Game:
Chomp, Nibble, Grow, Grow, Grow

A luck-meets-strategy ecosystem game where players explore the relationships between sea otters, sea urchins, and kelp.

Players: 2 players, or 2 teams of up to 5 players each   **Ages:** 8 – 11

Materials:

- 2 hula hoops, 2 sheets of paper, 2 shoebox lids, or anything else that can lie flat on a table or floor where small items (balls, tokens, etc.) can be thrown onto or into it

- Game tokens, 11 per team to start, but more will be necessary during gameplay (included)

    o   To use the "Chomp, Nibble, Grow, Grow, Grow" game tokens included, print several sheets and cut each of the pieces.

    o   You can also use any small, colored objects that can easily be tossed, such as foam balls, coins, checker pieces, or other game pieces. *Tip: If using your own objects, find things in three different colors, such as red, green, and blue to represent each of the species.*

- 2 "Chomp, Nibble, Grow, Grow, Grow" Step-by-Step Cards, one per team (included)
- String or masking tape

> **Watch the Cyberchase clip "An Urchin Matter: For Real" to see teams play Chomp, Nibble, Grow, Grow, Grow!**

Getting Ready:

- Place the 2 hula hoops, sheets of paper, etc. on a table, desk, or on the floor. They can be next to each other or facing each other. These are your ecosystems!

- Place a "throw" line (a piece of string, making tape, etc.) about 1 to 2 feet away from each ecosystem. Players must stand behind this line when tossing game tokens.

- Print and cut the paper game tokens, or collect your own game tokens in 3 different colors. *Tip: To make the paper game pieces sturdier, tape each disk to a ball, piece of cardboard, plastic disc (like a checker piece), coin, etc.*

- Give each team half of the game pieces. A recommended starting quantity is 2 sea otters (blue), 4 sea urchins (red) and 5 kelp (green) per team, but feel free to use any quantity you like and see what happens! *Note: During gameplay, each team will need extra tokens for stabilizing their ecosystems.*

> **You Need to Know...**
> - Sea otters eat sea urchins.
> - Sea urchins eat kelp.
> - Ecosystems consist of interdependent species.
> - In a balanced ecosystem, all the plants and animals have everything they need to live well.

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Playing the Game:

- One player from each team starts by standing at the "throw" line in front of their ecosystem and tossing one token into the ecosystem. If it lands inside, great! If not, the token is then out of play.

- Team members take turns throwing one token at a time into their ecosystem, until all the tokens have been thrown. *Tips: Try to get as many tokens as possible to land in your team's ecosystem. Remove all tokens that fall outside the ecosystem and put them out of play. Any tokens that fall in the opposing team's ecosystem stay in that team's ecosystem.*

- Once all tokens have been tossed, it's time to check the health of your ecosystem. Chant *"Chomp, Nibble, Grow, Grow, Grow!"* and complete the following steps, in order:

  1) **Chomp!** Every otter eats one urchin if it can. Any otter that doesn't eat an urchin dies and should be removed from the ecosystem. Remove any urchin that has been eaten.

  2) **Nibble!** Every urchin eats a kelp if it can. If it can't, it dies and should be removed from the ecosystem. Remove any kelp that have been eaten.

  3) **Grow!** If any kelp remain, add one kelp to your ecosystem. (Note: If several kelp remain, still add only 1 kelp.)

  4) **Grow!** If any urchins remain, they double. (1 becomes 2, 2 become 4, 3 become 6, etc.)

  5) **Grow!** For every two otters, add one otter. (If you only have one otter, do not add any.)

  Tip: Refer to your "Chomp, Nibble, Grow, Grow, Grow" Step-by-Step card as you play the game.

- Examine your ecosystem. If you still have at least one otter, one urchin and one kelp, congratulations! You get one point and can play another round. If you don't have all three species, your ecosystem is not stable and your game is over.

- Repeat steps 1-4 until you successfully complete 5 rounds or until your ecosystem is not stable (and doesn't have all 3 species).

Scoring:

Teams score one point after each round when all three species are still alive in their ecosystem. The winner is the player or team able to maintain a balanced ecosystem for 3 or more rounds, or with the most points at the end of play.

Topsy Turvy Ecosystems:

Try these fun variations and see what happens!

- If using balls as playing pieces, place the targets next to a wall to increase bounce back which will help you land pieces in the ecosystem.
- Rather than tossing the tokens into the ecosystems, start with different combinations of each species in the ecosystems. Try the following and predict what will happen and how many rounds your ecosystem will last:

  - **Many urchins:** Start with 1 otter, 3 urchins, and 3 kelp.

  - **No otters:** Start with 0 otters, 2 urchins and 4 kelp.

  - **Smooth sailing:** Start with 1 otter, 2 urchins and 4 kelp

  - **Ecosystem invasion:** Throw an extra otter or urchin into your opponent's ecosystem and see what happens!

"Chomp, Nibble, Grow, Grow, Grow" Game Tokens
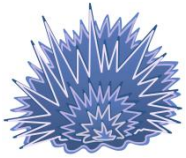
sea otter	sea otter	sea otter	sea otter
sea otter	sea otter	sea otter	sea otter
sea urchin	sea urchin	sea urchin	sea urchin
sea urchin	sea urchin	sea urchin	sea urchin
kelp	kelp	kelp	kelp
kelp	kelp	kelp	kelp
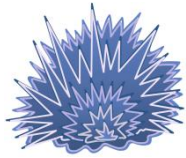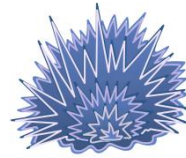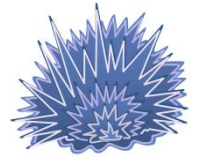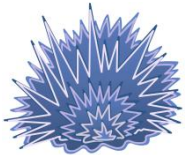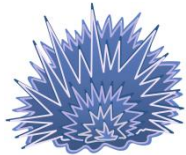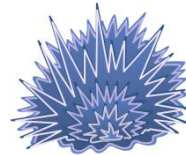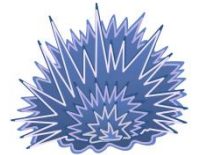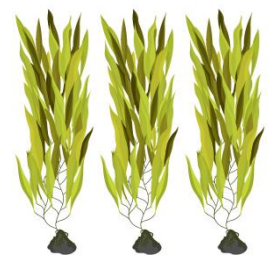
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"Chomp, Nibble, Grow, Grow, Grow" Step-by-Step Card

Step	Action	Details
1. Chomp	otter eats urchin	Each otter eats one urchin if it can. Any otter that doesn't eat an urchin dies and should be removed from the ecosystem. Remove any urchin that has been eaten.
2. Nibble	urchin eats kelp	Each urchin eats a kelp if it can. If it can't, it dies and should be removed from the ecosystem. Remove any kelp that have been eaten.
3. Grow	kelp grows	If any kelp remain, add one kelp to your ecosystem. (Note: If several kelp remain, you still add only 1 kelp.)
4. Grow	urchin grows	If any urchins remain, they double. (1 becomes 2, 2 become 4, 3 become 6, etc.)
5. Grow	otter grows	For every two otters, add one otter. (If you only have one otter, do not add any.)