



Clades™

The Evolutionary Card Game

by Jonathan Tweet & Karen Lewis

CLADES™ Card Game

A **clade** is a section of the evolutionary family tree—basically any branch, including all its sub-branches. A clade is a family of organisms, or living things, that are all more closely related to each other than they are to any other organisms. In this game you match cards according to their clades.

Contents: Deck of 83 CLADES PREHISTORIC cards. Includes 27 cards of each color and 2 bonus cards. There are also 5 animal description cards not used in play.

Object: Spot matching card triples to collect the biggest animal pile!

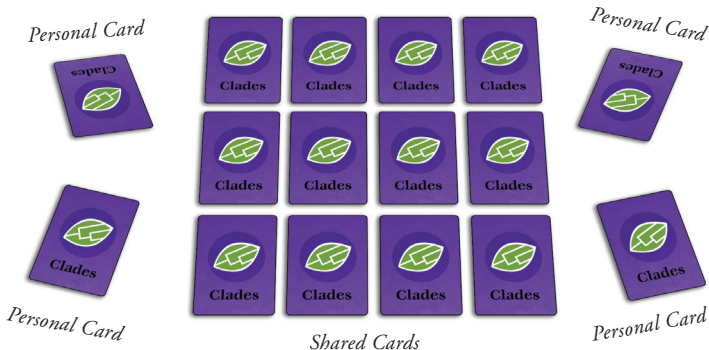
Setup

Deal 1 face-down card to each player as their personal card. For now, players keep these cards face-down and don't look at them.

Deal 12 face-down shared cards to the middle of the play area.

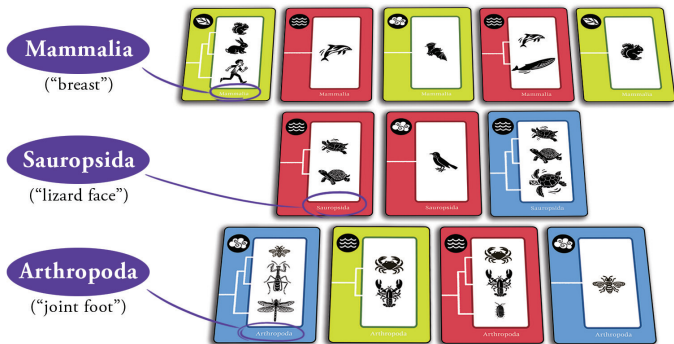
If you're learning or teaching the game:

- **Before dealing**, set aside the bonus cards and the cards showing only one or two animals. Play with just the cards showing three animals.
- **Deal 7 shared cards** instead of 12.



All players help flip the 12 shared cards face-up. Sort the cards into three rows according to their clades: top for **Mammalia** (mammals), middle for **Sauropsida** (sauropsids, or reptiles and birds), and bottom for **Arthropoda** (arthropods, or “bugs”). When the table is ready, each player picks up their personal card and looks at it. **Play begins immediately.**

If a player is dealt a bonus card at setup or if there's one at the table, replace the card with a new one from the deck and shuffle the bonus card back in.



Playing the Game

In CLADES, there are no turns. Everybody plays at the same time. Each player is on the lookout for 3 cards that form a **triple**. Players can use their personal cards to complete the triple, or they can make a triple using only shared cards.

The first player to spot a triple says “Triple.” They then show which 3 cards are the triple. If it is a complete triple, the player collects all 3 cards and puts them face-up in their animal pile.

At the end of the game, the player with the most cards in their animal pile is the winner!




Making Triples

In **CLADES**, any two cards can make a triple with exactly one other card in the deck.

A triple is any three cards with:

- **all three types of at least one quality** AND
- **just one type of any remaining qualities.**

In other words, when you look a quality on three cards, all three have to match or all three have to be different.

Qualities	Three Types Each	Science Notes
Cl	Mammals Sauropsids (reptiles and birds) Arthropods (“bugs”)	All the animals in each clade are related to each other more closely than they are to any other animals in the game.
Environment	 Water  Land  Air	This represents the environment of the animals’ common ancestor. All the animals on a card are descended from that ancestor.
Number	One animal Two animals Three animals	Animals on the same card are more closely related to each other than they are to any other animals in the game. On a three-animal card, the top two animals are more closely related than either is to the third.
Color	Blue Green Red	The three colors represent that even among animals of the same type, individuals are unique.

The four card qualities to be matched are clade, environment, number, and color.

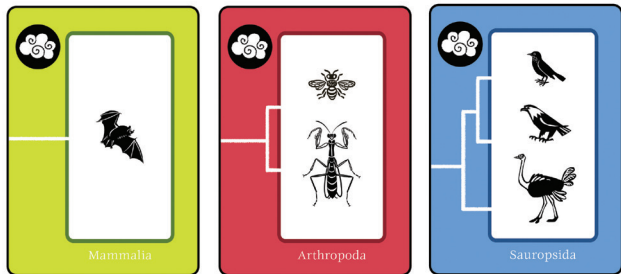
Clade: arthropod (think “bug”), sauropsid (reptile or bird), or mammal.

Environment: water, land, or air. This is the environment of the animals’ common ancestor.

Number: one, two, or three. Whenever two or three animals appear on a card together, they are more closely related to each other than they are to any other animals in the game.

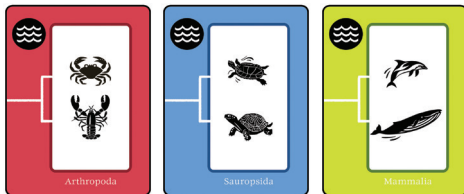
Color: blue, green, or red. These different colors represent the natural differences that occur in any group of animals. Every animal is unique.

Example of a Triple

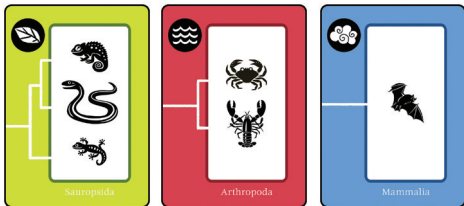


This triple has all three clades, all three colors, and all three numbers, while the environment is the same.

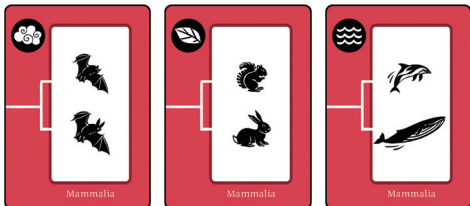
More Examples of Triples



Three different clades and colors. Same environment and number.



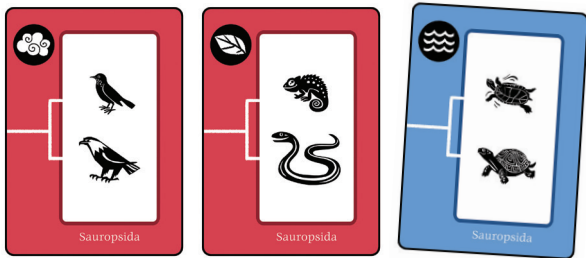
ALL different qualities: three clades, three environments, three numbers, and three colors.



Three different environments. Same clade, number, and color.
(*See special rule for clade triples on page 8.)*

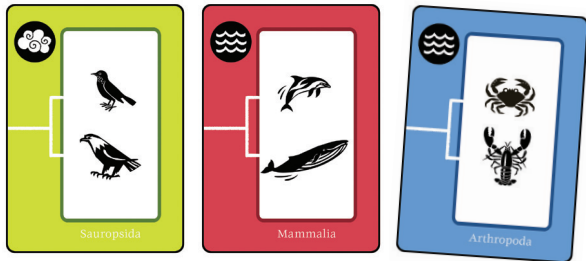
Examples of Failed Triples

If two cards are the SAME in some quality (color, for example), then the third card must also be the same in that quality:



***NOT a triple!** The first two cards are **red**, so the third card must also be **red**.*

If two cards are DIFFERENT in some way (environment, for example), then the third card must also be different in that way.

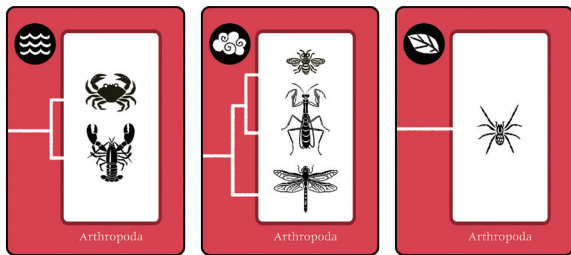


***NOT a triple!** The first two cards are **air** and **water**, so the third must be **land**.*

Clade Triples

Most triples include representatives of each clade: arthropod, sauropsid, and mammal. If a triple includes animals of only ONE clade, such as all mammals or all arthropods, then it is a special “**clade triple.**”

Clade Triple: All animals belong to the same clade.



A clade triple earns +2: If your triple is all one clade, take 2 extra cards from the deck and add them to your animal pile in addition to the 3 cards in the triple. That means you get a total of 5 cards! If either of these 2 extra cards is a bonus card, it goes to the player on your left or right, and you get a replacement from the deck. See “Bonus Cards” on the next page.

Additional Rules

Replacing cards: After making a triple, replace the shared cards that you took from the table with cards from the deck. If you used your personal card, replace it as well. If any of the new cards is a bonus card, replace it with another card from the deck. See “Bonus Cards” on the next page.

Multiple triples: If more than one player calls a triple, all those triples are counted before any of the cards are replaced. The player who called their triple first gets to take their cards first. Then the next player who called a triple can take theirs—as long as the triple is still on the table. If the first player took a

card the second player needs for their triple, the second player is out of luck. Repeat in the same way for any additional players who called triples. Once no one can make a triple with the remaining cards, take turns replacing the claimed cards. The first player to make a triple replaces cards first, and so on.

Lucky 13: Sometimes no one can see a triple. With 12 cards for anyone to use plus the players' personal cards, almost every combination yields a triple, but they sure can be hard to spot sometimes! When this happens, add a card to the 12 shared cards. Once someone spots a triple, the shared pool goes back to 12 cards. Don't be shy about adding that 13th card to keep the game moving.



Bonus Cards



There are two bonus cards, the ray-finned fish and the mollusk. They add a little randomness to the game.

Bonus cards go left or right: Whenever a bonus card comes up, it goes into a player's animal pile. But who gets it? If the card is the ray-finned fish, it goes to *the player to the right of the one who made the triple*. If it's the mollusk, it goes to the player to the left. Replace the bonus card with another card drawn from the deck.

Second bonus card +5: When the second bonus card comes up, follow the rules for bonus cards and then give 5 extra cards from the deck to the player who received the bonus card.

Ending the Game

When the deck runs out, players make whatever final triples they can. Because there aren't any more cards in the deck, clade triples don't earn extra cards.

Most cards wins: The player with the most cards in their animal pile is the winner. In the case of a tie, all tied players win. And really, everyone who has fun playing is a winner.

Balancing the Game

A nice thing about CLADES is that it's easy to balance when players of different skill levels are playing.

Smaller deck: For a faster game, put about a third of the cards aside. The exact number isn't important. Shorter games make luck a little more important and skill a little less important. For players who fall behind, it's often more fun to end the game and get a fresh start than to keep playing while losing.

Extra Starter cards: Every player who loves animals starts with 3 cards in their animal pile. Any players who don't love animals get 3 cards, too, because all people are equal.

Beginner's luck: Players who are just learning the game get 5 animal cards to start.

Victory break: When a player scores a triple, they take a break until the next triple is spotted. If they used their personal card in their triple, they don't replace it until another player confirms the next triple. They can then start looking for triples again.

Threes only: Make a 27-card deck from just the cards with three animals on them. When all the cards are the same number, it is easier to spot triples.

No personal card for the best players: The most experienced players play without the advantage of a card of their own.

Extra personal cards for new players: Give new players 2 personal cards instead of 1. You could even try giving them 3 cards.

Making the Game Harder

Here are some ideas to make the game more challenging.

False call penalty: If you call a triple and it isn't there, you have to take a random card from your animal pile and add it to the grid as a temporary shared card. When a player collects it as part of a triple, do not replace it from the deck.

Open hand: If no one calls a triple for a while, all players put their personal cards down face-up in front of them, so everyone can see. These cards are not added to the grid but can now be used by any player as part of a triple that doesn't include any other personal cards.

Once someone calls a triple and takes its cards, replace any personal card that was part of that triple first. Then all players pick their personal cards up again. Finally, replace the shared cards that were part of the triple. Cards can be turned face-up again anytime the game stalls and go back to being private once a triple is scored.

Open hand with switch: Like open hand, but when you make a triple with someone else's personal card, you give them yours. You then get the replacement card from the deck.

Solitaire

In solitaire, there are no personal cards, bonus cards, or bonuses for clade triples.

Casual: Deal out plenty of face-up cards and look for triples. Keep going as long as you can, then reshuffle.

10-triple race: Use just 39 cards, and set the rest aside. Lay out 12 grid cards. There are no player cards. Start a stopwatch and flip the grid cards over. How long does it take you to find 10 triples? The deck runs out after the ninth triple, indicating that you're on your last turn. You can also race against the clock by setting a time on a countdown timer and trying to beat it.

Science Questions and Information

Q. What's a sauropsid? Aren't lizards reptiles?

A. Hundreds of years ago when birds were classified as different from reptiles, scientists didn't understand evolution yet. Now we know that birds are a branch of the dinosaur clade, which is a branch of the reptile clade. Birds and reptiles together form the sauropsid clade. "Sauropsid" means "lizard face."

Q. Tortoises aren't water animals. Woodlice aren't either, and ostriches aren't air animals. Why are they shown in those environments?

A. Tortoises and other turtles all share a common ancestor that lived in the water. Woodlice share a common ancestor with crabs and lobsters, and that ancestor lived in the water. Ostriches share a flying ancestor with other birds. The modern way to classify animals is by their common ancestors of long ago, not by the characteristics they have today.

Q. How are the arthropod clade, the sauropsid clade, and the mammal clade related?

A. The sauropsid and mammal clades are both in the amniote clade, descended from the first lizard-like animals to lay eggs on dry land about 300 million years ago ("mya" for short). Then the amniote and the arthropod clade are both in the clade Bilateria, which is descended from a sort of aquatic worm that had a left side and a right side with a gut in the middle. That was about 600 mya.

Q. What do you call the smaller groups within a clade, such as winged insects or supraprimates?

A. Those are also clades.

Q. What do you call Bilateria, the big group of two-sided animals that all three clades belong to?

A. That's a clade, too. Clades are nested inside each other.

Q. Are bats more closely related to birds than other mammals are?

A. Bats are as closely related to birds as any other mammal is, no closer and no further away. All mammals trace their origins back to the same common ancestor as birds: the first lizard-like amniotes of 300 mya (million years ago). In ancient times, creation stories spoke about the creatures of the air, the creatures of the water, and the creatures of the land as if those were three real groups. Now we know to group animals according to their family relationship to other animals, not to whether they fly, swim, or walk.

Animal Information Cards

Included with this game are five cards that describe more about the animals in these clades. These notes cover three eras: the Paleozoic (“old animal”), the Mesozoic (“middle animal”), and the Cenozoic (“dawn animal”). Between the Paleozoic and Mesozoic eras was Earth’s fourth great extinction, 252 mya (million years ago). Between the Mesozoic and Cenozoic eras was Earth’s fifth great extinction, 66 mya.

In each clade are three smaller clades, one representing each environment.

	Water	Land	Air
Arthropod clade	Malacostracans Crabs, lobsters, etc. <i>Malacostraca</i> (“soft shell”)	Tetrapulmonates Spiders and relatives <i>Tetrapulmonata</i> (“four lungs”)	Winged insects <i>Pterygota</i> (“winged”)
Sauropsid clade	Turtles Sea turtles, tortoises, etc. <i>Testudines</i> (“tortoises”)	Squamates Lizards and snakes <i>Squamata</i> (“scaled”)	Birds <i>Aves</i> (“birds”)
Mammal clade	Whippomorphs Whales, hippos, etc. <i>Whippomorpha</i> (“whale-hippo shape”)	Supraprimates Rodents, primates, etc. <i>Euarhontoglires</i> (“true ancestors” and “dormice”)	Bats <i>Chiroptera</i> (“hand wings”)

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