

# Some Gifts of Cattail

## Scientific Ecological Knowledge

Cattail pollen can support biological control by being used as a supplement for predator population that eat crop pests (Pijinakker et al., 2015).

When cattails are made into a nutrient-rich juice, this can be a food source for microalgae when they are being used for biofuels. (Rahman et al., 2015)

Cattail gel helps with wound healing by enhancing collagen formation, which increases skin tensile strength, and through its antioxidant properties, evidenced by the ascorbic acid content of wounds in experiments. (Panda & Thakur, 2014).

Cattail fiber is similar to cotton, wool and polyester, in particular through its diameter, ability to regain moisture, its burning behaviour and thermal properties (Chakma et al., 2017).

Activated carbon can be harvested from the cattail leaves, which can then be used as an adsorbent of heavy metals in wastewater (Anisuzzaman et al., 2015).

Cattails have the potential to be bioindicators of metal pollution in aquatic ecosystems (Klink et al., 2016).

## Indigenous Land-Based Knowledge

### The Flowers

The fluff from the female flower can be used for birds' nests, insulation, bedding, and for the lining of moccasins and diapers. It is also the part of the cattail that can be drenched in oil and used as a fire-starter (Kimmerer, 2013).

The whole cattail can then burn for about 6 hours (Mandy Wilson, 2022).

Before pollination, the female flower can be boiled and eaten with butter, and it tastes like artichoke (Kimmerer, 2013).

In the summertime, the male pollen is high in protein and it can be used as a protein supplement in smoothies, soups, pancakes, biscuits (Kimmerer, 2013).

### The Gel

Plants themselves use the gel as a defense against microbes and to keep the leaf bases moist when water levels drop (Kimmerer, 2013).

Can relieve pain and helps soothe sunburns, similarly to Aloe Vera gel (Kimmerer, 2013).

Gel can be used as an antiseptic (Wilson, 2022).

### The Leaves and Stalk

Used as building materials because of their cell structure (aerenchyma). In dry weather, the leaves lose moisture and shrink, and then when it rains, the leaves gain moisture and the gaps between the leaves close. This acts as ventilation (Kimmerer, 2013).

Can be eaten, as in the springtime, the white pith tastes like cucumber when fresh, but it can also be sautéed and boiled (Kimmerer, 2013).

When eating the shoot, you stop eating when it gets to the more woody/fibrous part (Musgrave, 2015).

When burned, the ash can be used on wounds as an antiseptic (Kimmerer, 2013).

The stalk can also be dipped in fat and used as a torch (Kimmerer, 2013).

Can be used as sleeping mats, as the wax on the leaves keeps moisture away, and the special plant tissue provides cushioning and insulation (Kimmerer, 2013).

Used as cordage, such as string or twine (Kimmerer, 2013). To process cattail into fibre, a toothed comb or stone is used to cut the cattail into smaller fibres (Musgrave, 2015).

## Scientific Ecological Knowledge

The temperature at which cattail fibers decompose is 234.9°C, which is similar to cotton fiber (248.3°C) (Chakma et al., 2017).

Cattail pellets can be used as an alternative for wood burning/ heat energy, because of their phosphorous content (Grosshans, 2011).

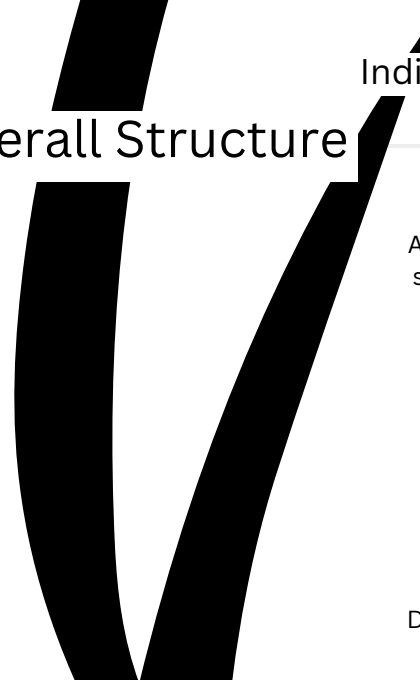
Cattails have potential for filtering oils from runoff, as they demonstrated a high capacity for oil absorption and reusability (Cao et al., 2017).

Cattail leaves present as a source of hydrochar, which can be used in energy-related applications and remediation (Jaruwat, 2018).

The molecular mass of the amylopectin in the starch of the cattail rhizomes is between the masses of corn and potato starch, and it has a more branched structure (Kurzawska et al., 2014).

A dietary supplementation of 10% cattail rhizome flour may help reduce the extension and damage of lesions associated with Crohn's disease (Costa Fruet et al., 2012).

## Overall Structure



## Indigenous Land-Based Knowledge

As the cattails die, the biomass returns to the soil below and provides nutrients (Kimmerer, 2013).

Used for clothing (Musgrave, 2015).

Stalks can be made into arrow shafts (Kimmerer, 2013).

Dead leaves can be used as tinder (Musgrave, 2015).

## The Rhizomes



Rhizomes are a source of food, and the best time to eat them is during the fall or early winter, when plant is dormant, and all the starches are stored in the rhizomes (Kimmerer, 2013).

Can also be used as starchy flour, porridge, or syrupy gluten, and thus can be used as a thickening agent (Kimmerer, 2013).

Rhizomes can be roasted over a fire and eaten (Kimmerer, 2013).

### References

- Anisuzzaman, S. M., Joseph, C. G., Daud, W. M. A. B. W., Krishnaiah, D., & Yee, H. S. (2014). Preparation and characterization of activated carbon from *Typha orientalis* leaves. *International Journal of Industrial Chemistry*, 6, 9-21.
- Cao, S., Dong, T., Xu, G., & Wang, F. (2017). Cyclic filtration behaviour of structured cattail fiber assembly for oils removal from wastewater. *Environmental Technology*, 39(14), 1833-1840.
- Chakma, K., Cicek, N., & Rahman, M. (2017). Fiber extraction efficiency, quality and characterization of cattail fibres for textile applications. *Proceedings of the Canadian Society for Bioengineering Conference (CSBE)*. Winnipeg, Canada.
- Costa Fruet, A., Seito, L. N., Rall, V. L. M., & Di Stasi, L. C. (2012). Dietary intervention with narrow-leaved cattail rhizome flour (*Typha angustifolia* L.) prevents intestinal inflammation in the trinitrobenzenesulphonic acid model of rat colitis. *BMC Complementary and Alternative Medicine*, 12(62).
- Doran, B. [Science North]. (2011, September 28). Science North - Cattails [Video]. Youtube. <https://www.youtube.com/watch?v=oMPfNCusXHQ>
- Kurzawska, A., Górecka, D., Blaszcak, W., Szwengel, A., Paulszta, D., & Lewandowicz, G. (2014). The molecular and supermolecular structure of common cattail (*Typha latifolia*) starch. *Starch*, 66(9-10), 849-856.
- Grosshans, R. [University of Manitoba]. (2011, March 30). Creating fuel out of cattails [Video]. Youtube. <https://www.youtube.com/watch?v=7bhMrH4LCCg>
- Jaruwat, D., Udomsap, P., Chollacoop, N., Fuji, M., & Eiad-ua, A. (2018). Effects of hydrothermal temperature and time of hydrochar from Cattail leaves. *AIP Conference Proceedings*, 2010(1). <https://doi.org/10.1063/1.5053192>
- Kimmerer, R. W. (2013). *Braiding sweetgrass: Indigenous wisdom, scientific knowledge, and the teachings of plants*. Milkweed Editions.
- Klink, A., Polechońska, L., Ceglowska, A., & Stankiewicz, A. (2016). *Typha latifolia* (broadleaf cattail) as bioindicator of different types of pollution in aquatic ecosystems—application of self-organizing feature map (neural network). *Environmental Science and Pollution Research*, 23, 14078-14086.
- Musgrave, C. [Canadian Bushcraft]. (2015, June 25). Some uses of Cattail [Video]. Youtube. <https://www.youtube.com/watch?v=PxKNQ6vsvRQ>
- Panda, V., & Thakur, T. (2014). Wound healing activity of the inflorescence of *Typha elephantina* (Cattail). *The International Journal of Lower Extremity Wounds*, 13(1), 50-57.
- Rahman, Q. M., Wang, L., Zhang, B., Xiu, S., & Shahbazi, A. (2015). Green biorefinery of fresh cattail for microalgal culture and ethanol production. *Bioresource Technology*. 185, 436-440.
- Wilson, M. (2022). Queen's University Indigenous Land-Based Learning STEM [Unpublished transcript]. Queen's University Biological Station, Queen's University.