Across the arid landscape of Arizona, riverside habitats, or Riparian Areas, provide vital resources to humans and wildlife alike. Their flowing water and the shaded, vegetation rich habitats they support make activities like cattle ranching, mining, outdoor recreation, and urban expansion all possible - while still providing critical habitat for over 70 percent of the state’s endangered wildlife.

On Arizona’s public lands, through which many of the state’s rivers flow, it is the job of Resource Managers to monitor the impacts of all of these activities and ensure that no one use pushes out another. Since these lands are public, it is mandated that no one user’s impacts may ever prevent another user, whether human or animal, from using the land.

In riparian areas, where resources are concentrated and space is limited, this balancing act can become especially tricky. In this game, you’re a resource manager trying to protect Arizona’s rivers, but western rivers are complex and sometimes, despite your best efforts, disasters will happen.

Try your best to protect our rivers and save as many birds as you can along the way. Good luck!
RULES OF PLAY

CONTENTS:

120 Cards
   42 River Cards
     34 Rivers
     8 Disasters
   78 Observation Cards
     43 Monitoring Cards
     32 Indicators
     10 Setbacks
     1 Wild Card
   21 Action Cards
   14 Bird Cards

OBJECT:
To be the player with the most points (birds saved) when the game ends.

SETUP:
A) Sort the cards into two decks, identified on their backs as River or Observation cards, and shuffle each deck thoroughly. Place the River cards face down to one side.
B) Deal each player seven cards from the Observation deck and place the deck face down in the center of the draw pile. Played and discarded cards will sit face up in a discard pile next to the draw pile. Players should look at their cards. Check the bottom of all green Monitoring cards so you can tell if you have an Indicator or a Setback.

BASIC GAME PLAY:
A) The player left of the dealer goes first. There are four ways to play on each of your turns.
   1) PROTECT A RIVER. Lay down three Monitoring-Indicator cards and take a River card. This is how you gain and lose points (see the box on the right).
   2) ADD A BIRD CARD to a River card (see box to the right).
   3) PLAY AN ACTION CARD. Most of these will be played against another player - any player. Follow the instructions on the card (see box to the right).
   4) DISCARD one card if you cannot do any of the above. This is one way to get rid of Monitoring-Setback cards.
B) Draw enough cards from the Observation deck to bring your hand back up to seven cards. If you took a card from an opponent, he/she will need to draw a new card. If both players need to draw, the one who played first should draw first.

At the end of every turn, all players should have seven observation cards in-hand

C) Play continues to the left (clockwise). If the draw pile runs out, reshuffle the discard pile and start a new draw pile.

WINNING:
The game ends when the first player gets 5 rivers. The winner is the one with the most points tallied from the RIVER and BIRD cards (see box to the right).

1) PROTECT A RIVER (earn points)
When you have collected three Monitoring-Indicator cards, each from a different category, you lay them on the discard pile to protect a river. Categories: Water Quality, Bank Stability, Vegetation, and Flow. There is one Wild Card that can substitute for any category indicator. Watch out for Setbacks: if you’re caught trying to protect a river with one, you forfeit your turn - take back your cards and don’t draw any new ones!

Next, draw a River card, say its name, and lay it face up in front of you. If you have drawn a disaster card, your turn ends. If you have drawn a river, look at the bottom for its associated birds. If you have any matching Bird cards in your hand, lay them on the River card for extra points.

You may add as many Bird cards to your River card as there are birds listed on the card, but no duplicates are allowed.

2) PLAY A BIRD CARD (earn points)
If you draw a Bird card later in the game that matches with one of your River cards, on another turn you may lay it on and get the extra points. This counts as your turn. Add only one bird per turn.

3) PLAYING AN ACTION CARD
STEALING A RIVER
Several of the Action cards allow you to steal another player’s River card. If the other player can immediately play a blocking card by laying it on the discard pile, nothing happens. If the other player has no blocking card, you choose which River card to take. Any associated Bird cards stay with the River and come to you. You must wait until another turn to add any new Birds.

LOSING A RIVER
There is one “Invasive Species” card which you play to make another player lose one River card, returning it to the bottom of the River card pile. There is no blocking this card. The other player gets to choose which River card is discarded. Any associated Bird cards go to the discard pile. Disaster cards are never put back, but can be shifted to another player by a “Dishonest Politician” card.

DRAW UP TO TWO CARDS
Two Action cards allow you to draw up to two cards. When you play this card, you may then immediately draw a card and decide whether to keep it or discard it. If you keep it, your turn ends. If you discard it, you may draw another card and keep it.

TAKE ONE MONITORING CARD:
If you play one of these cards, choose a player who must give you one of his or her monitoring cards. Some of these cards are category-specific (Water Quality, Bank Stability, Vegetation, Flow). If the card does not specify, you choose the category. Beware, the other player may give you a Setback. The other player will then need to draw a card. If the other player does not have a monitoring card from the specified/requested category, you simply draw a card and your turn ends.

WINNING:
When one player has protected 5 rivers (collected 5 River cards), play stops and each player counts up the total number of points in their River collection. When counting points, include River, Disaster, and Bird cards. The player with the most points wins.

If time is limited, you may wish to end the game when one player collects four River cards or after a set amount of time (we recommend at least 20 minutes). Alternately, play two or more games and add up the points from all games to find the ultimate winner - an honorary Resource Manager!
A large dam breaks upstream and the river is flooded!

A metropolitan area is growing unsustainably and needs more water!

Politicians ignore evidence that rivers are being dewatered.

Off-road vehicle users fail to see signage and are trampling plants along the river!

Environmental regulations are lessened, allowing for more industrial activity along Arizona’s rivers.

Agricultural operations begin producing crops that require extensive irrigation.

Cattle fences break during a monsoon storm. Cows are free to graze on riparian plants!

Crayfish, an invasive species, are found in the river!
San Pedro

Location in AZ: Cochise, Pima, Graham, and Pinal counties
Length: 150mi (241km)

BIRDS: western yellow-billed cuckoo, southwestern willow flycatcher, Bell’s vireo

Colorado

Location in AZ: Yuma, La Paz, Coconino, and Mojave counties
Length: 1,450mi (2,334km)

BIRDS: Yuma clapper rail, bald eagle, western yellow-billed cuckoo
River Pathways
River Pathways
River Pathways
River Pathways
River Pathways
River Pathways
River Pathways
River Pathways
Audubon, ARIZONA
Audubon, ARIZONA
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<table>
<thead>
<tr>
<th>Location in AZ</th>
<th>Length</th>
<th>Birds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yavapi and Maricopa counties</td>
<td>120mi (190km)</td>
<td>western yellow-billed cuckoo, Bell's vireo, common black-hawk</td>
</tr>
<tr>
<td>Gila and Maricopa counties</td>
<td>200mi (322km)</td>
<td>bald eagle, southwestern willow flycatcher, yellow-breasted chat</td>
</tr>
</tbody>
</table>
Santa Cruz 4
Location in AZ: Pinal and Santa Cruz counties
Length: 184mi (296km)
BIRDS: common black-hawk, Bell's vireo, western yellow-billed cuckoo

San Francisco 4
Location in AZ: Greenlee and Graham counties
Length: 159mi (256km)
BIRDS: southwestern willow flycatcher, yellow-breasted chat, common black-hawk

San Francisco 4
Location in AZ: Greenlee and Graham counties
Length: 159mi (256km)
BIRDS: southwestern willow flycatcher, yellow-breasted chat, common black-hawk

San Francisco 4
Location in AZ: Greenlee and Graham counties
Length: 159mi (256km)
BIRDS: southwestern willow flycatcher, yellow-breasted chat, common black-hawk

Blue 1
Location in AZ: Greenlee county
Length: 50.8mi (81.8km)
BIRDS: yellow-breasted chat, bald eagle, southwestern willow flycatcher

Blue 1
Location in AZ: Greenlee county
Length: 50.8mi (81.8km)
BIRDS: yellow-breasted chat, bald eagle, southwestern willow flycatcher

Blue 1
Location in AZ: Greenlee county
Length: 50.8mi (81.8km)
BIRDS: yellow-breasted chat, bald eagle, southwestern willow flycatcher

Little Colorado 3
Location in AZ: Apache, Navajo, and Coconino counties
BIRDS: yellow-breasted chat, bald eagle, southwestern willow flycatcher
**Little Colorado**

**Location in AZ:** Apache, Navajo, and Coconino counties

**Birds:** Yellow-breasted chat, bald eagle, southwestern willow flycatcher

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**Bell's Wren**

**Bird of Management Concern**

**Conservation Status:**

Diet: Mostly insects, such as caterpillars, beetles, and wasps. Rarely berries.


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**Common Black-Hawk**

**Bird of Management Concern**

**Conservation Status:**

Diet: Mostly fish, frogs, and lizards.

Fun Facts: Is at the northern edge of its range in the US. Wary at nest site and calls loudly if disturbed.

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**Southwestern Willow Flycatcher**

**Endangered**

**Conservation Status:**

Diet: Primarily insects.

Fun Facts: Flycatcher songs are innate, meaning they are born knowing how to sing them and do not have to learn them like other songbirds.

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**Yuma Clapper Rail**

**Endangered**

**Conservation Status:**

Diet: Small fish, frogs, and crayfish.

Fun Facts: Secretive due to loss of marsh habitat.
Bald eagle
*(Haliaeetus leucocephalus)*

**Diet:** Mostly fish, but occasionally eats birds and mammals.

**Fun Facts:** Hunts by watching prey from a high perch. Probably mates for life.

**Conservation Status:** Removed from the threatened/endangered list in 2007. Populations recovering.

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Western yellow-billed cuckoo
*(Coccyzus americanus occidentalis)*

**Diet:** Large insects such as cicadas, grasshoppers, and caterpillars.

**Fun Facts:** Very secretive. Nests in response to monsoon rains and is sometimes called the "rain crow".

**Conservation Status:** Threatened Status Pending

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Bell's vireo
*(Vireo bellii)*

**Diet:** Mostly insects such as caterpillars, beetles, and wasps. Rarely berries.

**Fun Facts:** Forages by gleanlng insects off leaves. Common victim of cowbird parasitism.

**Conservation Status:** Bird of Management Concern

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Yellow-breasted chat
*(Icteria virens)*

**Diet:** Insects, such as moths, beetles, and grasshoppers. Some berries.

**Fun Facts:** Song is a bizarre series of hoots and whistles. Males and females are identical.

**Conservation Status:** Least Concern
**Dissolved Oxygen**
Cool waters are supporting high oxygen levels

**INDICATOR**

**Turbidity**
Amount of suspended solids in the water is low and the water is clear

**INDICATOR**

**pH Levels**
Levels are stable and within the optimal range (6-7) to support aquatic life

**INDICATOR**

**Mining**
Local mining operations adopt new methods that result in cleaner water

**INDICATOR**

**Bad Data**
Water testing results are inconsistent, suggesting problems with your equipment

**SETBACK**
MONITORING
Water Quality
Mine Tailings
Mine tailings are leaking directly into the river!
SETBACK

MONITORING
Water Quality
Equipment Failure
Dissolved oxygen meter wasn’t calibrated correctly!
SETBACK

MONITORING
Bank Stability
Streamside Vegetation
The roots of dense riparian vegetation are effectively holding soil in place
INDICATOR

MONITORING
Bank Stability
Streamside Vegetation
The roots of dense riparian vegetation are effectively holding soil in place
INDICATOR

MONITORING
Bank Stability
Fencing
Fences are working! Damage to banks from cattle and off-road vehicles is reduced
INDICATOR

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Bank Stability
Fencing
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INDICATOR

MONITORING
Bank Stability
Vehicles
A new jeep trail is built outside the riparian corridor. Now no one drives in the riverbed!
INDICATOR

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INDICATOR
MONITORING
Bank Stability

Grazing
Livestock pressure is reduced and seedling trees abound, holding the banks together

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MONITORING
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INDICATOR

MONITORING
Bank Stability

Erosion
Man-made barriers are keeping soil in place

INDICATOR

MONITORING
Bank Stability

Erosion
Man-made barriers are keeping soil in place

INDICATOR

MONITORING
Bank Stability

Fencing
Fences fail and cattle burst through. They are trampling the banks!

SETBACK

MONITORING
Bank Stability

Vehicles
Off-road vehicles don’t see the signs prohibiting riding in the riverbed

SETBACK

MONITORING
Vegetation

Restoration
Volunteers planted young cottonwood and willow trees. They are thriving!

INDICATOR

MONITORING
Vegetation

Restoration
Volunteers planted young cottonwood and willow trees. They are thriving!

INDICATOR
Monitoring Vegetation

Non-native plants
Non-native tamarisk and Russian olive are removed and replaced with native plants
**INDICATOR**

Non-native plants
Non-native tamarisk and Russian olive are removed and replaced with native plants
**INDICATOR**

Understory
Dense understory plants are supporting a diverse array of insect life
**INDICATOR**

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**INDICATOR**

Monitoring Vegetation

High Canopy
Large native trees present and providing shade and nesting sites
**INDICATOR**

High Canopy
Large native trees present and providing shade and nesting sites
**INDICATOR**

Drought
A long term drought causes seedling cottonwood and willow trees to wither and die
**SETBACK**

Grazing
Cattle break through a fence and begin to graze on young cottonwood and willow trees
**SETBACK**
MONITORING
Flow

Legislation
New laws ensure and protect proper river flow amounts over time
INDICATOR

Agriculture
Farmers plant low-water use plants and reduce the amount of water they are pumping
INDICATOR

Water Treatment
Reclaimed water is returned to the river system
INDICATOR

MONITORING
Flow

Legislation
New laws ensure and protect proper river flow amounts over time
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Agriculture
Farmers plant low-water use plants and reduce the amount of water they are pumping
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Industry
Industries adopt new manufacturing methods that require far less water
INDICATOR

MONITORING
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**MONITORING**

**Flow**

- Dams
  - Dams upstream reduce river flow significantly
  - SETBACK

- Floods
  - Large flooding events disrupt communities along the river's banks
  - SETBACK

**MONITORING**

- WILD CARD
  - Student intern discovers new methods of measuring riparian health!
  - INDICATOR

**ACTION**

- Monitoring instruments are washed away in a flood!
  - Take one WATER QUALITY monitoring card from another player

**ACTION**

- Your work truck breaks down!
  - Take one BANK STABILITY monitoring card from another player

- Instrument malfunction!
  - Take one FLOW monitoring card from another player

- Student intern loses data sheet in the stream!
  - Take one VEGETATION monitoring card from another player

**ACTION**

- Dishonest Politician
  - Shift the blame to someone else
  - Pass DISASTER card to another player
ACTION

Land Acquisition!
Your agency acquires new property
TAKE one RIVER card from another player

ACTION

Smithsonian Institute awards you a grant!
The value of your research is finally recognized
BLOCKS theft of a RIVER card

ACTION

Presidential Medal!
You are awarded for your contributions to science
BLOCKS theft of a RIVER card

ACTION

The scientific community respects your expertise
BLOCKS theft of a RIVER card

ACTION

You help pass a new law protecting rivers
BLOCKS theft of a RIVER card

ACTION

Invasive Species!
Bullfrogs have invaded your river system
Make Another Player PUT BACK one RIVER card

ACTION

New Scientific Breakthrough!
Draw up to TWO cards

ACTION

New Scientific Breakthrough!
Draw up to TWO cards