

# A HARVESTER'S GUIDE



# *Morel Mushrooms*

**IN THE NORTHWEST TERRITORIES**





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# INTRODUCTION

Forest fires are naturally-occurring events in the Northwest Territories (NWT) that produce a valuable renewable resource: morel mushrooms. These mushrooms flourish in burn areas after a forest fire and present NWT residents and communities with an opportunity to generate a lucrative seasonal income. The prospect of sustainable earnings from the morel mushroom harvest will likely increase in coming years as more than the usual number of forest fires are expected to occur due to climate change.

Morel mushrooms are choice edible mushrooms, a prized delicacy and a valuable commodity in high demand on world markets. Morels can be harvested in large numbers in burn areas mostly during the first year after a forest fire. Fresh morels may be sold for cash in the field if mushroom buyers are present or they can be dried and sold for higher prices at a later date to southern wholesalers, specialty food stores and restaurants. When harvested and processed properly, morel mushrooms can provide a significant source of income.



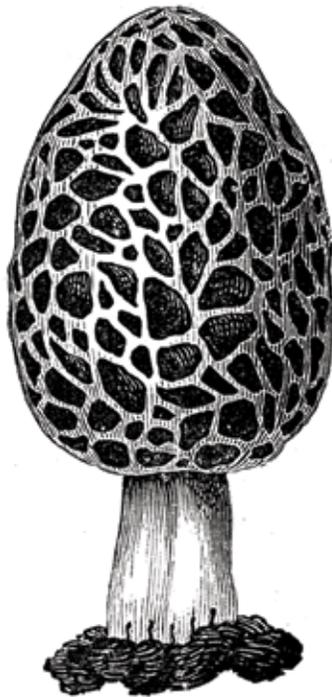
Photo Credit: ITI

# 1. ECOLOGY, GROWING SEASON AND HABITAT

The mushroom "body" we see and harvest is the "fruit" of the invisible spider-web-like "mycelium" growing underground which is the actual living organism. The "growing" of mushrooms is called "fruiting". The ecology of morels is not well understood except that wild fire, other disturbances, and dying or dead trees trigger mass fruiting and reproduction and the dispersal of millions of mushroom spores or "seeds".

In the NWT, edible "true morels" appear for six to seven weeks from mid or late May to about mid July in both burned and unburned forests. Prolific fruiting of morels usually happens in the first year after a forest fire but can occur continuously over a period of up to four years with successive but diminishing harvests in the same area. Fruiting may also occur at intervals over a period of up to six to eight years. In some cases, only a few morels will appear in the first year after a fire in a particular area while they may be abundant in nearby areas, or they may become plentiful in the second or third year after a fire.

Morels appear about one week after the first green leaves open on poplar, aspen and birch trees. Morels prefer burned forests with pine, spruce, aspen, poplar and birch trees. They occur in flat terrain, on slopes and in depressions – wherever sufficient soil moisture and warm temperatures are present. Morels grow continuously over the course of the season in "flushes" and a productive area can be re-visited and harvested several times. Experienced harvesters can predict when and where morels will appear.



## 2. IDENTIFICATION OF MORELS

Mycologists (mushroom scientists) estimate that about 22 species of edible or "true morels" (genus *Morchella*) occur in North America. In the NWT, six species and several varieties are known and described in wild mushroom field guide books. These include Yellow Morels (*Morchella esculenta*, *M. deliciosa* and *M. crassipes*) and Black Morels (*M. conica*, *M. elata* and *M. angusticeps*). The different varieties of morels growing in burn areas are known informally as "blonde, grey, black and conica" while "naturals" are found in unburned areas. Morels may be "single walled" or "double walled" denoting slim or fleshy varieties.



Typical Fire Morel  
*Morchella conica*

Photo Credit: Joachim Obst



Yellow Morel  
*M. esculenta*

Photo Credit: Joachim Obst



Black Morel  
*M. elata*

Photo Credit: Joachim Obst

### WARNING!

Many wild mushrooms are poisonous and can be lethal. Harvesters must be careful to identify "true morels" from poisonous or "false morels". Some species of poisonous "false morels" grow beside edible "true morels" in the same habitat. First-time harvesters should always work with experienced mushroom pickers and have their morels examined by a mycologist or a mushroom buyer.

“False morels” look very similar to “true morels”. “False morels” include “early” and “thimble” morels of the genus *Verpa*, such as “early false morel” (*Verpa bohemica*), and several species of the genus *Gyromitra*, such as the “beefsteak false morel” (*Gyromitra esculenta*) and “elfin saddle morel” (*G. infula*). False *Verpa* morels look like a thimble on a finger. They have a smooth or wrinkled cap with vertical striations and the sides or skirts of the cap hanging free. In contrast, edible *Morchella* morels have a net-like pitted cap that is inter-grown with the stem. False *Gyromitra* morels have lobed or brain-like caps. The stem and cap of “true morels” are hollow while the stems of “false morels” are filled in (*Gyromitra*) or contain cotton-like material (*Verpa*). It is always advisable to consult mycologists, mushroom buyers and up-to-date mushroom field guide books when identifying mushrooms.

While edible “true morels” pose less of a risk, these remain poisonous and can make a person sick if they are not properly cooked. Morels should never be eaten raw and must be well-cooked for at least fifteen minutes. Alcohol should also be avoided when consuming morels. In addition, some people have food allergies and sensitivities towards morels. If you have never eaten morels before, it is advisable to consume only a small helping the first few times you try them. If you notice any symptoms, you should not eat morels.



Photo Credit: ITI



It is critical to avoid harvesting contaminated morels. Mushrooms can accumulate toxic heavy metals and other contaminants. Consuming contaminated mushrooms can have serious adverse effects on human health. Harvesters should avoid harvesting in the following areas: where there are naturally elevated levels of heavy metals in the bedrock; near exploration and mining sites; along road corridors and dust zones of former and current gravel roads; near any infrastructure or settlement.

It is in everyone's best interest to safeguard the human health of consumers and foster a responsible morel mushroom industry that will benefit northern communities for generations to come.

### 3. HARVESTING

Morel mushrooms are a sustainable resource. Practicing proper harvesting techniques can help to ensure a succession of harvests over time. Harvesting is not difficult. A brief orientation in the field is all a first-time picker needs in order to know what to do. Pickers only need a small knife and suitable containers to put their mushrooms in. Five gallon pails are recommended. Several dozen holes should be drilled in the walls and bottom of the pails. This allows for air flow around the mushrooms which can be very moist when first harvested and it also lets dirt fall out through the bottom of the pail. A slot cut near the rim and wrapped with duct tape makes a convenient handle.

Always keep your containers of morels in the shade whenever you take a break and never let them stand in the rain. Be careful not to disturb the forest floor in the vicinity of morels. This could harm the mycelium growing underground. Pickers should never “clear cut” a patch of morels. Close observation will show that some morels may be either too mature or too small. Harvest only healthy specimens and never pull the mushroom out of the ground by hand. Always cut off the morel cap at the top of the stem with a sharp knife. It is important to handle morel mushrooms properly, especially when picking commercially. Be gentle and keep your mushrooms as clean and dry as possible. Mushroom buyers have certain specifications and they may refuse to buy mushrooms that have not been harvested or handled properly. At the end of each day, pickers bring their fresh morels to a buying station. Each picker’s take is weighed and they are paid cash on the spot. The buyers then sort and dry the mushrooms overnight in specially-designed dryers and store them for shipment at a later date.



Photo Credit: ITI



Photo Credit: ITI



## 4. DRYING

Depending on the circumstances, harvesters may choose to dry their own morels but special care must be taken when doing so. The drying process must begin immediately and must continue straight through without interruption or else problems can develop with mould and rot. Morels can be dried on large-mesh drying screens with simple wooden frames placed in the open air. Food-safe plastic screens are recommended. More often, galvanized metal screens with  $\frac{1}{4}$  in. mesh are used. These are readily available at most hardware stores. If large numbers of morels are being harvested or wet weather persists, a drying tent may become necessary. This could be a simple enclosure using tarps or vapour barrier with racks inside where the drying screens can be stacked. Ambient air is blown through the tent using a fan powered by a generator. This phase of the drying takes approximately two days.

After air drying, the mushrooms appear to be dry but they still contain a small amount of moisture. They are then put into a flash dryer. This could be a small simple plywood structure with an airtight stove inside. When the mushrooms are brought up to temperatures ranging from 140 to 170 degrees F (about 60 – 70 degrees C) for eight to ten hours the last of the moisture is driven off. The high temperatures also kill off any eggs laid by moths and other insects. The mushrooms can then be safely stored without fear of losing them to rot, mould or damage from hatching insect larvae. This ensures a clean and long-lasting product.

After the morels have been flash-dried they should be sealed in large food-safe plastic bags and stored in cardboard boxes for shipment. When properly dried, morels retain all their quality for several years and can be sold when prices are highest. However, for commercial purposes it is best to sell morels within one year of harvesting.

One five gallon pail holds approximately ten lbs. of fresh morels if the pail is filled up to about three inches below the top. It takes about 35 average-sized fresh morels for one lb. of fresh morels. Dried morels have approximately half the volume of fresh morels. The weight ratio between fresh and dried varies between 6:1 and 9:1 depending on weather and soil conditions. The average ratio is about 8:1 but reaches 7:1 when the morels are harvested after several days of warm, sunny and windy weather.



Sun Drying

Photo Credit: ITI



Flash Drying

Photo Credit: ITI

## 5. PUBLIC LAND, PRIVATE PROPERTY AND ABORIGINAL PRIVATE LANDS

In the NWT, you can pick morel mushrooms for personal use without a permit on public or Commissioner's Lands where public access is allowed, including in Territorial Parks.

You may also pick mushrooms for commercial purposes in Territorial Parks if you obtain a Commercial Use Permit from the Department of Industry, Tourism and Investment (ITI), Government of the Northwest Territories (GNWT). For Commercial Use Permits in Territorial Parks, please contact your local ITI Regional Office. Harvesting is currently not allowed in National Parks located in the NWT.

You are also required to obtain a Business Licence for any commercial morel harvesting in the NWT. For Business Licences and inquiries contact:

Consumer Services  
Public Safety Division  
Municipal and Community Affairs (MACA),  
GNWT  
#600 5201 50<sup>th</sup> Avenue  
Yellowknife NT X1A 3S9  
Phone: (867) 873-7334  
Email: nadira\_begg@gov.nt.ca

Land Use Permits are required for camps with over 200 person days (e.g. 20 people for 10 days equals 200 person days). Permits are issued by the Wekeezhii Land and Water Board and the Mackenzie Valley Land and Water Board ([www.mvlwb.com/mvlwb/apply-permit-licence](http://www.mvlwb.com/mvlwb/apply-permit-licence)). For more information regarding activities requiring a land use permit see sections 4 and 5 of the *Mackenzie Valley Land Use Regulations*.

The Department of Lands, GNWT, oversees inspection services for the land use permits issued by the Boards. Land Use Inspectors with the Department of Lands are available to assist applicants for land use permits with regulatory processes.

For more information, contact:

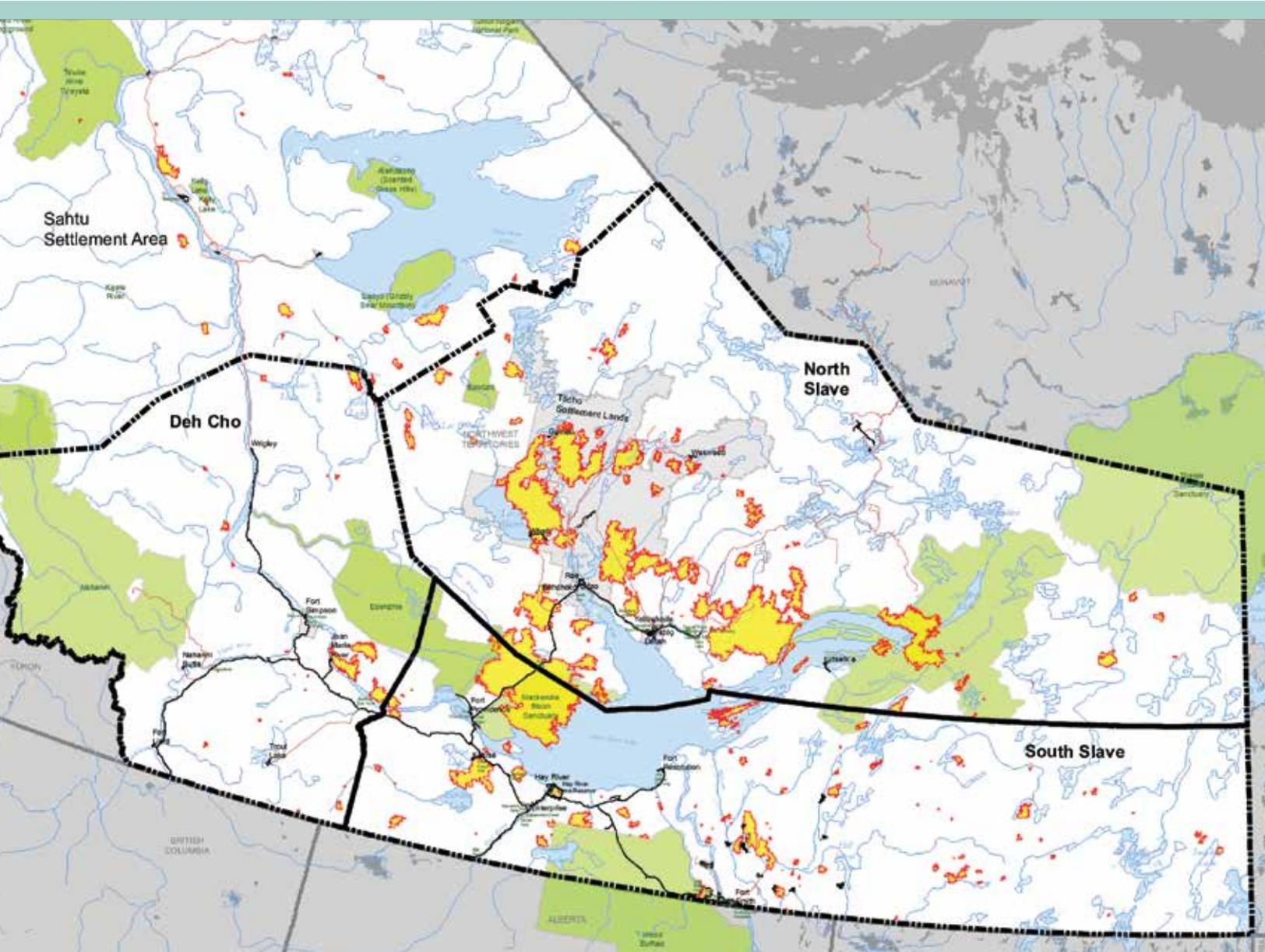
GNWT Department of Lands  
Resource Management (Inspector)  
Phone: (867) 765-6648  
Fax: (867) 873-9754  
Email: clint\_ambrose@gov.nt.ca

Mushroom pickers need permission from land owners if they want to harvest on private property. Harvesters should be aware that some public lands have traditional or historic values or may be actively used by local residents for specific purposes. Where harvesting sites exist on Aboriginal private lands, pickers are advised to contact that Aboriginal government's office prior to any harvesting activities.

Anyone wanting to harvest morel mushrooms on Tlicho lands should contact the Tlicho Government. Requirements concerning access to Tlicho lands and the harvesting of plants on Tlicho lands, including morels, are set out in the Tlicho Agreement. Tlicho law and NWT law may apply. For contacts, please see Section 10. Government, Community and Emergency contacts.



# 2014 BURN AREAS IN THE NWT



## 6. RESPECT THE LAND

Please show respect for the environment. Preventing damage to the fragile environment is your responsibility. You are not permitted to cut live, healthy trees or erect any permanent structures. Food, garbage and unsanitary practices can attract animals and result in unsightly and unhealthy camp conditions. Do not leave any garbage behind and collect garbage left behind by others. Ensure that all human wastes are dealt with in a sanitary fashion.

## 7. FOREST PROTECTION

Commercial mushroom harvesters must adhere to the "Forest Fire Prevention and Suppression Guidelines for Industrial Activities". For information on the guidelines, current fire situation and tips for building a safe campfire please visit [www.NWTFire.com](http://www.NWTFire.com). Report any fires to 1-877-NWT-FIRE.



Photo Credit: Walter Brown



## 8. SAFETY

Remember that you are in bear country and follow the instructions given in the Environment and Natural Resources (ENR) booklet "Safety in Bear Country" (available at GNWT Regional ENR Offices and online). When harvesting in remote wilderness areas you are on your own! The nearest community may be more than a hundred kilometres away and you may not be able to access the services and supplies you need, including medical assistance. Bring your personal wilderness survival equipment including first aid supplies, bear deterrent, mosquito protection, compass, GPS, map, satellite phone, harvesting equipment, food supplies, drinking water and bottles, proper footwear and clothing, camping gear and whatever else you think you may need. Be aware of fires that may still be burning underground from the previous year and watch for falling trees.

In order to prevent accidents and unnecessary congestion when accessing harvest areas by road please consult the GNWT Department of Transportation regarding regulations for parking and other activities along NWT highways and rights-of-way.



Photo Credit: ITI

## 9. ECONOMICS, MARKETING AND INCOME

The morel mushroom trade is worth hundreds of millions of dollars annually in North America alone and is a multi-billion dollar industry worldwide. The NWT has the largest potential of any region anywhere to become the major global producer of high quality morels.

In the Dehcho Region in 2014, for example, most local pickers harvested 20 – 35 lbs of fresh morels a day working three to four hours, which earned them \$200 – \$350 per day at the \$10 per lb being paid at the beginning of the season. A group of local students picked six to eight lbs of fresh morels per hour earning them \$60 – \$80 per hour. Six mushroom buyers from British Columbia were camped in the field and paid cash for all the fresh morels local people were able to pick. The income to harvesters eventually increased to \$400 – \$500 per day with some harvesters earning \$650 – \$840 per day as the buyers offered higher prices of \$13 – \$14 per lb at mid-harvest. One harvester picked 78 lbs of fresh morels in a single day, sold them at \$14 per lb, and earned \$1,092. Another harvester picked four to five hours per day for 33 days and earned on average \$440 per day for a total of \$14,520. One local woman earned \$25,000 cash in 36 days harvesting and selling fresh morels onsite at an average of \$694 per day.

The price paid for fresh morels in the field triples or quadruples in value when the mushrooms are dried and sold on world markets. With such a high profit margin, communities or individuals may decide to become mushroom buyers themselves in addition to picking. The total market value of the 40-day-long morel mushroom harvest in the Dehcho Region in 2014 was estimated at between six and ten million dollars, of which one to two million dollars went into the pockets of local harvesters. Another \$200,000 went to local businesses for goods and services. These same lucrative opportunities are available during the 2015 NWT morel mushroom harvest.



Photo Credit: ITI

## People can generate income from the morel mushroom harvest in several ways:

1. Local harvesters can sell fresh morels to independent buyers in the field for a negotiated price or they can make pre-arrangements with established food and mushroom distributors and sell exclusively to them.

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2. Local harvesters and communities can also sell pre-dried morels to the same buyers and distributors for higher prices than they can get selling fresh morels to buyers onsite.

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3. Local harvesters and communities working co-operatively can sell flash-dried morels directly to lucrative markets in Europe and the United States of America. Current and daily world market prices for dried morels can easily be looked up online (e.g. eBay). Prices are lowest in the summer and fall, usually ranging between \$170 and \$190 per lb. When dried morels are sold in smaller packages of 2 oz. (at \$37 to \$38) producers can earn up to \$300 per lb. Seasonal demand is highest beginning in early or mid-December and continues through until the next harvest begins. Prices during the winter season may double depending on the available supply of dried morels worldwide.

It is recommended that you review seasonal variations in world market prices for both fresh and dried morels before entering into any negotiated agreements. Talk to several buyers in the field or contact several markets before making a final decision. This will prevent you from underselling your product and help you secure the highest return for your efforts.

4. In addition to increased trade for established businesses, local entrepreneurs and communities can generate income by providing goods and services to pickers in the field (e.g., for food, water, gas or for garbage pickup and sanitary disposal at officially designated dump sites.)



## **10. GOVERNMENT, COMMUNITY AND EMERGENCY CONTACTS**

For regional contacts for the GNWT, Aboriginal governments, communities, RCMP and emergency contacts, please see the three regional editions of the Harvester's Handbook to Morel Mushrooms in the Northwest Territories: North Slave and Tlicho, South Slave, and Dehcho.

**Information Sources:**

Industry, Tourism and Investment

**[www.iti.gov.nt.ca](http://www.iti.gov.nt.ca)**

Environment and Natural Resources

**[www.enr.gov.nt.ca](http://www.enr.gov.nt.ca)**

Lands

**[www.lands.gov.nt.ca](http://www.lands.gov.nt.ca)**

Municipal and Community Affairs

**[www.maca.gov.nt.ca](http://www.maca.gov.nt.ca)**

Transportation

**[www.dot.gov.nt.ca](http://www.dot.gov.nt.ca)**

Tlicho Government

**[www.tlicho.ca](http://www.tlicho.ca)**





