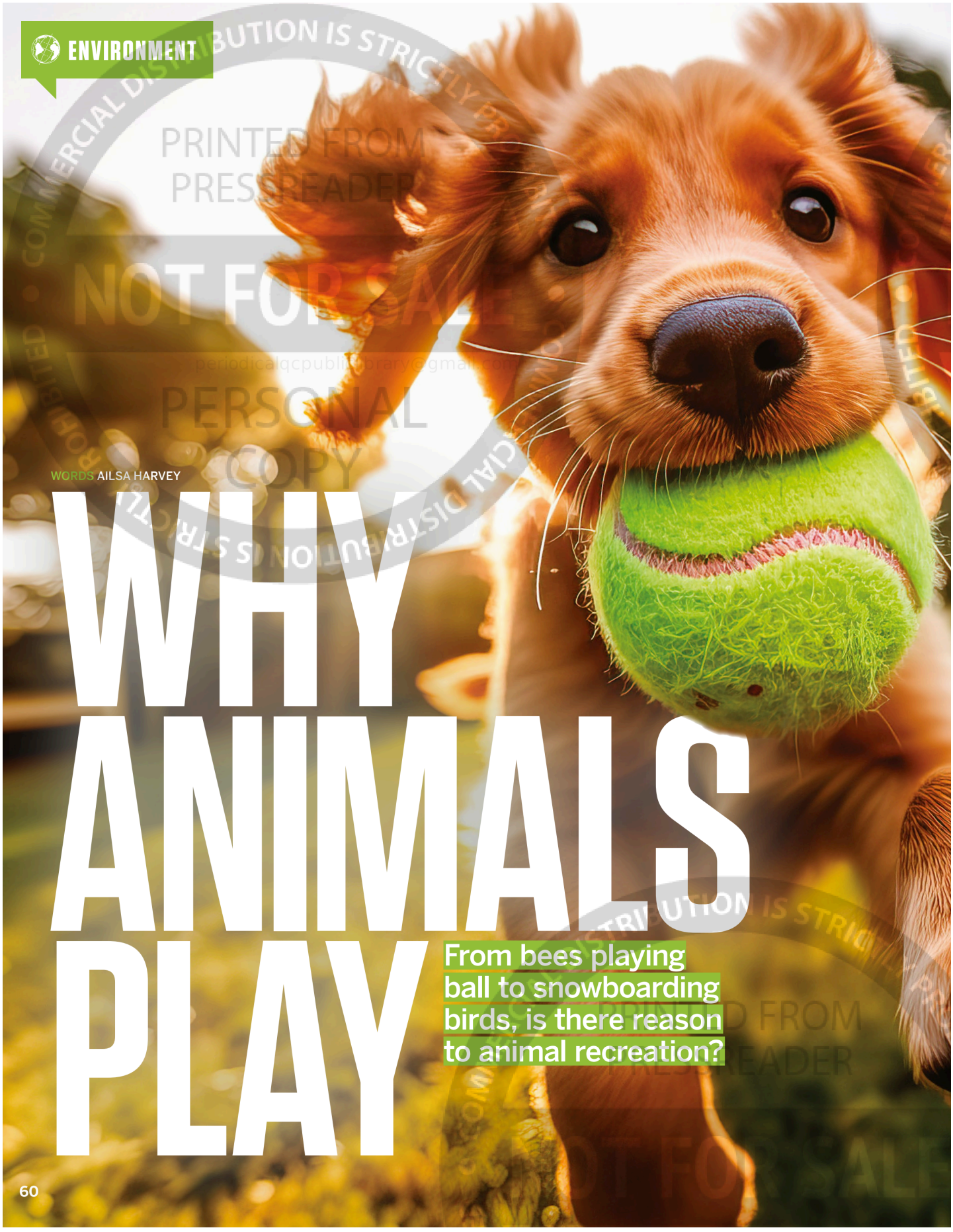
- Animal behavior



ENVIRONMENT

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WHY ANIMALS PLAY

From bees playing ball to snowboarding birds, is there reason to animal recreation?

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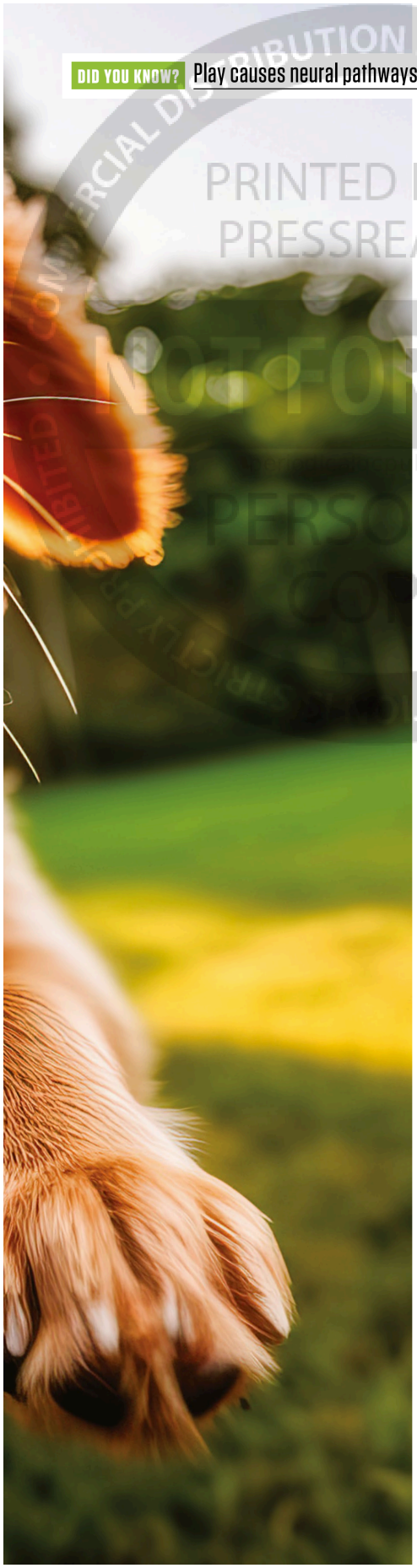

DID YOU KNOW? Play causes neural pathways to form in the human brain that determine emotional stability

When humans play, it brings people together socially, demonstrates competition and survival skills and enables creativity and exploration. For many animals, games and other playtime interactions provide similar benefits. But humans play differently to many other species of the animal kingdom, so how do we know when a creature is playing and when it's doing something else? There are five criteria that need to be met before researchers can say that an animal is playing: the activity needs to be spontaneous, exaggerated, not fully functional, performed when an animal is healthy and relaxed and have some repetition to show the act was intentional.

Humans have much more time for leisure activities compared to wild animals, who remain survival-oriented and alert to danger. But playing can be a fun and engaging way to introduce young animals to the survival skills they will depend on later in life. A litter of kittens, for example, will bite and fight with each other from an early age. While the unpredictable actions of a sibling won't harm another, the litter will develop quicker reaction times to potential threats and unexpected events early on.

Did you know?
80 per cent of mammals play

In other instances, play presents itself as a seemingly random act. Scientists don't fully understand the reasoning behind every animal action, but it's possible that animals don't always follow logic. Like humans, some activities are performed purely for pleasure. When many animals play, feel-good chemicals such as dopamine are released, which serve the body by boosting mood and enhancing neural functions such as learning and memory.



Monkeys are very playful creatures



Dogs learn to play fetch from two to three months old

PET INTERACTION

It's one of the best ways to bond and have fun with your pet, but playing isn't just entertainment between owner and animal. For most pets, playing is essential for their health and mental stimulation. Domesticated animals are more physically limited than those in the wild, meaning that playing is one of the main sources of exercise they rely on to maintain a healthy weight. For example, a simple game of fetch with your dog, or interacting with your cat by throwing a soft toy around the house for them to chase, encourages them to keep their bodies moving in a world where it would be easy to become as sedentary as humans can be. These types of games help animals maintain a healthy muscle to fat ratio and provide them with an outlet for excess energy and stress. Pets such as dogs are highly intelligent animals, and play is mentally stimulating for their senses.

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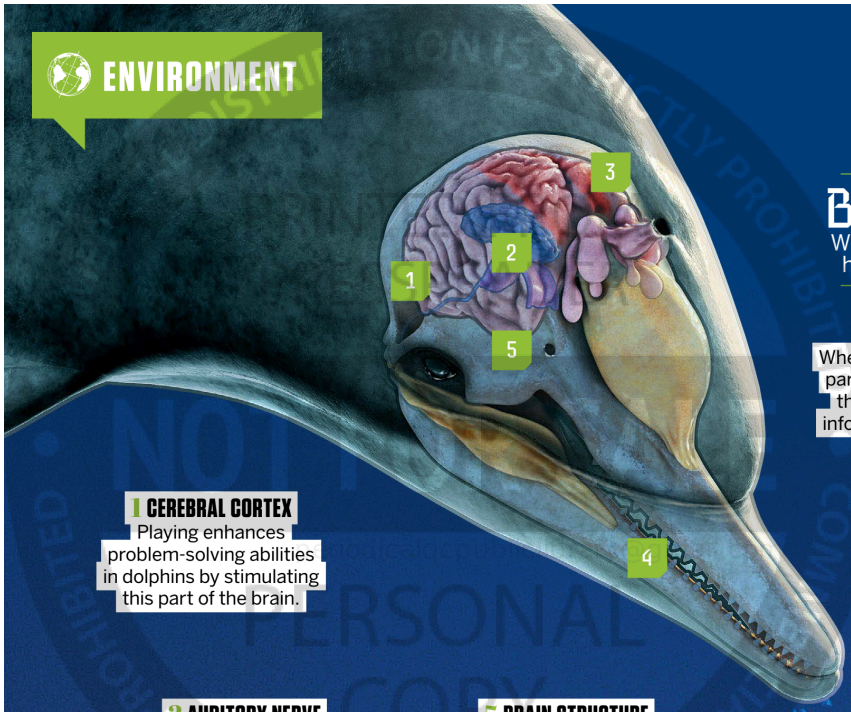


BRAIN GAME

What goes on inside a dolphin's head during ocean playtime?

1 CEREBRAL CORTEX
Playing enhances problem-solving abilities in dolphins by stimulating this part of the brain.

2 AUDITORY NERVE
A dolphin's auditory nerve is twice as wide as a human's, enabling them to react to sounds more quickly than us.

3 VISUAL CENTRE
When blowing bubbles, this part of the brain assesses the shapes using visual information from the eyes.

4 MIMICRY
During play, dolphins may smile and mimic the facial expressions of other dolphins, increasing social bonding.

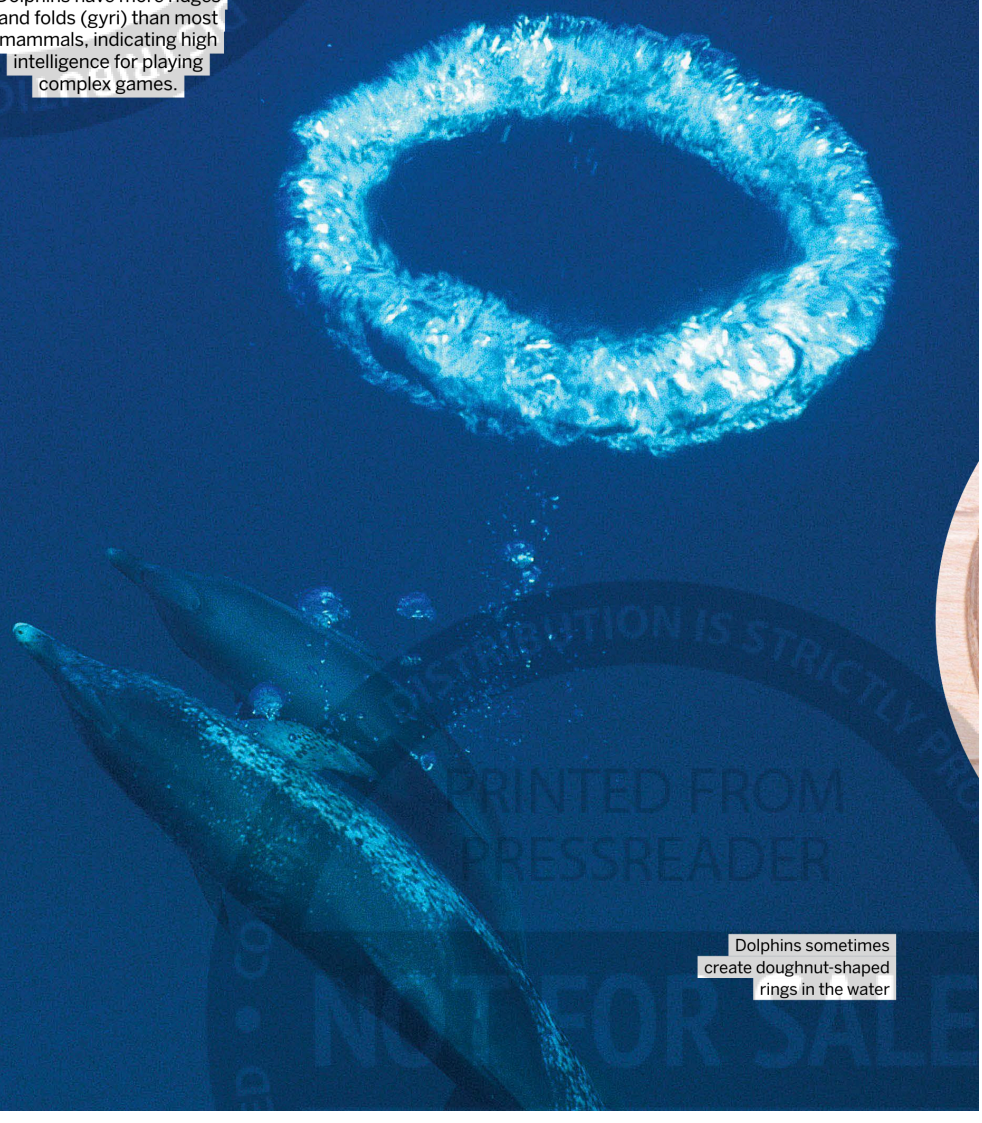
5 BRAIN STRUCTURE
Dolphins have more ridges and folds (gyri) than most mammals, indicating high intelligence for playing complex games.

> "These games require high intelligence and skill"

DOLPHIN BUBBLE PLAY

Dolphins have been observed performing multiple forms of play, from using objects in the ocean and playing games of tug of war to producing and manipulating their own toys in the form of bubble rings. Young bottlenose dolphins release air from their blowholes while swimming underwater and churn the seawater with their fins. Blowing air into the swirling water causes circular bubble rings to form. When these bubble rings are made, dolphins play with them by churning the water around them to turn, flip and move the ring's direction of travel. They can also produce more rings and join them together in a chain. These games require high intelligence and skill, as the rings need to be perfectly formed to be smooth and rounded enough to connect.

In other social forms of play, dolphins will take pieces of seaweed or animals like marine turtles and play tug of war, pulling the objects between two animals in opposite directions. Other games that dolphins have been observed playing include seaweed tag – chasing each other with a piece of seaweed on their head or flipper – and purposely hitching rides on humpback whales to be lifted up above the water's surface.



Dolphins sometimes create doughnut-shaped rings in the water

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DID YOU KNOW? Macaques have been trained to play *Pac-Man* with strategical decision-making

RAT HIDE-AND-SEEK

When they are comfortable and safe, rats have shown that they are highly playful rodents that enjoy games that have complex rules. To determine how much enjoyment a rat gains from playing, scientists have recorded the high-pitched noises they make. These noises can't be heard by the human ear, but can be picked up on sensitive devices. In previous studies, scientists found that the high-pitched sounds are a sign of amusement in the animals.

In one experiment carried out by neuroscientist Michael Brecht in Berlin, Germany, it was revealed that rats can play hide-and-seek, learning the rules and complex turn-taking elements of the game. A 30-square-metre play area was specially designed to test if six lab rats could play this game. Some hiding spaces were designed for the rats, and others for the gamemaster. The rats began to learn that their turn to seek was when the lid on their box opened after being contained within it. When the box was left open, the rats learned that this was their turn to hide in one of the hiding places. Before this, it was only known that rats are capable of simple games such as play fighting.

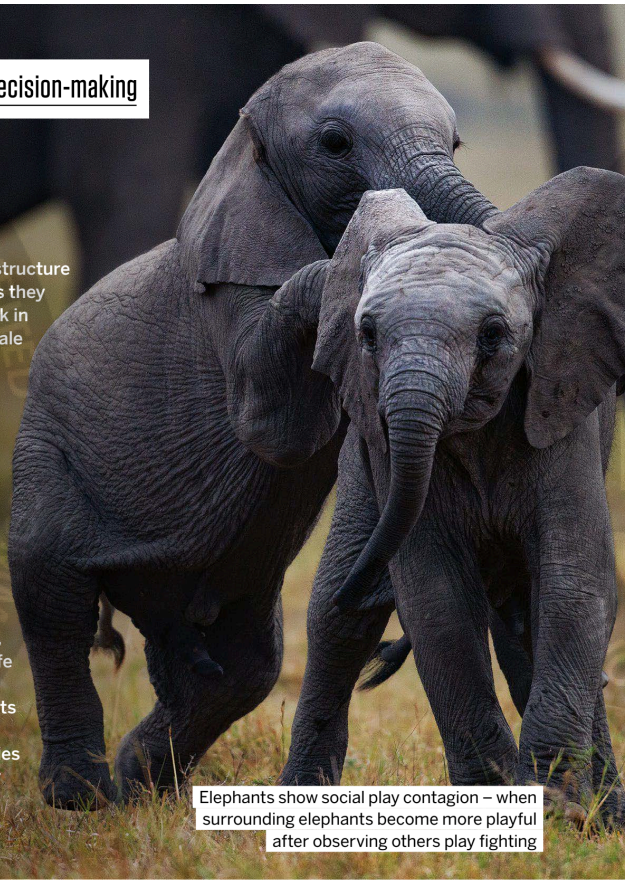


Rats have good episodic memory, helping them play hide-and-seek well

Did you know?
Rats remember previous hiding places in hide-and-seek

ELEPHANT PECKING ORDER

Elephants are taught the social structure of their herd from a young age as they play and assess each other's rank in the hierarchy. To do so, young male elephants will gently headbutt each other, and when they're older this develops into using their tusks to jab and further test their strength. While young elephants enjoy play fighting and treat it as a game, the activity sets them up with survival skills. When a young elephant wants to play with another, he will hold his trunk up in invitation to a play fight. This teaches elephants fighting skills, which they need to use later in life to assert dominance over others and compete for mates. Elephants are also known to demonstrate environmental play, which includes kicking and throwing mud, water and vegetation and using their trunks to grab and swing objects during play.



Elephants show social play contagion – when surrounding elephants become more playful after observing others play fighting

CLEVER CORVIDS AND AERIAL ACROBATICS

Crows and ravens are among some of the most intelligent birds in the world. Because of this, some of their play is more complex and adventurous than other animals'. For example, they can incorporate objects in their surroundings as toys in play. Crows have been observed carrying human litter such as plastic lids in their beaks up to the tops of snowy buildings and sliding on them down rooftops.

The more crows play, the greater their problem-solving skills become, as well as their ability to manipulate tools they come across in their environment. Crows and ravens both perform playful displays of aerial acrobatics. This involves doing somersaults in the air as they play. Ravens are known to play a game of catch mid-air, which involves dropping a stick and then swooping down to catch it again. This helps develop their motor and sensory skills.



When ravens play in the air, they improve their flight coordination

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WHALE OF A TIME

When it comes to entertainment in the ocean, killer whales play with their prey, tossing sea lions into the air after hunting them down. Meanwhile, humpbacks experiment with fashion, carrying seaweed on their heads in a phenomenon known as kelping. The whales create wigs using large pieces of algae and seaweed called kelp. They will also play with the kelp, rolling around in it or just holding it in their mouths. Though scientists are still exploring the reasons behind their interactivity with seaweed, kelping is thought to be stimulating to their senses, a tool for social interaction as they pass it between them and a way to maintain skin health due to kelp's antibacterial properties. Other ways in which humpbacks play with each other include slapping the water with their pectoral fins and breaching the water to make dramatic splashes in playful excitement.

Did you know?

Sea lions throw starfish at each other during play



A killer whale can flip a seal high into the air with its tail

DID YOU KNOW? American zoologist Vladimir Dinets used 3,000 observations of crocodiles to analyse their play types

GAMING AS GROWN-UPS

Playing games is most common in younger individuals of most species, but just as humans enjoy playing games as adults, studies show that chimpanzees do too. Adult social play is rare in animals, but playing games throughout all stages of life can build bonds, trust, psychological resilience and teamwork. Adult chimpanzees are more likely to play with others that they have a strong bond with, or with younger members of their families.

They have also been observed playing with other adults that they have had disputes with. This shows their ability to use lighthearted play as a way to ease social tension in their groups. Doing so can increase their survivability, as they are more likely to cooperate with each other when needed. During studies of chimpanzees' play behaviour, it was also found that when food is scarce, or the animals face other survival hardships, adults stop playing with each other. However, female chimpanzees continue to play with young offspring during these times, just as a human parent may continue to provide normality to their children during difficult periods.



Two chimpanzees play fighting with each other

5 FACTS FUN ANIMAL FINDINGS

1 RATS ARE TICKLISH
When rats are tickled, they release the same noise as they do when playing, which triggers brain regions linked to enjoyment. This is the periaqueductal grey brain region.

2 PARROTS AND PUZZLES
Parrots are highly intelligent, meaning that they can play with complex puzzles. This involves using their beaks to match shapes and colours, removing bolts and screws and turning wheels.

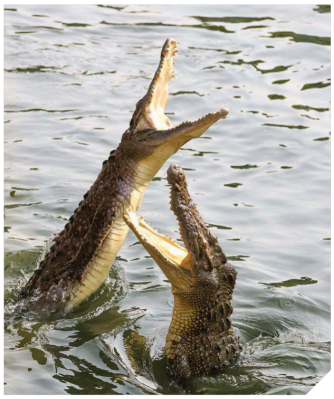
3 BEES PLAY BALL
In a 2022 research study, bumblebees were given wooden balls, which they played with. Younger bees found playing with the toys more entertaining than adults did, but both demonstrated repetitive object play, indicating an element of reward.

4 OCTOPUS OBJECT PLAY
Octopuses engage in object play by releasing jets of water to push objects through the water. An example of this was shown when octopuses in captivity blew pill bottles around their tank and watched them being returned by the tank's intake valve.

5 GAMING PIGS
When put to the test, pigs demonstrated that they could use their snouts to control a joystick, successfully manipulating the images in a video game.

TYPES OF PLAY

Crocodiles demonstrate all three of the core play behaviour types



LOCOMOTOR

Locomotor play is when an animal plays by itself or with others by moving its body. This can involve running, jumping and kicking. Young crocodiles often engage in this type of play by sliding down slopes or riding ocean waves.



OBJECT

This is the most common type of play in crocodiles. Object play is any play that involves manipulating an object. Crocodiles are often provided with toys to play with in zoos, and in the wild they can be seen playing with twigs and other floating vegetation.



SOCIAL

This is any play that takes place with multiple animals. Young crocodiles play socially by giving each other rides on their backs. Social play by adults is uncommon in animals as it's often a tool for developing social skills early on.

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