

Diploma in Animal Sensory Enrichment

**Plant Assignment Four
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**Fucus vesiculosus
(Bladderwrack)**

by

Deborah J Benson

Identification and Background Information

Fucus (from the Greek “*phykos*” meaning seaweed) **Vesiculosus** (from the Latin meaning with bladder) or bladderwrack grows on the shores of those countries bordering the North Atlantic, including the British Isles and Ireland and also in the North Sea, the western Baltic and Pacific Ocean.

It is prevalent around the coast of Greenland, Norway, France Spain and Morocco and grows on both north coasts of America and Canada extending from Hudson Bay to North Carolina and in Europe north of the Mediterranean, to which it has access through the Straits of Gibraltar.

It is known by a variety of names including “**tany, cutweed, dyer's fucus, jelly bags, paddy tang, murach dubh, popping wrack, red fucus, sea oak, Quercus marina, Meeriche and sea tang.**” www.botanical.com).amongst others.

As the diversity of its names suggest it also comes in differing colours from olive green to olive brown to reddish brown to almost black dependent on location as colours change with the addition of extra pigments known as accessory pigments.www.seaweedindustry.com)

This develops in response to the need for photosynthesis as they are required to absorb more light energy in areas where exposure to sunlight is reduced, mainly by pollution or in shadowy areas and they then transfer the light energy to the substance chlorophyll a which governs the photosynthesis process.

This process allows for the synthesis of nutrients from carbohydrates and water using sunlight and generates oxygen as a by product.www.whatisphotosynthesis.net)

Green seaweed contains chlorophyll a + b, while red seaweed contains chlorophyll a + phycobiliproteins, normally phycoerythrin and brown seaweed contains chlorophyll a + carotenoids, mostly fucoxanthin and *Fucus vesiculosus* turns black when it dries out, hence the range of colours.

It grows on submerged rocks, is a form of kelp and a perennial plant (enduring or continually recurring) and is exposed at low tide, so can be readily harvested.

It is mainly harvested in France, Ireland, UK, Canada and the United States and being an intertidal species it is typically collected by hand at low tide using scissors or small knives and is cut at a height of 15-25 cm above the anchorage point, although the whole plant can be gathered from the rocks during early to mid summer. Ideally the top 10-15cm should be removed as this allows for continued plant growth.www.seaweedindustry.com)

Once it has been rinsed thoroughly it can be dried at 60 degrees Celsius in the oven until completely dry and stored in an airtight container and once immersed in water it returns to its natural state.

It grows gregariously forming dense mats of long ribbons up to one meter long and five centimetres across and its appearance changes depending on the environmental conditions in which it finds itself.

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It attaches itself to the rocks via **“branched, root-like, discoid, woody extremities which develop at the base of the stalk”**(www.botanical.com).

The frond or thallus is erect, normally being from 24-36 inches in height and a light-yellowish or brownish-green colour. It is fan shaped being narrower at the base with the remainder being flat and leaf like in form.

Each leaf branch divides into two and is supported by a broad mid-rib from base to tip. (www.botanical.com).

Fucus vesiculosus has a tough leathery texture and is characterised by air vesicles, which are air filled inter cellular spaces, found in some aquatic plants such as seaweeds. (www.thefreedictionary.com).

These develop in pairs, one on either side of the supporting mid-rib, although a single vesicle often grows at the fork of the branch where it divides into two.

The vesicles are oval or spherical in shape and can grow up to half an inch in diameter.

Also situated at the end of each frond there are ovoid or oblong swollen receptacles filled with a transparent mucous which grow to a length of approximately one inch.

Although these spherical bladders are referred to as air bladders they are actually filled with nitrogen, varying amounts of oxygen, carbon dioxide and water.

The gases do not remain in these vesicles or bladders but diffuse in and out.

The tissues of the vesicle will use any available oxygen for respiration and excrete carbon dioxide and as nitrogen gas is relatively inert this is why its concentration builds up inside the vesicle. (www.theseashore.com)

These vesicles both aid buoyancy and create an increased surface area on the fronds of the bladderwrack and whilst the greater the surface area the greater the ability to photosynthesise, proportionally the increased surface area correlates directly with the risk of damage by wave action.

This however is where the adaptability of Fucus vesiculosus comes to the fore so that where it grows in more sheltered areas it produces many more air bladders, whilst in exposed conditions there will be fewer and in smaller plants in similarly exposed areas there will be a distinct absence of bladders and the fronds will be shorter and narrower.

“As fucus vesiculosus survives in a range of exposures, it can grow more than 0.5cms per week in optimum sheltered summer conditions, eventually reaching sizes of 1.5 – 2ms, with a life span of five years.”(www.theseashore.com)

It is common in the inter-tidal zone and mid-shore and has an important role in promoting bio-diversity as it provides shelter for various species, including the tube worm and surface grazing snails.

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Medicinal Properties, Actions and Common Uses

Bladderwrack is a valuable manure for potatoes and other crops and is specifically gathered for this purpose along the coasts of the British Isles.

During both World Wars it was recommended that it be used as fertiliser due to the shortage of artificial fertiliser.

In the Channel Isles it is called Vraic and is used to produce their world famous, early season and distinctly flavoured Jersey potatoes.

Similarly on the West coast of Ireland it is practically the only manure used for growing potatoes

The first broccoli of the season from Cornwall is also fertilised with seaweed and the Channel Islanders also use it for smoking bacon and fish.

In the Hebrides salty bladderwrack ash is used to cover drying cheeses providing them with a unique flavour and it forms the staple diet for horses, cattle and sheep in the winter months when grazing is scarce. The seaweed industry continues to thrive on the islands to this day.(www.botanical.com).

It is a popular food in Japan although less so in Europe, the British Isles and America.

Once dried it can be stored in an airtight container and used to make nutritious tea, or added to soups and stews, often in flaked or powdered form for extra flavour and a nutritional boost.

Fucus vesiculosus is recognised for its emollient, softening and invigorating effects on the body and has been put to use with great success in the preparation of products that are designed specifically for dry, faded and ageing skin.

Consequently hundreds of products from around the world contain Fucus vesiculosus as an active ingredient, some of which are highly expensive and much sought after personal care and cosmetic products from leading brands.

They include anti-aging and anti-cellulite products, eye-gels, toners, face and body masques, exfoliation scrubs, cleansers and firming creams.

The range also includes hair care products and skin treatments including night, day and hand creams, massage oils and sunscreens, so it is an extremely versatile plant with huge potential to rejuvenate the body externally.(www.seaweedindustry.com).

Fucus vesiculosus “ **is the original source of iodine and is an excellent source of minerals for the body. It is used as an electrolyte when valuable salts are depleted from the body. Some beneficial nutrients in seaweed include photo-synthetic vitamins, trace minerals, lipids, plant sterols, amino acids, omega3 and omega 6, antioxidants, polyphenols and flavenoids**”(Elizabeth Whiter 2013; [Certificate in Natural Food Animal Remedies; Page 9 of 28](#)).

It is possibly the most iodine rich of the known sea vegetables and is also rich in calcium, magnesium, potassium, sodium, sulphur, silicon and iron and high in some B complex

DEBORAH J BENSON 2013

vitamins. Also present are moderate amounts of phosphorous, selenium, manganese and zinc, along with small amounts of Vitamins A, C, E, G and K . Fucus vesiculosus also contains the anti-sterility vitamin, Vitamin S.(www.herbwisdom.com).

The biochemical constituents of bladderwrack are predominantly algin, beta-carotene, mannitol, zeaxatin and traces of bromine.(www.herbwisdom.com).

Fucus vesiculosus has the following properties, **thyroactive**,(capable of entering into the thyroid metabolism and being incorporated into the thyroid hormone) **anti-obesic, anti-rheumatic, demulcent**,(tending to soothe, providing protective coating for mucous membranes) **anti-inflammatory, adaptogen**(natural substance that helps the body adapt to stress), **emollient** (increases skin hydration by reducing moisture loss) **and nutritive**. (www.herbwisdom.com),(<http://en.wikipedia.org>).

Because of the above composition Fucus vesiculosus has been incorporated in nutritional and healthcare supplements and used successfully to treat a diverse range of conditions in both humans, pets and livestock.

Due to the fact that it is a naturally occurring source of iodine its primary function is as a thyroid stimulant to treat hypothyroidism (underactive thyroid) and goitre (swelling of the thyroid gland caused by iodine deficiency).

Its stimulant ability increases metabolic rate and it also possesses the ability to activate the flow of lymph, which reduces fluid retention.

Weight loss effects are reinforced by the presence of amino acids, mineral salts and polysaccharides combining with the iodine to effectively breakdown subcutaneous fatty tissues.(www.seaweedindustry.com).

Fucus vesiculosus is also used to help reduce joint pain and inflammation caused by rheumatoid arthritis through both ingestion and external application.

The anti-inflammatory action is due to the presence of fucoidan which is a type of complex carbohydrate known as a polysaccharide, composed of various sugars, sugar acids and sulphur compounds and found in brown seaweeds.(www.cancer.centre.com).

Fucoidan has various other therapeutic properties as it contains antioxidants which protect against cell damage, it kills viruses and bacteria, stimulates and balances the immune system and promotes the growth of healthy gut flora, whilst lowering cholesterol by maintaining correct levels of HDL, and effectively promotes optimal circulatory system health by preventing arteriosclerosis (hardening of the arteries) and lowering blood pressure. (www.livestrong.com), (www.cancer.centre.com).

Perhaps most importantly fucoidan has been found to possess anti-tumour and anti-carcinogenic properties as it regulates the production of AP- I, the activator protein responsible for cell growth and multiplication, thereby reducing tumour growth. (www.livestrong.com)

Carotene mannitol and bromide also offer vital nutrients for bone and joint health.(www.gaiaherbs.com)

DEBORAH J BENSON 2013

Finally Fucus vesiculosus contains algin which is a form of fibre which aids digestion and relieves both diarrhoea and constipation, also proving effective in the treatment of gastrointestinal reflux.

With animals it can be used to treat similar conditions to those experienced by humans and provides important additional nutrition supporting a healthy endocrine system, improving skeletal health in bones and joints, maintaining liver, kidney and bladder function and optimal coat, skin hoof and paw condition.

**Honour the Earth.
Give Glory to the Creator.
Cherish that sweet connection with the plants.
And your medicine power will be deep and strong.**

(Nancy & Michael Phillips; The Herbalist's Way; Chelsea Green Publishing Company 2005).

Learning Outcomes

- 1. Identify and harvest local culinary herbs specific to this course.**
- 2. How to use fresh and dry herbs for simple remedies**
- 3. Equipment needed, drying and storage of herbs.**
4. How to create a herb garden.
- 5. How to use specific culinary Macerated Oils; Nettle, Marigold, Rose-hip, Mint, Catnip, Chickweed, and Seaweed infused oils and cold pressed Linseed Oil.**
6. Create delicious, culinary, herbal pet treats specific to this course.
7. Make simple animal topical preparations such as insect repellent and cooling gel using plants, herbs, clays and honey.
- 8. Have a clear understanding of what animal self-selection is and how animals can benefit from an enhanced, nutritional, healthy, balanced diet, containing plant material.**
9. Able to work and communicate with pet owners vets and other healthcare professionals.
10. How to keep professional standard records of all animal self-selection sessions undertaken.
11. Be aware of the importance of personal and animal safety as well as the relevant insurance, the law and vet liaison.

DEBORAH J BENSON 2013

12. Be able to observe and understand why animals self-select culinary macerated oils/herbs/clays/honey specific to this course at animal rescue centres and with private clients.
13. Be aware of when not to conduct an animal self-selection session.
14. Be more aware of yourself as an animal healer and consider how and when you will use your training and experience from this course.

Bibliography

(Elizabeth Whiter; Certificate in Natural Food Animal Remedies; 2013; page 10 of 28).

(Nancy & Michael Phillips; The Herbalist's Way; Chelsea Green Publishing Company 2005).

(www.botanical.com)

(www.cancer.centre.com).

(www.thefreedictionary.com)

(www.gaiaherbs.com).

(www.herbwisdom.com)

(www.livestrong.com)

(www.theseashore.com)

(www.seaweedindustry.com).

(www.whatisphotosynthesis.net)

(www.en.wikipedia.org)

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