

Module 1 History

Learning Objective

To know the history and the development of the iron mining and taconite industry

Student Outcomes

By the end of Module 1, the student will

- define the terms **taconite** and **iron ore**.
- identify Vermilion, Cuyuna, and Mesabi ranges with appropriate towns given a map of northeastern Minnesota.
- complete a time line that includes five people, five places, and five events to explain the development of the iron mining/taconite industry.

Supportive Resources and Curriculum Materials

Videos

The Birthplace of Minnesota Taconite Industry

Description: A 9 1/2-minute video that explain the early development of the industry with a special focus on Babbitt, Minnesota

Minnesota Mining: A New Beginning

Description: A 23-minute presentation that chronicles the development of the iron mining industry and the taconite industry.

Brochures

“Minnesota’s Iron Mining Industry”

Description: A pamphlet that includes the process, places, events, and dates of the development of the taconite industry

“Founders of the Range” from *Mining Matters*

Description: A listing of the men who lead in the development of the Ranges and mining.

****ADD**

Name _____

Worksheet 1-A

The Birthplace of Minnesota Taconite Industry
Video Discussion Questions

1. Where is the birthplace of taconite? Why?
2. Why did the early developers research the low grade ore, taconite?
3. How can producing taconite be compared to recycling today?
4. What is the difference between taconite and red ore?
5. When did the first mining plant begin and how many tons were produced?
6. How was math and science used to develop the industry?
7. Why did the Babbitt plant close? What lessons were learned from this early plant?

Teacher's Key

Worksheet 1-A

The Birthplace of Minnesota Taconite Industry Video Discussion Questions

1. Where is the birthplace of taconite? Why?

The birthplace is Babbitt, Minnesota, because Peter Mitchell discovered a 1 ½ miles wide by 12 miles long strip of taconite there.

2. Why did the early developers research the low grade ore, taconite?

They saw a valuable resource that was not being used.

3. How can producing taconite be compare to recycling today?

Today's recycling reuses resources for a healthier planet.

4. What is the difference between taconite and red ore?

Red ore is 50-60% iron and is known as direct shipped ore. Taconite is 20-30% iron and is crushed and processed and then shipped as pellets.

5. When did the first mining plant begin and how many tons were produced?

The first plant began in 1920 and produced 200 tons a day.

6. How was math and science used to develop the industry?

The early plans used flow charts and math to solve problems; science experiments discovered the process.

7. Why did the Babbitt plant close? What lessons were learned from this early plant?

The Babbitt plant closed because it could not compete with the other ores being mined. This plant supplied information for other plants to be better built. It was the foundation of today's taconite industry.

Name _____

Worksheet 1-B

Minnesota Mining: A New Beginning
Video Discussion Questions

1. Why did the rich ore run out?
2. In your opinion, which event, person, or place had the most important impact on the taconite industry? Explain.
3. How did the events, people, and places affect the development of the industry?
4. What would the Iron Range be without the taconite industry?
5. What future is predicted for the taconite industry?

Extension activity

Research the contributions of a founder of the Iron Range.

George Stuntz	Captain J.G. Cohoe
Peter Mitchell	Frank Hibbing
Charlemagne Tower	John Monroe Longyear
Merritt Brothers	John McCaskill
Cuyler Adam	

Teacher's Key

Worksheet 1-B

Video Discussion Questions *Minnesota Mining: A New Beginning*

1. Why did the rich ore run out?

The heavy demand and World War II caused the ore to run out.

2. In your opinion, which event, person or place had the most important impact on the taconite industry? Explain.

Answers will vary.

3. How did the events, people, and places affect the development of the industry?

Suggested themes: citing any contributions from founders, events, or places.

4. What would the Iron Range be without the taconite industry?

Answers should include the expansion of tourism, logging, less population.

5. What future is predicted for the taconite industry?

The future of the taconite industry is competitive and viable with skilled workers using the latest technology.

Name _____

**Worksheet 1-C
Timeline Activity**

Directions: Using the people, places and events from the list, match them to the correct date on the time line.

<p>E.W. Davis discovered taconite process Cuyuna Range settled</p>	<p>1860</p>	<p>1865 _____</p>
<p>Merritt brothers discovered Mesabi Range Soudan Mine opened</p>	<p>1870</p>	<p>_____</p>
<p>Peter Mitchell discovered taconite Mesabi Range settled</p>	<p>1880</p>	<p>1880 _____ 1882 _____</p>
<p>George Stuntz Vermilion Range settled</p>	<p>1890</p>	<p>1890s _____ 1892 _____</p>
<p>Dean Applebee 1st pellet production by Mesabi Iron Frank Hibbing</p>	<p>1900</p>	<p>_____</p>
<p>High-grade ore depleted Eight taconite plants operating</p>	<p>1910</p>	<p>1904 _____ 1910 _____ 1912 _____ 1912 _____ 1913 _____</p>
<p>Reserve Mine opened Increased demand because of WWII</p>	<p>1920</p>	<p>_____</p>
	<p>1930</p>	
	<p>1940</p>	<p>1944 _____</p>
	<p>1950</p>	<p>1950-52 _____ 1954 _____ 1955 _____</p>
	<p>1960</p>	
	<p>1970</p>	<p>1970s _____</p>
	<p>1980</p>	
	<p>1990</p>	

Teacher's Key

Worksheet 1-C Timeline Activity

Directions: Using the people, places and events from the list, match them to the correct date on the time line.

E.W. Davis discovered taconite process	1860	1865 George Stuntz
Cuyuna Range settled	1870	
Merritt brothers discovered Mesabi Range	1880	1880 Peter Mitchell discovered taconite
Soudan Mine opened		1882 Soudan Mine opened
Peter Mitchell discovered taconite		
Mesabi Range settled	1890	1890s Merritt brothers discovered Mesabi Range
George Stuntz		
Vermilion Range settled		1892 Frank Hibbing
Dean Applebee	1900	1904 Cuyuna Range settled
1st pellet production by Mesabi Iron		
Frank Hibbing		
High-grade ore depleted	1910	1910 E. W. Davis began taconite industry
Eight taconite plants operating		1912 Mesabi Range settled
Reserve Mine opened		1912 Vermilion Range settled
Increased demand because of WWII		1913 Dean Applebee
	1920	
	1930	
	1940	1944 Increased demand because of war
	1950	1950-52 High grade ore depleted
		1954 Reserve Mine opened
		1955 1st pellet production by Mesabi Iron
	1960	
	1970	1970s Eight taconite plants operating
	1980	
	1990	

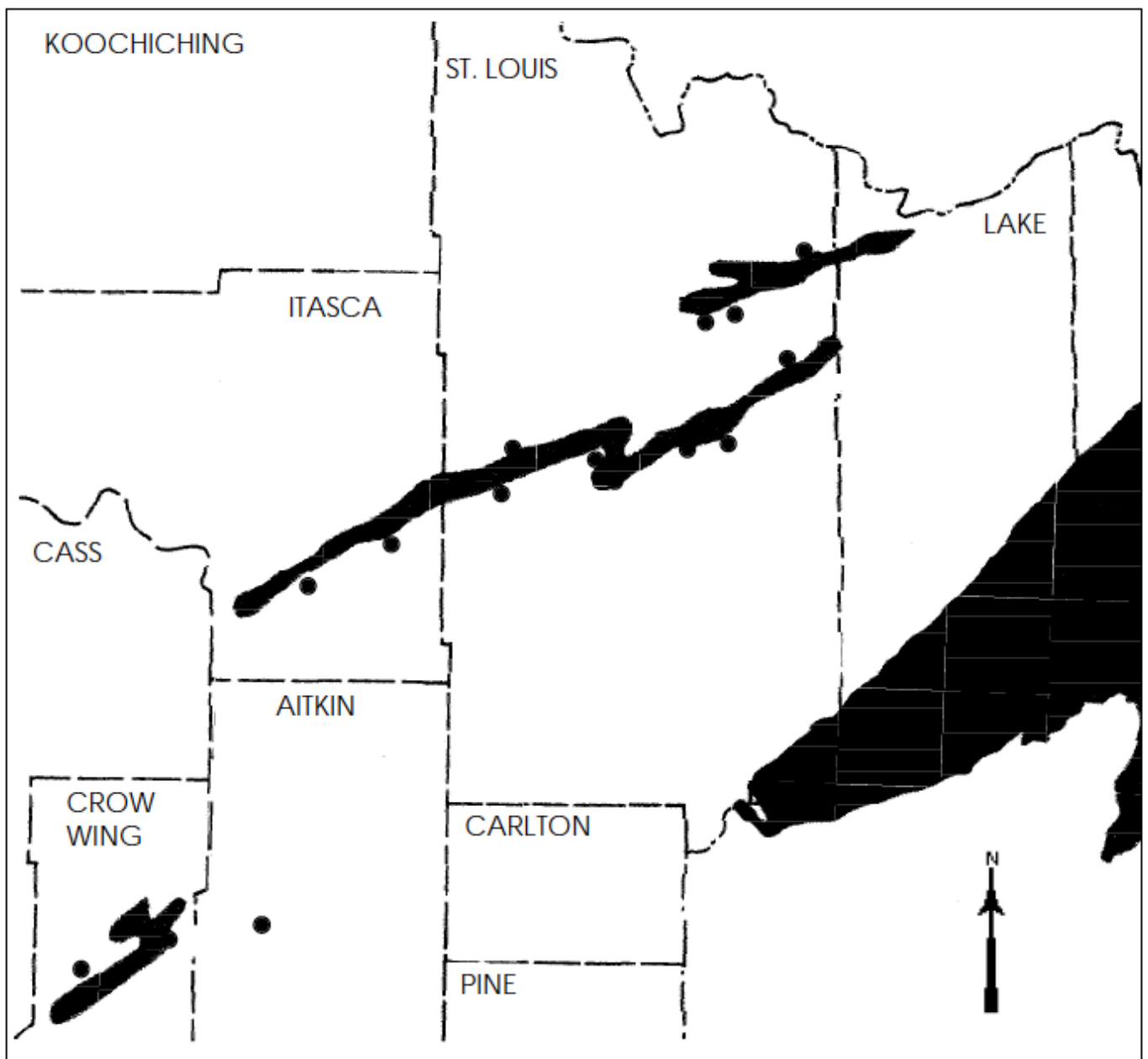
Name: _____

Worksheet 1-D
Map

Place the names of the towns in the Mesabi, Vermilion, or Cuyuna Range on the map provided. Using a color pencil, shade the Mesabi Range area blue, Vermilion Range red, and the Cuyuna Range green.

The towns to be placed are

- | | | | |
|--|-----------------------------------|---------------------------------------|-----------------------------------|
| <input type="checkbox"/> your town | <input type="checkbox"/> Biwabik | <input type="checkbox"/> Ely | <input type="checkbox"/> Nashwauk |
| <input type="checkbox"/> Aitkin | <input type="checkbox"/> Brainerd | <input type="checkbox"/> Eveleth | <input type="checkbox"/> Soudan |
| <input type="checkbox"/> Aurora/Hoyt Lakes | <input type="checkbox"/> Chisholm | <input type="checkbox"/> Grand Rapids | <input type="checkbox"/> Tower |
| <input type="checkbox"/> Babbitt | <input type="checkbox"/> Crosby | <input type="checkbox"/> Hibbing | <input type="checkbox"/> Virginia |



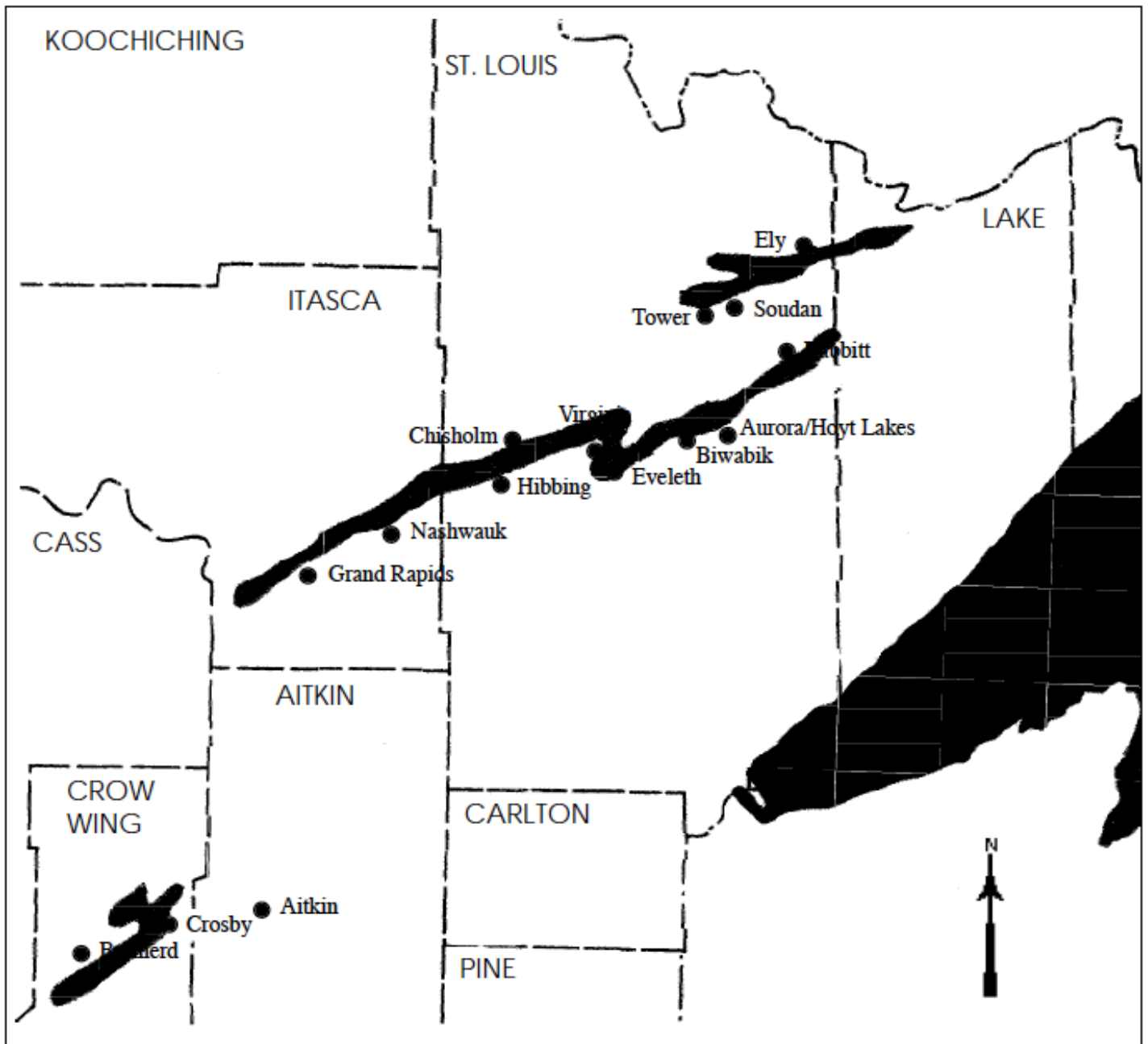
Teacher's Key

Worksheet 1-D

Place the names of the towns in the Mesabi, Vermilion or Cuyuna Range on the map provided. Using a color pencil, shade the Mesabi Range area blue, Vermilion Range red and the Cuyuna Range green.

The towns to be placed are:

- | | | | |
|--|-----------------------------------|---------------------------------------|-----------------------------------|
| <input type="checkbox"/> your town | <input type="checkbox"/> Biwabik | <input type="checkbox"/> Ely | <input type="checkbox"/> Nashwauk |
| <input type="checkbox"/> Aitkin | <input type="checkbox"/> Brainerd | <input type="checkbox"/> Eveleth | <input type="checkbox"/> Soudan |
| <input type="checkbox"/> Aurora/Hoyt Lakes | <input type="checkbox"/> Chisholm | <input type="checkbox"/> Grand Rapids | <input type="checkbox"/> Tower |
| <input type="checkbox"/> Babbitt | <input type="checkbox"/> Crosby | <input type="checkbox"/> Hibbing | <input type="checkbox"/> Virginia |



Name: _____

Assessment Module 1 History

1. When and where did the taconite industry begin?
2. What is taconite?
3. Who discovered taconite?
4. Who is the “Father of Taconite” and why?
5. Describe the difference between red ore and taconite.
6. Name the three ranges of the Iron Range.
7. Name two important people who helped develop mining and tell what they did.

Teacher's Key

Assessment Module 1 History

1. When and where did the taconite industry begin?

The industry began in Babbitt, Minnesota, in 1922.

2. What is taconite?

Taconite is a hard rock that contains 20-30% iron.

3. Who discovered taconite?

Peter Mitchell discovered taconite.

4. Who is the “Father of Taconite” and why?

E.W. Davis is the “Father of Taconite” because he developed the taconite mining process.

5. Describe the difference between red ore and taconite.

Red ore is 50-60% iron and taconite is 20-30% iron. Red ore is shipped directly, and taconite is processed and formed into pellets and then is shipped.

6. Name the three ranges.

The three ranges are Cuyuna, Mesabi, and Vermilion.

7. Name two important people who helped develop iron mining industry.

Any of two: George Stuntz, Peter Mitchell, Charlemagne Tower, Merritt brothers, John McCaskill, Captain Cohoe, Frank Hibbing, the Longyears