ID CARD

Wakame

(*Undaria pinnatifida*)

Family name: Alariaceae

Common name/s: Wakame, Asian Kelp, Japanese Kelp

Wakame (*Undaria pinnatifida*) is an invasive brown seaweed known for its rapid growth and distinctive wavy fronds.

In Ireland, it poses a significant threat to native marine ecosystems by outcompeting local seaweed species and altering the structure of marine communities.

The plant primarily spreads through spores and human activities, making management difficult.

Control measures include mechanical removal, preventative cleaning of boats and equipment, and monitoring for early detection. If left unmanaged, Wakame can significantly impact biodiversity and disrupt local marine habitats.

Description - Wakame is a large, fast-growing brown seaweed known for its distinctive shape and rapid spread in marine environments. It has become one of the most widely distributed invasive marine species, spreading to various coastal regions worldwide, including Ireland.

Wakame can significantly impact native marine ecosystems by outcompeting local species for space and resources.

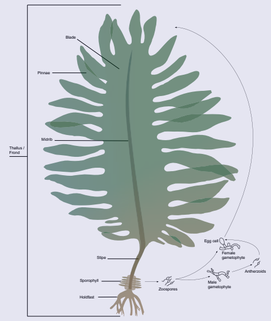
Key characteristics include:

Size: Can grow up to 1-3 metres long, depending on environmental conditions.

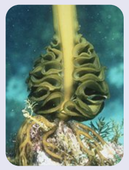
Blades: Are long, flat, with a distinctive wavy or ruffled edge.

Blades arise from a central midrib and can be broad and flattened and are dotted with white cryptostamata and dark gland cells.

Stipe: The stipe (stem-like structure) is flattened and flexible, measuring up to 1 metre long, and has a distinctive midrib running down its length.



Holdfast: Wakame has a branched, root-like holdfast that anchors it to rocks or other hard substrates. The holdfast is made up of numerous finger-like projections, which firmly attach to the substrate.



Reproductive Structures: The reproductive structures, known as sporophylls, form near the base of the stipe and appear as thickened, leaf-like structures that contain reproductive cells (spores).

Habitat - Wakame is native to the northwest Pacific Ocean (Japan, Korea, China), where it thrives in cool, temperate marine environments. In its introduced range, it can be found in a variety of coastal habitats:

- Rocky Shores and Reefs: Commonly grows on subtidal rocky substrates in coastal areas, attaching to rocks, reefs, and artificial structures such as piers and boat hulls.
- Marinas and Harbours: Frequently found in sheltered areas, such as harbours, marinas, and aquaculture facilities, where it can spread via human activities.
- Kelp Forests: Can invade areas occupied by native kelp species, potentially disrupting local ecosystems.

The species grows best in temperate waters, with temperatures ranging from 5°C to 25°C, and can be found from the intertidal zone down to depths of 15-20 metres.

Status in Ireland - In Ireland, Wakame is considered a high-risk invasive species, having been introduced through shipping, aquaculture, and recreational boating. It poses a threat to native marine ecosystems by forming dense stands that can outcompete native seaweeds and alter the structure of marine communities.

Reproduction and Spread - Wakame spreads through both sexual and asexual reproduction, with spores being the primary method of dispersal:

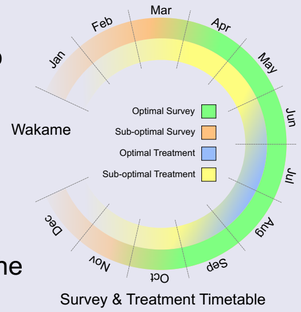
- Spore Production: Wakame produces millions of microscopic spores, which are released from the reproductive structures (sporophylls). These spores can settle on hard substrates and grow into new plants.
- Human Activity: The species can spread via hull fouling, ballast water, and aquaculture equipment, allowing it to colonise new areas.
- Fragmentation: Fragments of the seaweed can also regenerate into new individuals, further aiding its spread.

Management and Control - Controlling Wakame is challenging due to its rapid growth and ability to reproduce from spores and fragments. Management strategies include:

- Mechanical Removal: Hand-pulling or cutting can reduce biomass in small infestations, but complete removal is difficult due to the risk of leaving fragments behind.

  Regular monitoring is required to manage regrowth.

- Preventative Measures: Cleaning boats, aquaculture equipment, and fishing gear before moving between different coastal areas can help prevent the spread.



Survey & Treatment Timetable

  Monitoring high-risk areas, such as ports and marinas, can aid in early detection.

- Biological Control and Chemical Methods: There are currently no widely accepted biological or chemical control methods for Wakame.

Ecological Impact - Wakame can have significant ecological impacts, particularly in areas where it becomes invasive:

- Competition with Native Species: Forms dense stands that outcompete native seaweeds and marine flora, leading to a reduction in biodiversity and altering habitat structure.
- Impact on Marine Communities: Its dense growth can disrupt local ecosystems, affecting species that rely on native seaweed for food and shelter.
- Fouling of Infrastructure: Can foul aquaculture structures, boat hulls, and other submerged surfaces, leading to increased maintenance costs.

For further information and free advice, please contact:
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