How Seaweed is used in Ireland

Stefan Kraan

The contemporary uses of seaweed in Ireland are many and various. Seaweed is gathered as food, processed and used as fertiliser, forms an ingredient in many cosmetics and spa treatments, and is the subject of biotechnological and pharmaceutical research.

Sea vegetables

Seaweeds, when used as food, are generally referred to as sea-vegetables. The main species used in Ireland at present are dulse, carrageen moss, and various kelps and wracks. Others include sloke, laver or nori *(Porphyra sp.)*; sea lettuce *(Ulva sp.)*; sea spaghetti (*Himanthalia elongata*); Atlantic wakame *(Alaria esculenta)*; sweet kombu *(Saccharina latissima)*; and kombu *(Laminaria digitata)* (Morrissey *et al.* 2001).

Agriculture and horticulture

Historically, the use of seaweed on farmland was confined to coastal regions, but this has changed in recent years. Research conducted since the 1950s investigated the active growth components of seaweed, which can now be refined into liquid extracts, making it more widely available as a fertiliser (Blunden 1991).

Bodycare and cosmetics

Irish seaweeds are rich in vitamins, trace elements and iodine, all of which play a part in skincare. A number of Irish companies make seaweed body-care products including seaweed baths, bubble bath, shampoo, shower gel, moisturisers, face masks, scrubbers, wraps, and foot-baths. Carrageen *(Chondrus crispus)* is used to prevent inflammation of the gums and to prevent scarring; dillisk *(Palmaria palmata)* has antiperspirant qualities; kombu *(Saccharina and Laminaria species)* is rich in iodine, which boosts the metabolism; the coralline alga Lithothamnion is rich in calcium carbonates and trace elements; species of the brown alga Fucus, which includes the common seaweed known as bladderwrack, have medicinal qualities and are also used in hair-care, and seaweed baths; and Knotted wrack *(Ascophyllum nodosum)* is used in slimming products, shampoos and shower gels (De Roeck-Holtzhauer 1991).

Thalassotherapy

Thalassotherapy, which takes its name from the Greek word for sea, involves treatment with seawater or seaweed and has been used in Europe for many years to treat liver complaints and cellulite, promote weight loss, and relieve depression. It has found a modern re-invention in contemporary spa treatments. Seaweed bath therapists claim that seaweed hydrotherapy baths are great for softening the skin, reviving and improving circulation, and draining the lymphatic system.

Duileasc drying prior to being used in cookery (Prannie Rhatigan)

Sea weeds are used in many skin care products due to theirhigh vitamin and mineral content. (Stockpix).

Duileasc (Palmaria palmata) *at Spiddal, Co Galway. (M. D. Guiry).*

Kelp (Laminaria digitata) *with the kelp-eating white urchin* (Echinus esculentus). *(M. D. Guiry.).*

Biotechnology

Biotechnology uses organisms, or parts of organisms, to make or modify food, drugs and other products. Using this definition, Ireland has been applying biotechnology for centuries by using seaweed as food and fertiliser! Current research in seaweed biotechnology is exploring the potential of seaweed as a 'functional food', which is a food that claims to have health-promoting or disease-preventing properties beyond the function of supplying basic nutrients. Marine functional foods are products formulated with naturally occurring chemicals (or combinations of chemicals) found in marine resources, such as seaweeds. They aim to provide a health benefit, to lower the risk of certain diseases, or to affect a particular body process. This research is based on studies that have shown that seaweeds are unrivalled sources of compounds with the potential to maintain and improve health. However, Ireland has a great diversity of marine life and, as yet, there has been only limited activity aimed at exploiting these resources for inclusion in foods.

Biomedicine

Seaweeds are also used in the pharmaceutical industry. Carrageen is used as a suspension agent and stabiliser in other drugs, lotions, and medicinal creams. It has also been used as an anticoagulant in blood products and for the treatment of bowel problems such as diarrhoea, constipation, and dysentery, and to make internal poultices for the control of stomach ulcers (Morrissey et al. 2001).

Seaweed aquaculture

Seaweed aquaculture is simply seaweed farming. In European countries it is still in its infancy, with only a small number of commercial seaweed farms, but in Asia seaweed cultivation is more important than any other form of aquaculture. The worldwide seaweed aquaculture is rapidly growing. The latest figures from the FAO show that 13 million tonnes (wet weight) of seaweed are produced worldwide with an economic value of over US$ 6 billion. The largest producer is China. Most farmed seaweed is used as food and for the extraction of hydrocolloids, which are the gelling agents found in seaweeds like carrageen and are used in both food and medicine.

A sea weed identification course, hosted by Prannie Rhatigan (James Connolly).

Seaweeds are a forager's dream and small amounts for consumption at home can be collected on low tides, although conservation areas should not be used. There are many recipes available for seaweeds and several excellent seaweed cookbooks.

Recipes *(Reproduced from Irish Seaweed Kitchen by Prannie Rhatigan, Booklink, 2009)*

Carrot and sea spaghetti salad

Willowy sea spaghetti and delicate carrot strips combine with a sweet garlicky dressing to create a salad as delightful to look at as it is to eat. Easy to prepare, this salad never fails to delight even first time seaweed tasters.

Seaweed used: sea spaghetti

Serves 4 – 6
15g (1/2 oz) sea spaghetti, dried or a handful of fresh sea spaghetti
2 tablespoons lemon juice
1 tablespoon wine vinegar
4 – 5 carrots, washed well, not peeled, and sliced into long, fine lengths with a potato peeler

Dressing

3 tablespoons good quality olive oil
11/2 tablespoons lemon juice
1 teaspoon coarse whole grain mustard and honey
1 tablespoon mixed seaweed
2 cloves garlic, crushed
A pinch of cayenne pepper
A pinch of grey sea salt

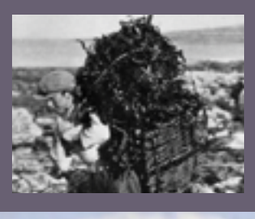
To prepare the sea spaghetti

1 Rinse the dried sea spaghetti and soak in warm water for 1 hour or briefly steam until al dente. If using fresh sea spaghetti, rinse well and steam for 10 minutes until al dente.
2 Rinse the seaweed again and then marinate in lemon juice and wine vinegar for a few hours or overnight.
3 Some can be left full length to decorate – chop the remainder into 2.5 – 5cm (1 – 2 inch) pieces.

To prepare the salad

1 Combine the dressing ingredients in a small jug or bowl.
2 Pour the dressing over the carrots and sea spaghetti and allow to marinate for at least an hour.

Diane Roemer, artist and teacher



Ireland's coastline seaweed

Where can I get further information?

The following websites contain information and photographs on seaweed.

www.seaweed.ie
www.irishseaweed.com
www.algaebase.org

Other sites relating to the sea and seashore include

Bord Iascaigh Mharaigh
www.bim.ie
The Marine Institute
www.marine.ie
Sherkin Island Marine Station
www.sherkinmarine.ie

References

Blunden, G. (1991). Agricultural uses of seaweeds and seaweed extracts. In: *Seaweed Resources in Europe: Uses and Potential*. (Guiry, M.D. & Blunden, G. Eds), pp. 65-81. Chichester: John Wiley & Sons.

Hardy, F.G. & Guiry, M.D. (2003). *A Check-list and Atlas of the Seaweeds of Britain and Ireland*. pp. x + 435. London: British Phycological Society.

Morrissey, J., Kraan, S. & Guiry, M.D. (2001). *A guide to commercially important seaweeds on the Irish coast*. pp. 1-66. Dun Laoghaire: Bord Iascaigh Mhara. {the text should read "Morrissey, Kraan & Guiry 2001"

De Roeck-Holtzhauer, Y. (1991). Uses of seaweeds in cosmetics. In: *Seaweed Resources in Europe: Uses and Potential*. (Guiry, M.D. & Blunden, G. Eds), pp. 83-94. Chichester: John Wiley & Sons.

Books:

There are several guides to the sea shore of which two examples are
Guide to the Sea Shore of Britain and Europe, by Hayward, P.J., Nelson Smith, A., Shields, C., published by Collins 1996

A Beginner's Guideto Ireland's Seashore By Helena Challinor; Susan Murphy Wickens; Jane Clark; Audrey Murphy; published by the Sherking Island Marine Station and available from their website.

Prannie Rhatigan *Irish Seaweed Kitchen*, available on her website, http://prannie.com

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National Library of Ireland

Cover photo: Cuan na Beirtrí Buí (M.D. Guiry).

Cover Inset photo: Boy carrying load of dried seaweed for use as fertiliser: Aran Islands, Co. Galway (T.H. Mason).

Background photos: Knotted wrack *(Ascophylum nodosum)* (M. D. Guiry).

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The seaweed of Ireland's coastline

Compiled by Susan Steele with contributions from Henry J. Lyons, Michael Guiry, and Stefan Kraan.

INTRODUCTION

Henry J. Lyons

Seaweed is one of Ireland's least-used resources. As an island with a 7,000 kilometre coastline, located in the warm and fertile waters of the Gulf Stream, we have an abundance of many different kinds of seaweed. Although we currently use only a small fraction of Irish seaweed, this situation is changing. Attention is turning to the sea as a source of food, energy, and raw material for the chemical and pharmaceutical industries. Ireland's interesting history of harvesting seaweed is about to begin a new chapter.

Kelp (Laminaria digitata) *in an intertidal pool. (M. D. Guiry).*

HISTORY

Michael Guiry

Women gathering seaweed on the Irish coast, 1900-1920. Courtesy of the National Library of Ireland.

Seaweed harvesting

Seaweed harvesting has a long tradition in Ireland. A poem, probably dating from the twelfth century, describes monks harvesting dillisk (Palmaria palmata) from the rocks and distributing it to the poor as one of their daily duties. Dillisk, also known as dulse, a red alga that is eaten on both sides of the North Atlantic, has traditionally been used as both a food and a medicine. In the eighteenth century it was used as chewing tobacco, ingested to eliminate worms, and recommended as a remedy for 'women's longing'.

Drying carrageen in the fields near Finvarra, Co Clare in 1970s. (G. Blunden).

Early aquaculture

Wet seaweed being taken to a croft for use as fertiliser: Aran Islands, Co. Galway, 1900-35. (T.H. Mason).

In coastal areas with mudflats, or without a rocky shore, stones were moved from the land into the sea to create a place for seaweed to grow. This eighteenth-century practise was recorded in 1912 in Co. Mayo, and is still in use in part of County Donegal, yielding about 1,000 tonnes of seaweed a year.

Seaweed and farming

Throughout the centuries different types of seaweed were used as a fertiliser, enriching the soil with minerals and growth hormones. Seaweed manure was particularly important in areas with poor soil, and family conflicts were fought over seaweed rights and access. Harvesting rights predate the formation of the Irish State and date back to the British Crown.

Alternate layers of sand and seaweed laid on bare rock for growing potatoes: Aran Islands, Co. Galway, 1900-35. (T. H. Mason)

Kelp kilns

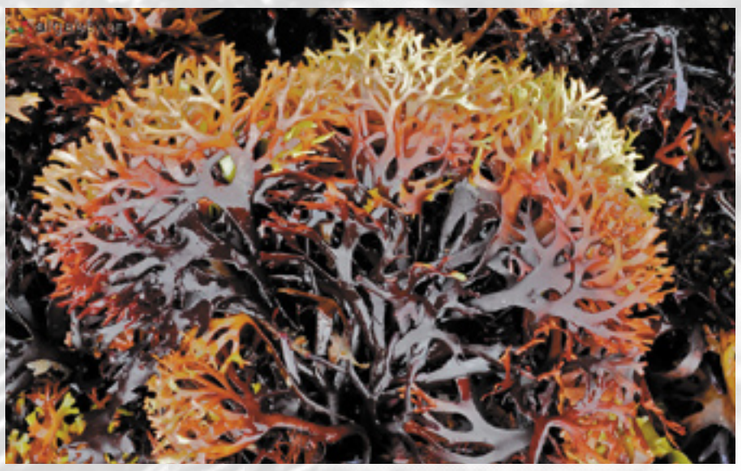
Knotted wrack (Ascophyllum nodosum), *Tra na reilge (M. D. Guiry)*

Ireland's tradition of kelp harvesting dates back to the seventeenth century. Coastal communities gathered kelp from the shoreline, especially after a storm, and burnt it in stone circles known as kelp kilns, the ruins of which are still visible along the west coast. The ash that remained was contained soda and potash, and was used for glazing pottery and for making glass and soap. In the mid-eighteenth century the ash was found to also contain iodine, and this discovery kept the tradition alive until the World War II. Today, small amounts of kelp are harvested for the sea-vegetable industry and as feed for farmed shellfish, specifically urchins and abalone.

Seaweed and prejudice

Although edible seaweeds can be a nutritious delicacy, for many years eating seaweed was associated with poverty and hunger. This stigma perhaps dates from the famines of the 18 and 19th centuries when starving coastal communities were forced to use seaweed as a foodstuff. Carrageen *(Chondrus crispus)*, which is traditionally used as a thickener for desserts, soups, and sauces, escaped the prejudice and continued to play a part in Irish traditional cookery. More recently, Irish people have become aware of sea-vegetables as an excellent source of minerals, trace elements, and vitamins, and edible seaweed is losing its negative associations.

Folk medicine



Carrageen Moss (Chondus crispus) on the upper shore. (M. D. Guiry).

The health-giving properties of seaweed are legendary, and carrageen is still used as a traditional home remedy for colds, bronchitis, and chronic coughs. Recent scientific research into seaweed tends to support this folklore and has led to a growing use of certain seaweed extracts in biotechnology, medicine, and healthcare. However, to date, only a small number of Irish seaweeds have been put to commercial use, and the species harvested tend to be the larger and more plentiful ones.

BIODIVERSITY

Stefan Kraan

Scientific research on Irish marine algae began in earnest in the early 19th century with the investigations of W.H. Harvey (1811-1866) of TCD. Since then, over 500 different species of seaweed have been identified in Irish waters. This is an unusual range of diversity for a small island and may be because Ireland straddles the northern limit for some warm-water species and the southern limit for some cold-water species.

The reef at Finavarra in Co. Clare is known to harbour 336 species alone and seems to represent the peak of seaweed diversity for Irish and British coasts. Research suggests that the highest diversity occurs on softer and more porous rocks, such as limestone, although other factors – like wave exposure, geographical position, and the use of the location by people – also play a part (Hardy & Guiry 2003).

Woman wearing protective coat of goat-skin, carrying wet seaweed from the shore: Aran Islands, Co Galway, 1900-35. (T. H. Mason)

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