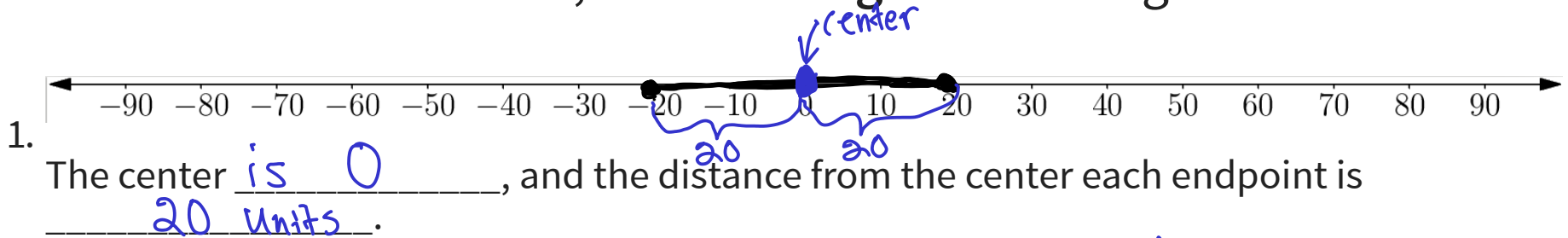# WHERE DOES IT LIVE?

LEARNING GOAL

1. I can use **absolute value inequalities** to describe where a species lives.

KEY IDEA

We can describe where a species lives by describing the **center**, the **width**, and the **height** of its range.
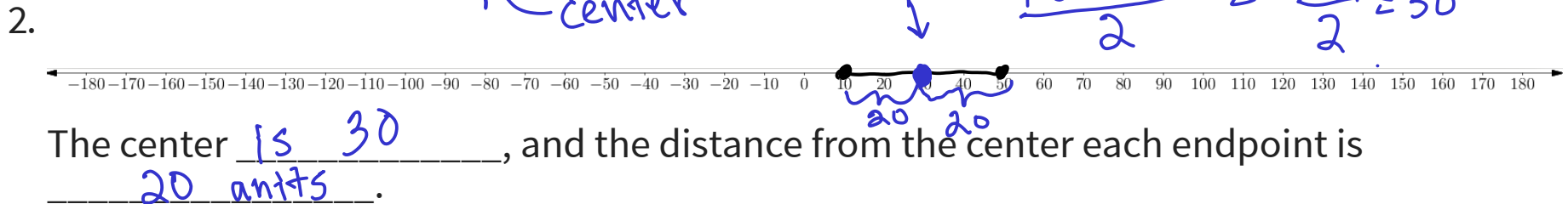
center

1.

The center is 0 _____, and the distance from the center each endpoint is 20 units .

$$|x - 0| \leq 20$$

center ← distance to endpoint

2.

center

$$\frac{10 + 50}{2} = \frac{60}{2} = 30$$

The center is 30 _____, and the distance from the center each endpoint is 20 units .

$$|x - 30| \leq 20$$

center ← distance to endpoint from the center

TASK 1

Draw north, south, east, and west boundaries around where your species lives.
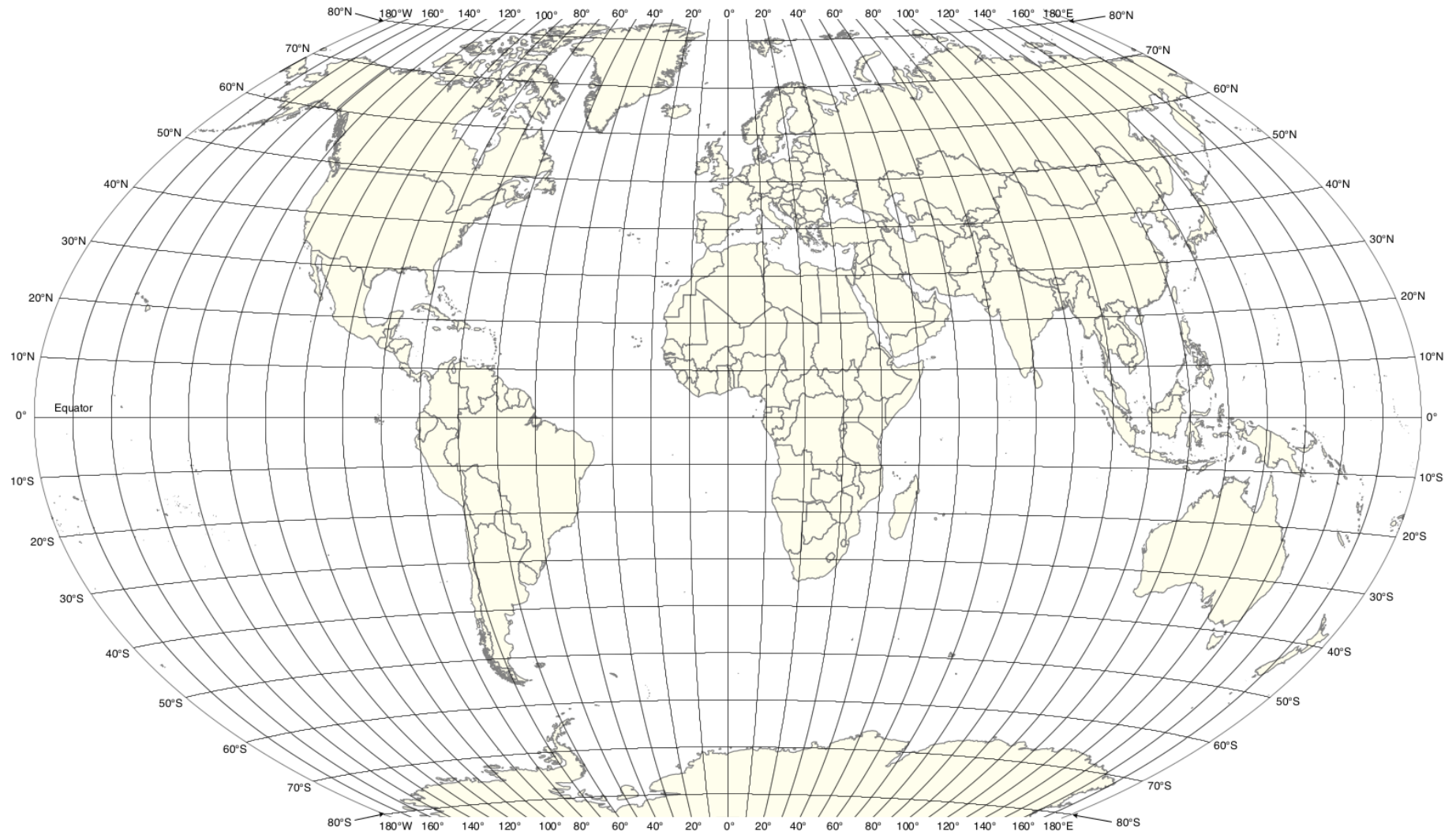
THINGS TO REMEMBER:

1. North and south boundaries will lie along lines of latitude (horizontal lines)
2. East and west boundaries will lie along lines of longitude (vertical lines).
3. Each line must pass through the top, bottom, leftmost, or rightmost point.
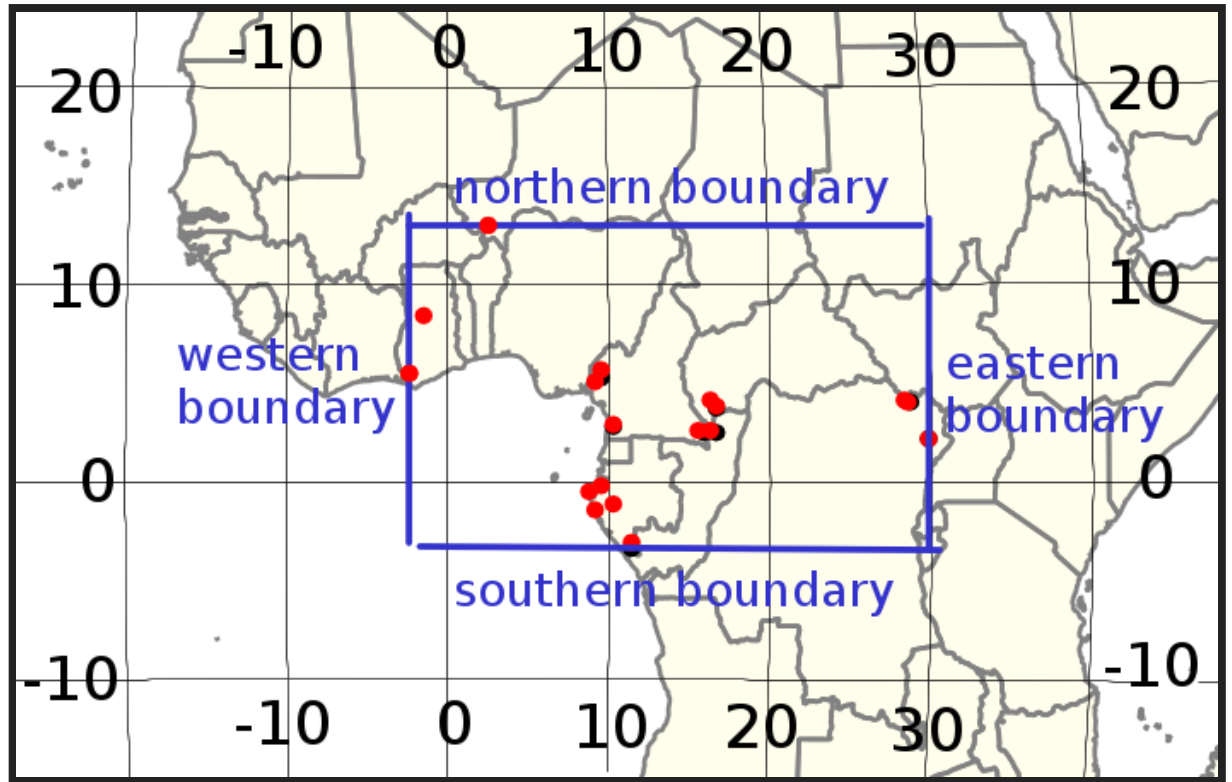
Draw north, south, east, and west boundaries around where your species lives.

13°N

-3°W
(-3)

30°E

-3°S
(-3)
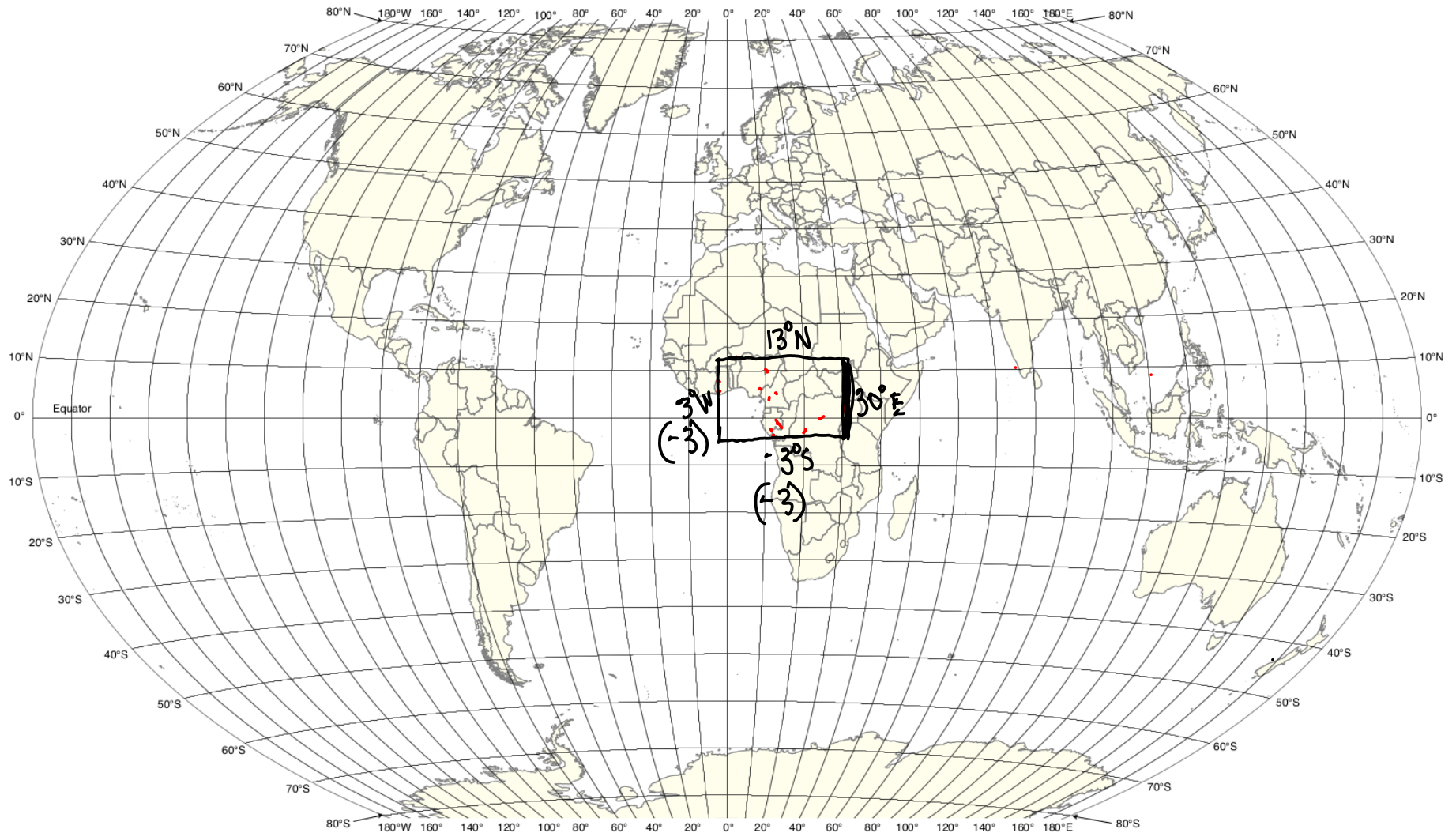
Draw north, south, east, and west boundaries around where your species lives, or copy your work from yesterday onto the next slide.

TASK 2

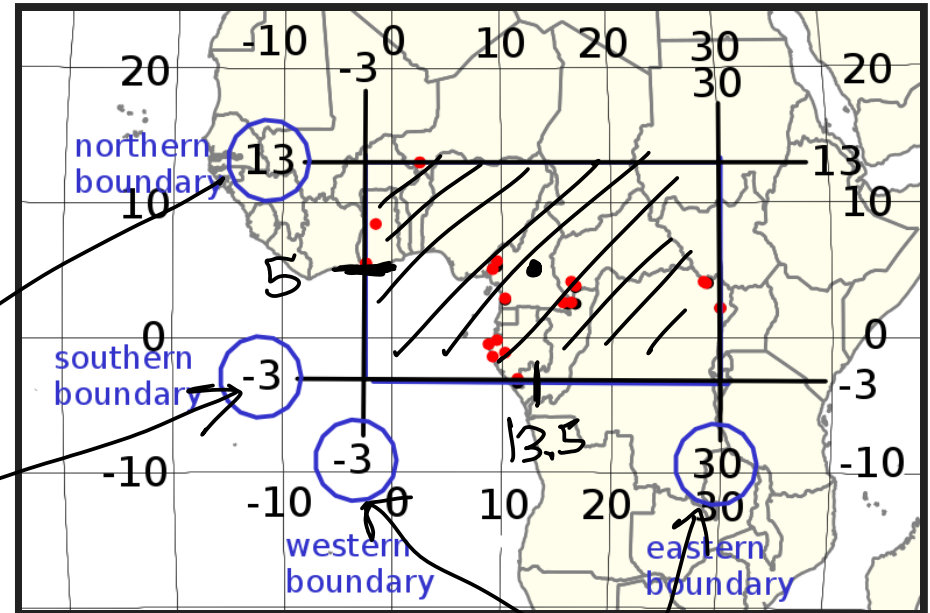Describe the center, the height, and the width of your species range.

$$\frac{-3+13}{28} = \frac{10}{2} = 5$$

latitudes

longitudes

1.
The center of the latitudes is ____5____, and the distance from the center to the northern boundary is ____8____°.
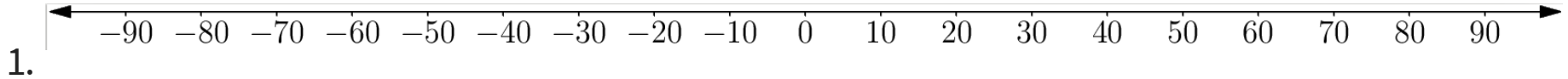
2.
$$\frac{-3+30}{2} = \frac{27}{2} = 13.5$$

$$\begin{array}{r} 30.0 \\ -13.5 \\ \hline 16.5 \end{array}$$

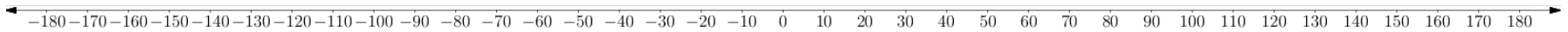The center of the longitudes is ____13.5____, and the distance is from the center to the eastern boundary is ____16.5____°.

TASK 2

Describe the center, the height, and the width of your species range.

1.

$$-90 \quad -80 \quad -70 \quad -60 \quad -50 \quad -40 \quad -30 \quad -20 \quad -10 \quad 0 \quad 10 \quad 20 \quad 30 \quad 40 \quad 50 \quad 60 \quad 70 \quad 80 \quad 90$$

The center of the latitudes is _____, and the distance from the center to the northern boundary is _____ °.

2.

$$-180 \ -170 \ -160 \ -150 \ -140 \ -130 \ -120 \ -110 \ -100 \ -90 \ -80 \ -70 \ -60 \ -50 \ -40 \ -30 \ -20 \ -10 \ 0 \ 10 \ 20 \ 30 \ 40 \ 50 \ 60 \ 70 \ 80 \ 90 \ 100 \ 110 \ 120 \ 130 \ 140 \ 150 \ 160 \ 170 \ 180$$

The center of the longitudes is _____, and the distance is from the center to the eastern boundary is _____ °.

TASK 3

Translate each of your sentences from task 2 into an **absolute value** inequality.

SENTENCES FROM TASK 2

1. The **center** of the latitudes is ____5____, and the distance from the center to the northern boundary is ____8____ °.
2. The **center** of the longitudes is ____13.5____, and the distance from the center to the eastern boundary is ____16.5____ °.

ABSOLUTE VALUE INEQUALITIES

1. Inequality for latitudes:

$$|x - 5| \leq 8$$

2. Inequality for longitudes:

$$|x - 13.5| \leq 16.5$$

TASK 3

Translate each of your sentences from task 2 into an **absolute value** inequality.

SENTENCES FROM TASK 2

1. The **center** of the latitudes is _____, and the distance from the center to the northern boundary is _____ $^\circ$.
2. The **center** of the longitudes is _____, and the distance from the center to the eastern boundary is _____ $^\circ$.

ABSOLUTE VALUE INEQUALITIES

1. Inequality for latitudes:

2. Inequality for longitudes:

TASK 4 (OPTIONAL)

Look at the maps of temperature and rainfall. Focus on the areas where your species lives and does not live. What do you notice?

Do the maps help you make a hypothesis (an educated guess) about what kind of environment your species needs to survive.

If not, what other factors might be important for its survival?

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