgare</i>	✓	✓✓	X	X	✓✓	✓✓	✓✓	✓✓ ²	✓ ³
Creeping or field thistle <i>Cirsium arvense</i>	X	X	X	X	✓✓	✓✓	✓✓	✓✓	✓ ³
Giant hogweed <i>Heracleum mantegazzianum</i>	✓ ¹	✓✓	X	X	✓ ³	X	✓✓	✓✓ ²	✓ ³
Japanese knotweed <i>Polygonum cuspidatum</i>	X	X	X	X	✓✓	X	✓✓	✓✓ ²	✓ ³
Curled/broadleaved dock <i>Rumex crispus</i> <i>Rumex obtusifolius</i>	✓	X	X	✓✓	✓✓	X	✓✓	✓✓	✓ ³
Common ragwort ⁴ <i>Senecio jacobaea</i>	✓	✓	✓	X	✓	✓ ³	✓✓	✓✓	✓ ³

Notes:

✓✓ = Good degree of control possible

✓ = Moderate degree of control possible

X = Ineffective control method

¹ = Cut below ground level

² = No manufacturers' information, but control is likely to be good

³ = No manufacturers' information, but control is likely to be moderate to good

⁴ = Dying plants remain poisonous, and palatability to grazing animals may increase

information on crop tolerance, application techniques, special precautions, etc.

The Environment Agency or Scottish Environment Agency should be consulted before any herbicides are used in or near watercourses.

Most species should be treated when the plants are actively growing, before flowering or senescence. Plants such as Japanese knotweed and giant hogweed, which grow tall, should be treated early in the growing season, before spraying becomes impractical because of plant height. Table 1 summarizes the mechanical options for weed control, and details herbicides with forestry approval that may be of use in controlling the weeds listed in this Note.

Herbicides for the control of specific species

Herbicides will give the best long-term control of spear thistle, creeping thistle and docks when applied to actively growing plants before flowering or senescence take place. It is easiest to control seedling growth. It may be necessary to repeat applications in future years to control newly germinating seeds.

The complete eradication of a ragwort infestation in one spraying is probably only possible through the use of a residual herbicide such as imazapyr. Repeated applications of contact herbicides are likely to be needed to deal with overlapping generations of ragwort. For best results, treat in the spring when the rosettes first appear. If the weeds are only noticed when they are into their flowering stage, the first application should be made by October, before frost damages the foliage. In either event, a second application in late April of the following year may be necessary.

Glyphosate is the only forestry approved product that has been proved experimentally to be effective against giant hogweed, although 2,4-D/dicamba/triclopyr, imazapyr and triclopyr are likely to give good control. It is most practical to apply herbicides in April to May, when the plants are still small. Alternatively, weed wipers can be used on individual plants, which may also help to reduce damage to susceptible, desirable vegetation in amenity areas. There is little point in controlling giant hogweed in the lower regions of water catchments, where there are untreated, seed-producing infestations upstream – control should start at the furthest upstream occurrence. It may be necessary to repeat applications every year to control freshly germinating seedlings.

Although Japanese knotweed is easiest to control when at its maximum height in July to September, dense infestations of the weed at this time will be difficult to treat – access tracks may need to be cut. In addition, some chemicals are not approved for use above waist height – check the product label. It is probably more practical to tackle smaller, younger growth; follow-up applications are likely to be required in any event. Mechanical cutting followed by herbicide treatment of the regrowth is another option. It is advisable to establish an alternative vegetation cover on the site after clearance to reduce the risk of knotweed reinfestation.

Herbicide product details

Asulam, 2,4-D/dicamba/triclopyr, glyphosate, imazapyr and triclopyr, are herbicides with full forestry on-label approval that may be of use for controlling the weeds listed in this Note. Clopyralid has an off-label approval – users should refer to the text of this approval in the appendix.

- **Asulam** is a post-emergent translocated herbicide that is taken up by the foliage and translocated to the roots. It offers good tree tolerance – some conifers and broadleaves may be over-sprayed in the growing season – and is effective against docks.

Approved product:

Asulox 400 g/l asulam (RP Environmental)

Weed susceptibility:

Docks – apply at 2.8 l/ha to actively growing plants before flowering, from April to September.

- **2,4-D/dicamba/triclopyr** is a translocated foliar acting herbicide that controls a wide range of annual and perennial herbaceous weeds, including thistles, docks and Japanese knotweed. It will offer some control of ragwort and giant hogweed. All sprays should be directed away from the foliage or rooting zone of crop trees. This product is useful in amenity sites, as it will have little effect on any grasses present.

Approved product:

Broadshot 200:85:65 g/l 2,4-D/dicamba/triclopyr (Cyanamid)

Weed susceptibility:

Docks and thistles – apply at 5.0 l/ha, to actively growing weeds in late spring or summer, before flowering.

Ragwort – for complete control a minimum of two applications as above will be needed. Control will be improved by the addition of 2.5 l/ha 2,4-D (Dicotex Extra, RP Environmental).

Japanese knotweed – apply as a solution of 65 ml product in 1 litre of water. Spray to wetness to cover all foliage, before senescence at the end of September. Do not exceed a total application rate of 5 l/ha.

Giant hogweed – no manufacturers' recommendations exist, but it is likely that moderately good control will be achieved when applied as for Japanese knotweed.

- **Clopyralid** is a selective foliar acting herbicide that will control thistles. It has little effect on trees, grasses and other herbaceous vegetation, and so is useful when these vegetation types must be protected. It has off-label approval for use in forestry; users must refer to the copy of the approval included in the appendix.

Approved product:

Dow Shield 200 g/l clopyralid (DowElanco)

Weed susceptibility:

Thistles – apply at 0.5 l/ha followed by an application at 1.0 l/ha 3-4 weeks later for complete kill of plants up to 250 mm across at the rosette stage.

Ragwort – applications at 1.0 l/ha are likely to give some degree of control.

● **Glyphosate** is a broad spectrum, foliar acting herbicide that is translocated throughout the plant. Most vegetation will be controlled to some degree, including all the species detailed in this Note. **GLYPHOSATE SHOULD BE THE ONLY PRODUCT THAT IS USED FOR APPLICATIONS IN OR NEAR WATERCOURSES.** Crop trees should be protected from any sprays.

Approved products:

Barbarian	360 g/litre glyphosate (Barclay)
Barclay Gallup	360 g/litre glyphosate (Barclay)
Barclay Gallup Amenity	360 g/litre glyphosate (Barclay)
Clayton Glyphosate	360 g/litre glyphosate (Clayton)
Clayton Swath	360 g/litre glyphosate (Clayton)
Glyphos	360 g/litre glyphosate (Cheminova)
Glyphogan	360 g/litre glyphosate (PBI)
Glyphosate-360	360 g/litre glyphosate (Top Farm)
Helosate	360 g/litre glyphosate (Helm)
Hilite	144 g/litre glyphosate (Nomix-Chipman) – CDA formulation
Outlaw	360 g/litre glyphosate (Barclay)
Portman Glyphosate	360 g/litre glyphosate (Portman)
Roundup	360 g/litre glyphosate (Schering/AgrEvo)
Roundup	360 g/litre glyphosate (Monsanto)
Roundup Biactive	360 g/litre glyphosate (Monsanto)
Roundup Pro Biactive	360 g/litre glyphosate (Monsanto)
Roundup Biactive Dry	42.6% w/w glyphosate (Monsanto)
Stacato	360 g/litre glyphosate (Unicrop)
Stefes Glyphosate	360 g/litre glyphosate (Stefes)
Stetson	360 g/litre glyphosate (Monsanto)
Stefes Kickdown 2	350 g/litre glyphosate (Stefes)
Stirrup	144 g/litre glyphosate (Nomix-Chipman) – CDA formulation
Typhoon 360	360 g/litre glyphosate (Chiltern)

These products have varying conditions of use regarding operator and environmental safety – refer to the product label for further guidance.

Weed susceptibility:

Thistles, docks, ragwort, giant hogweed – apply at 5.0 l/ha to actively growing weeds in the summer, before senescence.

Japanese knotweed – apply at 6.0 l/ha to actively growing plants in the summer before senescence. Alternatively apply as a 2-3% solution, taking care not to exceed a maximum dose of 10 l/ha.

● **Imazapyr** is a translocated contact and residual herbicide that will control most vegetation to some degree, including all the weeds detailed in this Note.

It will also prevent vegetation regrowing on a site for up to two seasons after use. Imazapyr should only be used as a pre-plant spray, away from the rooting zone of desirable trees and vegetation.

Approved product:

Arsenal 50F	50 g/litre imazapyr (Cyanamid/Nomix-Chipman)
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Weed susceptibility:

Creeping thistles, docks – apply at 15 l/ha, when weeds are actively growing from July to September, before weed senescence.

There are no manufacturers' recommendations for spear thistle, giant hogweed or Japanese knotweed, but applications at 15 l/ha are likely to give good control. Imazapyr will kill existing weeds, and prevent new growth from seeds or rhizomes. It should only be used as a pre-planting treatment, prior to planting Sitka spruce, lodgepole pine and Corsican pine, for reasons of crop safety.

● **Triclopyr** is a growth regulating herbicide, rapidly absorbed by foliage, roots and stems. All the weeds in this Note, and most other herbaceous species, will be damaged to some degree, but grasses should remain unaffected. All applications should be directed away from desirable trees.

Approved products:

Timbrel	480 g/litre triclopyr (DowElanco)
Garlon 4	480 g/litre triclopyr (DowElanco)
Chipman Garlon 4	480 g/litre triclopyr (Nomix-Chipman)

Weed susceptibility:

No manufacturers' recommendations exist for the specific weed species listed in this Note, but it is likely that applications of up to 8 l/ha will give moderate to good control of all the weed species discussed.

Further reading

- ANONYMOUS (1994). *Guidance for the control of invasive plants near watercourses*. Available from the National Rivers Authority, Rivers House, Waterside Drive, Aztec West, Almondsbury, Bristol BS12 4UP.
- BCPC (1995) *The UK pesticide guide 1995*. British Crop Protection Council, Reading.
- FORBES, J. C. and WILLIAMSON, J. A. (1983). *Giant hogweed, the problem and its control*. Leaflet 49. Available from the North of Scotland College of Agriculture, 581 King Street, Aberdeen AB9 1UD.
- HAWK, C. and WILLIAMSON, D. R. (1995). *Japanese knotweed in amenity areas*. Arboriculture Research Note 106/95. Arboricultural Advisory and Information Service, Farnham.
- MOFFAT, A. (1994). *Using waste materials in the forest—implications of recent legislation*. Research Information Note 265. Forestry Commission, Edinburgh.
- WILLOUGHBY, I. and DEWAR, J. (1995). *The use of herbicides in the forest*. Fourth edition. Forestry Commission Field Book 8. HMSO, London.

Appendix

NOTICE OF APPROVAL No. 0757/92

FOOD AND ENVIRONMENT PROTECTION ACT
1985

CONTROL OF PESTICIDES REGULATIONS 1986
(S.I. 1986 No. 1510):

APPROVAL FOR OFF-LABEL USE OF AN
APPROVED PESTICIDE PRODUCT

This approval provides for the use of the product named below in respect of crops and situations, other than those included on the product label. Such 'off-label use' as it is known is at all times done at the user's choosing, and the commercial risk is entirely his or hers.

The conditions below are statutory. They must be complied with when the off-label use occurs. Failure to abide by the conditions of approval may constitute a breach of that approval, and a contravention of the Control of Pesticides Regulations 1986. The conditions shown below supersede any on the label *which would otherwise apply*.

Level and scope: In exercise of the powers conferred by regulation 5 of the Control of Pesticides Regulations 1986 (SI 1986/1510) and of all other powers enabling them in that behalf, the Minister of Agriculture, Fisheries and Food and the Secretary of State, hereby jointly give full approval for the advertisement, sale, supply, storage and use of

Product name: Dow Shield containing

Active ingredient: 200 g/l clopyralid

Marketed by: DowElanco Ltd under MAFF No. 05578 subject to the conditions relating to off-label use set out below:

Date of issue: 15 July 1992

Date of expiry: (unlimited subject to the continuing approval of MAFF 05578)

Field of use: ONLY AS A FORESTRY
HERBICIDE

Crops: Coniferous and broadleaved trees

Maximum individual dose: 1 litre product/hectare

Maximum number of treatments: Two per year

Operator protection: (1) Engineering control of operator exposure must be used where reasonably practicable in addition to the following personal protective equipment: operators must wear suitable protective gloves and face protection (face shield) when handling the concentrate.
(2) However, engineering controls may replace personal protective equipment if a COSHH assessment shows they provide an equal or higher standard of protection.

Other specific restrictions: (1) This product must only be applied if the terms of this approval, the product label and/or leaflet and any additional guidance on off-label approvals have first been read and understood.
(2) Livestock must be kept out of treated areas for at least 7 days following treatment and until poisonous weeds such as ragwort have died and become unpalatable.

Signed J Micklewright
(Authorised signatory)

Date 15 July 1992

Application Reference Number: COP 91/00752

THIS NOTICE OF APPROVAL IS NUMBER 0757 of 1992

ADVISORY INFORMATION

This approval relates to the use of Dow Shield on coniferous and broadleaved trees. Overall spray may result in crop damage. Tree guards should be used to prevent foliar contamination.

When spraying with a knapsack use 1 part product to 240 parts water. Do not spray to run-off.

This Research Information Note is not intended as an endorsement or approval of any product or service to the exclusion of others that may be available. The Forestry Commission accepts no responsibility for any loss or damage resulting from following any advice in this Note.

ALWAYS READ THE INSTRUCTIONS ON THE PRODUCT LABEL AND FOLLOW THE SAFETY PRECAUTIONS AND INSTRUCTIONS RELATING TO ITS USE.

Enquiries to:
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