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для студентов специальности
1 – 31 03 01 02 «Биология
(научно-педагогическая деятельность)»

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Настоящее практическое пособие по управляемой самостоятельной работе включает профессионально ориентированные тексты биологического профиля на английском языке, а также речевые задания к ним. Материал издания направлен на развитие и совершенствование у студентов биологического факультета навыков всех видов чтения профессионально ориентированных текстов на английском языке, а также на формирование навыков монологической речи в рамках обозначенной тематики.

Адресовано студентам специальности 1 – 31 03 01 02 «Биология (научно-педагогическая деятельность)».

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РЕПОЗИТОРИЙ ГГУ ИМЕНИ Ф.СКОРИНЫ

ПРЕДИСЛОВИЕ

Практическое пособие по управляемой самостоятельной работе студентов направлено на развитие и совершенствование навыков чтения и монологической устной речи на английском языке. Предлагаемые аутентичные тексты отражают современное состояние развития науки, а также соответствуют требованиям программы по английскому языку для студентов неязыковых специальностей высших учебных заведений.

Основной целью издания является формирование и развитие у студентов навыков чтения профессионально-ориентированных текстов, умения представить извлеченную из текста информацию в виде устного монологического высказывания либо письменной аннотации или реферата. Целевой аудиторией практического руководства являются студенты второго курса, обучающиеся по специальности «Биология», однако отдельные материалы руководства могут быть использованы при организации работы студентов первого курса.

Практическое пособие из 6 разделов: Invisible Animals, Spiders, Sheep, Penguins, Elephants, Crows. Каждый раздел содержит аутентичные тексты проблемного либо занимательного характера, а также задания к ним, ориентирующие студентов на определенный вид чтения текста (просмотровое, поисковое, изучающее). Критерием при отборе текстов служили насыщенность профессионально-ориентированной лексикой и соответствие современному состоянию развития науки.

Материал практического пособия предлагается для использования при организации учебного процесса как в аудитории, так и для внеаудиторной самостоятельной работы студентов. Издание следует рассматривать как дополнение к основным учебным пособиям курса.

UNIT 1. INVISIBLE ANIMALS

Ex. 1. Read the text and answer the question:

How do animals hide from predators in different surroundings?

We've all heard of squid and octopus using pigments to blend in with their surroundings, but what about becoming completely invisible? To become actually see through, and appear as if you aren't there, you need to either allow light to travel through you unimpeded, or bend light around you - so that none reflects back at an observer. It's a tricky task, but some animals are almost there.

In the ocean animals have two choices if they want to hide. Creatures that live in the deep ocean close to the seafloor can blend in with sand or rocks, or hide in coral. In the deep ocean it is often pitch black anyway and predators lack eyes, so being invisible is not necessary.

Animals that live close to the surface and want to hide can produce dazzling displays of light in a process known as bioluminescence, confusing predators below who think they are looking at dappled sunshine hitting the water's surface. Animals that live in midwater though have neither of these options. This region is known as the pelagic zone, and it also happens to be where most invisible animals live.

Perhaps the easiest way of becoming invisible is by being transparent and letting light travel completely through you. In open oceans, which lack structures to hide behind, being transparent is a great way of hiding from all viewpoints and angles. It's so popular in fact that transparency has independently evolved multiple times in completely unrelated animals.

Ex. 2. Read the text and complete the gaps (1–6) with the sentences (a-f).

a) *Paradoxically at least 11 species in the group can also emit bright luminous colours;*

b) *Even worse, these organs will cast shadows on the seafloor below, making them more visible to predators;*

c) *It uses photophores – organs beneath its eyes – to produce light in a trick called counter-illumination;*

d) *For part of it they live by themselves, but they then clone themselves and form long strings and other shapes of connected organisms;*

e) *Many transparent molluscs camouflage their eyes with mirrors, as mirrors in the open ocean reflect only more ocean and so are invisible;*

f) *They filter out the phytoplankton in the water to feed on.*

One such animal, the glass octopus (*Vitreledonella richardi*) is so named because it is almost completely transparent. The gelatinous creature can grow up to 45cm (18in), if you include the tentacles. It lives 300-1000m below the surface in tropical and subtropical waters across the world, and is almost completely invisible to predators except for its digestive system, optic nerves and eyes.

But what's the point in making your whole body transparent, if the eyes and guts are still visible? **1.** _____ Eyes need to absorb light to function, so it is not possible for them to be transparent. Guts betray their contents, so unless an animal feeds on transparent material, they will be visible. However the octopus, and all hosts of transparent creatures go to great lengths to disguise these opaque organs. The glass octopus (*Vitreledonella richardi*) for example has very elongated eyes which reduces its peripheral vision, but minimises the shadow it casts below - making it less likely to be detected by predators hunting from below. There is also some evidence that it orientates its body in such a way so as to minimise its shadow.

The glass octopus is not the only transparent animal to come up with an ingenious way of disguising its eyes. **2.** _____.

The glass family of squid, of which there are about 60 species, are almost entirely see through. They live, again in the pelagic region of oceans around the world, between 200 and 1000m below sea level.

Although their bodies are entirely transparent, their large eyes are opaque, which is a problem as predators swimming below can easily see the shadow they cast. However the glass squid (*Cranchiidae*) uses a clever form of camouflage to hide them. **3.** _____ This light looks very similar to the sunlight filtering down from above, so it makes the squid completely invisible to predators swimming below it. However the light could make the squid very conspicuous to viewers looking at it from other angles.

Rather than an invisibility cloak, the glowing light could act like a beacon drawing predators to it.

Researchers from the University of Pennsylvania found that the squid's photophores are amazingly able to match the amount of light they produce to that coming in from every direction, creating a sort of omnidirectional invisibility cloak.

The tomopteris deep sea worm. This genus, or group of marine planktonic polychaete worms are almost completely transparent, making them very difficult for predators to see.

4. _____ Most tomopteris worms glow blue, but one species, *Tomopteris nisseni* can produce yellow light and is one of only few such creatures on the planet to do so.

Some tomopteris worms can even distract predators by releasing a glowing part of their body called a parapodia, making the predator chase after the dispelled body part rather than the worm itself.

Sea salp. A salp is a completely transparent barrel shaped creature which swims and feeds at the same time by pumping water through its gelatinous body. 5. _____

Although they look a bit like jellyfish they are actually more sophisticated and are closely related to fish and vertebrates - they have a heart and gills and can reproduce sexually. Salps have a fascinating life cycle.

6. _____ Individual salps synchronise their swimming by communicating with one another via electrical signals.

Ex. 3. Read the text and be ready to explain why there are so many transparent animals in the sea rather than on land.

All of the transparent animals discussed so far have lived in the sea, and there's a good reason for that. To be transparent you need to be made up of stuff that neither absorbs nor reflects light. This is a difficult task for plants and animals that live on land because there is such a large difference between the refractive index of living tissues and air. The refractive index of a material describes how quickly light travels through it. Light travels fastest in a vacuum, and generally speaking the denser a material, the longer light takes to travel through it and the greater its refractive index will be.

As biological tissue is so much thicker and denser than air, when light waves go from travelling through air to body tissue, they slow

down. This causes light to change directions and scatter, causing reflections that make the animal more visible.

In the sea there is less difference between the refractive index of water and biological tissues, so transparency is an easier task, hence why there are so many 'almost' invisible animals. Another reason you don't find many see through animals on land is because organisms need pigments like melanin to protect them from UV radiation from the sun.

Ex. 4. Arrange the parts of the text in the chronological order.

a) Another exception to the rule is a translucent snail (*Zospeum tholussum*) that was discovered in the deepest cave in Croatia. Scientists from Goethe University, Frankfurt found the see through mollusc living 980m underground in the Lukina Jama-Trojama cave, in a chamber full of rocks and sand with a small stream running through it.

b) However there are some exceptions to the see through rule. One is the glasswing butterfly (*Greta oto*) which lives in Central America.

c) However even though it is translucent, the snail is still fairly visible, highlighting just how difficult it is for land animals to achieve what those in the ocean do.

d) The snail belongs to a genus of miniature land snails that are found in dark, underground caves, and which are unable to move by themselves. Researchers believe they use running water from streams to transport themselves.

e) Although not all of its body is see through, its transparent wings make it difficult for predators to track it during flight. To look at how the butterfly achieves its transparency, scientists examined their wings under an electron microscope. They found tiny nano sized bumps called nanopillars which were scattered randomly and had different lengths. It seems that the random size and distribution of the nanoscale structures help the butterfly minimise reflections from its wings. The nanopillars interfere with rays of light hitting the wing, causing most to pass straight through rather than bouncing back.

(By Jasmin Fox-Skelly, the BBC)

UNIT 2. SPIDERS

Ex. 1. Read the text and find the answers to the questions:

1. Why are orb-weaving spiders considered one of the most successful groups of animals?
2. What is the hunting strategy «pirate spiders» have adopted?

Build a web, catch a fly, wrap the fly in silk, then devour at leisure. This hunting strategy has proven so effective that orb-weaving spiders are one of the most successful groups of animals. They are found in almost every corner of the world and there are more than 3,000 species.

Making a web is a fairly sophisticated ploy. As well as multiple forms of silk and glue, the spider needs to perform a sequence of precise manoeuvres.

But why bother building your own web, when you can just invade somebody else's and devour the architect? A group of spiders known as «pirates» have adopted this method of nabbing their prey. Their hunting strategies are among the most remarkable in the animal kingdom.

Pirate spiders are members of the spider group that includes all the «orb weavers» – those that make the prototypical, circular webs we are all familiar with – but they do not make webs.

In fact, they have lost the ability. They can still produce silk, which they use to build egg sacs and wrap prey. But they are anatomically incapable of spinning a web. The number of silk «spigots» on their spinnerets is dramatically small compared to their relatives.

Instead, they invade the webs of other spiders, and then kill the hapless architect. Gently, they pluck the strings of the web, enticing the host to approach. Once the host spider has ventured close enough, the pirate makes its move. First, it encloses its prey within its two enormous front legs. These are fringed with massive spines, called «macrosetae», which they use to trap the host within a prison-like basket. Then, the final move: the pirate bites its prey and uses its fangs to inject a powerful venom that instantly immobilizes it.

Ex. 2 Read the text and complete the gaps (1–4) with the sentences (a–d).

a) These encounters follow a pretty simple pattern, where the spiders signal at one another, then slowly approach each other, usually until the smaller spider gives up and flees the web;

b) *Once another spider has been bitten it ceases to move, whereas fruit flies may struggle for several minutes;*

c) *Hence the Latin name for pirate spiders: Mimetidae, or «imitator»;*

d) *Secondly, pirate spiders are specialist predators.*

But we do not yet fully understand how the pirate's strategy works. In particular, it is not clear why the pirate spiders pluck the strings of the host spider's web.

It has long been assumed that the plucking mimics the vibrations caused by an ensnared insect. **1. _____.**

However, not all entomologists agree that this is what the pirate spiders are doing as the behaviour of resident spiders towards pirate spiders and their own prey is quite different, as are the vibrations in the web caused by these two sources. It seems likely that pirate spiders are mimicking the vibrations of web-invading spiders of the same species, and possibly spiders of different species. A spider on its web needs to defend its web – a valuable resource – from other spiders, who may try to take over the web to avoid the cost of building their own web, or simply try to steal prey from the web. **2. _____.**

What the pirate spiders are doing is basically sending a deceptive signal representing themselves as small web invaders that refuse to flee, drawing the resident closer and closer until they are within attack range. Then there is the matter of pirate spider venom, which has evolved to be extremely toxic towards other spiders, including members of their own species, but not towards other animals. **3. _____.** Their toxins appear to be very specific to other spiders.

Why, and how, could such a strange hunting strategy evolve?

The first problem is that the prey spiders are also predators, equipped with fangs and venom. This means they are more dangerous than, say, beetles or flies, and also less abundant. **4. _____.** While they do sometimes feast on other prey, their main source of food is always spiders. By comparison, most orb-weaving spiders are generalist predators, eating whatever wanders into their web.

Ex. 3. Read the text and be ready to explain how the unique hunting strategy evolved in pirate spiders.

In fact, pirates are not even capable of capturing other spiders without the web to stand on. In the lab, if you put an orb weaver into a jar but don't allow it to spin a web, the pirate spider will not attack it. It needs a web in order to capture another spider.

Somehow, the ancestors of pirate spiders both lost the ability to weave their own webs, and became predators of other spiders. The most plausible explanation is that it began with thievery. Pirate spiders' ancestors may have started invading the webs of other spiders, in order to steal the insects that the host had trapped, poisoned and stored.

This filching behaviour has a colourful name: «kleptoparasitism». Some of the proto-pirates could have then taken this tactic to the next level, by preying on the host spiders themselves. Over time, they would then have become increasingly specialised for capturing other spiders: evolving unusually long front legs, sophisticated web-plucking behaviours, and spider-specific venom.

Whatever the reason for their quirky behaviour, pirate spiders are highly successful. Scientists have formally described more than 160 species, and they are found on every continent except Antarctica.

Ex. 4. Scan the text and find the answer to the question:

How do pirate spiders care about their young?

But they also have a gentler side. The study published in November 2016 in the journal *Cladistics* featured the first report of female pirate spiders caring for their young.

Maternal care is relatively common in spiders. Some merely regurgitate prey for their young, while others go as far as allowing their spiderlings to feast upon their corpse. Pirates can be good mothers as well. In some instances, females had their eggs distributed evenly in a small web on the underside of a leaf. But if a web is moved or a spider is touched, she would gather all the eggs or spiderlings quickly, create a ball with them, and carry them away in order to protect them.

(By Zoe Cormier, The BBC)

UNIT 3. SHEEP

Ex. 1. Read the text and match paragraphs 1–7 with the headings a–d.

- a) General characteristics;*
- b) Feeding habits;*
- c) Growth and development;*
- d) Domestication.*

1. Male sheep are called rams, the females ewes, and immature animals lambs. Mature sheep weigh from about 80 to as much as 400 pounds (35 to 180 kg).

2. A sheep regurgitates its food and chews the cud, thus enabling its four separate stomach compartments to thoroughly digest the grasses and other herbage that it eats. The animals prefer grazing on grass or legume vegetation that is short and fine, though they will also consume high, coarse, or brushy plants as well. They graze plants closer to the root than do cattle, and so care must be taken that sheep do not overgraze a particular range.

3. Sheep are ruminant (cud-chewing) mammal of the genus *Ovis*. The sheep is usually stockier than its relative the goat; its horns, when present, are more divergent; it has scent glands in its face and hind feet; and the males lack the beards of goats. Sheep usually have short tails. In all wild species of sheep, the outer coat takes the form of hair, and beneath this lies a short undercoat of fine wool that has been developed into the fleece of domesticated sheep.

4. Sheep are basically timid animals who tend to graze in flocks and are almost totally lacking in protection from predators. They mature at about one year of age, and many breed when they reach the age of about one and a half years. Most births are single, although sheep do have twins on occasion. The lambs stop suckling and begin to graze at about four or five months of age.

5. Domestic sheep differ from their wild progenitors and among themselves in conformation, quantity and quality of fleece, colour, size, milk production, and other characteristics. Most breeds of domesticated sheep produce wool, while a few produce only hair, and wild sheep grow a combination of wool and hair.

6. Sheep were first domesticated from wild species of sheep at least 5000 BCE, and their remains have been found at numerous sites of early human habitation in the Middle East, Europe, and Central Asia. Domesticated sheep are raised for their fleece (wool), for milk, and for meat.

7. Several hundred different breeds of sheep have been developed to meet environmental conditions influenced by latitudes and altitudes and to satisfy human needs for clothing and food. Breeds of sheep having fine wool are generally raised for wool production alone, while breeds with medium or long wool or with only hair are generally raised for meat production. Several crossbreeds have been developed that yield both wool and meat of high quality, however. Of the more than 200 breeds of sheep in the world, the majority are of limited interest except in local areas.

Ex. 2. Read the text and complete the gaps (1–5) with the sentences (a–e).

- a) *Almost everything we believe about them is wrong;*
- b) *The truth is that sheep are far smarter than we know;*
- c) *These acts of loyalty and friendship-building are driven by emotions;*
- d) *Intelligent. Complex. Sociable;*
- e) *The team also found evidence that sheep can differentiate facial expressions, and prefer a smile to a frown.*

Sheep are not stupid and they are not helpless either. Sheep are one of the most unfairly stereotyped animals on the planet. **1. _____.**

Reputation: Sheep are stupid, defenceless and harmless creatures that mope about on hillsides doing not very much. They are good for two things: being eaten and producing wool.

Reality: Sheep are actually surprisingly intelligent, with impressive memory and recognition skills. They build friendships, stick up for one another in fights, and feel sad when their friends are sent to slaughter. They are also one of the most destructive creatures on the planet.

2. _____. All words we would quickly assign to humans, but would not dream of extending to sheep, those fluffy white creatures you see milling about in fields – or served up with mint sauce on your dinner plate.

Instead, we have decreed that sheep (*Ovis aries*) are just plain stupid. This opinion has not changed much since the 1700s, when George Washington, one of the Founding Fathers of the United States of America, declared: «If the freedom of speech is taken away then dumb and silent we may be led, like sheep to the slaughter.»

Nowadays, to be «a sheep» is to be someone who mindlessly follows others: «a waste of flesh and brain cells,» as Urban Dictionary puts it.

3. _____.

A 2001 study found that they can recognise and remember at least 50 individual faces for more than 2 years. That is longer than many humans. In the study, the team trained sheep to distinguish between 25 pairs of sheep, by associating one member of each pair with a food reward. 4. _____.

Over two decades ago, researchers from the University of California observed rams for three years and discovered that they established firm friendships and looked out for one another in times of need: «Rams were found to form long term relationships... [they] intervened on behalf of weaker colleagues and supported each other in fights,» says the 1993 study.

5. _____. A 2009 report published in *Animal Welfare* found that sheep are capable of experiencing a whole range of feelings, from fear to anger, despair, boredom and happiness.

The researchers gave sheep intermittent access to food from a trough, and then turned on an air blower above the trough at an unexpected moment while they were eating. After the blower came on, the sheep bleated four times more than sheep that were not disturbed, and their heart rates immediately increased.

«[As with humans], despair is triggered by situations which are evaluated as sudden, unfamiliar, unpredictable... and uncontrollable, whereas boredom results from an overly predictable environment,» write the authors.

Ex. 3. Arrange the parts of the text (a–e) in the chronological order.

Suddenly sheep do not seem so dumb after all.

a) Sheep are thought to have descended from wild mouflon that roamed Europe and Asia. They were particularly common in ancient Mesopotamia,

an area that covered a large chunk of what we now call the Middle East, including modern-day Iraq, Kuwait, east Syria and south-east Turkey.

b) For example, the Greek astrological sign Aries is a ram, and in ancient Egyptian religion the ram was the symbol of several gods. Further, the common phrase "to separate the sheep from the goats" comes from a passage in the New Testament. In the story, the sheep (righteous people) find salvation with God, and the goats (sinners) are sent to damnation.

c) It is ironic how little most of us know about sheep, given how deeply entrenched they are in human culture. They were domesticated between 11000 and 9000 BC for the use of their woollen fleece, meat and milk. The animals have been referred to by different cultures, religious texts and even astrology for thousands of years.

d) However, today's sheep still have a few tricks up their woolly sleeves. For starters, they can deliver a painful kick to anyone who gets too close, especially if they are defending their young. They can also run fast and scale steep cliffs that many predators are not equipped to handle. Finally, their peripheral vision is impressive: they have horizontal, slit-shaped pupils that allow them to see behind themselves without turning their heads. Still, none of these defences are a match for us.

e) These ancestors had mighty horns with which to defend themselves, but humans have largely bred these out of modern sheep. Nowadays, domestic sheep are bred to be big fluffy creatures, covered in wool that never stops growing so that farmers make money all year round.

Ex. 4. Read the text and be ready to explain why sheep are now considered hugely destructive.

Humans very much like to eat and wear sheep: so much so that there are 1.2 billion sheep on the planet, according to data from the UN Food and Agriculture Organization.

The world's biggest producer of sheep is China, which is home to nearly 200 million of them. It is followed by Australia at over 70 million, India with over 60 million, Iran with 45 million and Nigeria with 41 million. Sudan has nearly 40 million sheep, while the UK has 33 million and New Zealand nearly 30 million.

In Kenya, where there are estimated to be over 17 million sheep raised for slaughter, the animals are spelling catastrophe for wildlife.

A study published in September 2016 shows that the populations of wild animals in Kenya fell by 68% between 1977 and 2016. The affected species included warthogs, many species of antelope and the rare Grevy's zebra. During the same period, sheep numbers increased by 76.3%.

The effects of drought are much more extreme now

Aerial monitoring from the government of Kenya shows that sheep numbers have gone up dramatically in the last 40 years. Sheep graze grass very low to the ground, and in their huge numbers they decimate the grasslands. This is terrible because most wild animals (like elephants, buffalo and zebra) need taller grasses to eat.

The buffalo population in Kenya was nearly 13,000 in 1992, but has since sharply decreased. During the drought, they were pushed out of feeding areas by sheep and other cattle, and the buffalo population crashed by 76% in one year. They've never recovered.

Drought is not uncommon in Kenya, but the issue now is the number of animals, both wild and domesticated, trying to survive it. The effects of drought are much more extreme now that there are so many sheep competing with wild animals for the same resources.

But what is happening in Kenya is a microcosm for a global story. The demand for livestock products is still rising, putting pressure on the environment.

A 2006 report by the UN Food and Agriculture Organisation explains why: «Extensive grazing occupies and degrades vast areas of land... the livestock sector enters into more and direct competition for scarce land, water and other natural resources... in all, livestock production accounts for 70 percent of all agricultural land and 30 percent of the land surface of the planet».

In their huge numbers, sheep are hugely destructive creatures. Our use of them is contributing to the destruction of forests and to climate change, and causing a shortage of fresh water.

(By Harriet Constable, the BBC)

UNIT 4. PENGUINS

Ex. 1. Read the text and match paragraphs 1–6 with the headings a–d.

- a) *General characteristics;*
- b) *Diet;*
- c) *Population;*
- d) *Habitat;*
- e) *Behavior;*
- f) *Reproduction.*

1. Their main staples are krill (a shrimp-like crustacean), fish and squid. Various species of penguins have slightly different food preferences, which reduce competition among species. In general, penguins closer to the equator eat more fish and penguins closer to Antarctica eat more squid and krill. Emperor and king penguins mainly eat fishes and squids.

2. Penguins are aquatic, flightless birds that are highly adapted to life in the water. Their distinct tuxedo-like appearance is called countershading, a form of camouflage that helps keep them safe in the water. Penguins do have wing-bones, though they are flipper-like and extremely suited to swimming. Penguins are found almost exclusively in the southern hemisphere, where they catch their food underwater and raise their young on land. The emperor penguin is the largest of all living penguins, standing to 1.1 m tall and can weigh more than 41 kg. The smallest of the penguins is the little penguin, standing just 41 to 45 cm and weighing about 1 kg.

3. Penguins can be found on every continent in the Southern Hemisphere from the tropical Galapagos Islands (the Galapagos penguin) located near South America to Antarctica (the emperor penguin). They are abundant on many temperate and subantarctic islands.

In general, flightless penguins have greater limits on foraging ranges and search capacities compared to birds that can fly. Thus to be successful, penguins must find predictable food sources within their limited foraging range. The more northerly Spheniscus penguin species, for example, are limited in distribution to primarily highly productive areas of the ocean such as upwellings and continental shelves. Penguins generally live

on islands and remote continental regions free from land predators, where their inability to fly is not detrimental to their survival.

These highly specialized marine birds are adapted to living at sea – some species spend months at a time at sea. Penguins are usually found near nutrient-rich, cold-water currents that provide an abundant supply of food.

4. Like most seabirds, penguins tend to be long-lived. They may take three to eight years to reach sexual maturity.

With some of the smaller species, breeding may begin at three to four years, but most larger species are not accomplished breeders until much later. On average, breeding does not begin until the fifth year, and a few males do not breed until the eighth year.

Breeding seasons differ from species to species. Most species have an annual breeding season - spring through summer. The king penguin has the longest breeding cycle of all the penguin species, lasting 14 to 16 months. A female king penguin may produce a chick during alternate breeding seasons. Emperor penguins breed annually during the antarctic winter, June through August. During the emperor breeding season, air temperature may drop to -60°C and winds may reach speeds up to 200 kph. For most of the winter, antarctic penguins live in an environment of darkness or half-light. Why emperors breed during the harshest season of the year is unknown, but some scientists speculate that when the chicks become independent five months later (in January and February, the antarctic summer), environmental conditions are more favorable for the young birds.

The little penguin breeds throughout the year and has the shortest breeding cycle, which lasts about 50 days.

5. Population data usually are gathered during the breeding season. Some researchers count chicks to estimate the total population, others count breeding pairs. The penguin species with the highest population is the Macaroni penguin with 11,654,000 pairs. The species with the lowest population is the endangered Galapagos penguin with between 6,000–15,000 individuals.

6. Penguins are among the most social of all birds. All species are colonial. Penguins may swim and feed in groups, but some may be solitary when diving for food. Emperor penguins have been observed feeding in groups with coordinated diving.

During the breeding season penguins come ashore and nest in huge colonies called rookeries. Some rookeries include hundreds of thousands of penguins and cover hundreds of square kilometers. Penguins exhibit intricate courting and mate-recognition behavior. Elaborate visual and vocal displays help establish and maintain nesting territories.

Although king penguins are highly gregarious at rookery sites, they usually travel in small groups of 5 to 20 individuals.

Penguins communicate by vocalizing and performing physical behaviors called «displays». They use many vocal and visual displays to communicate nesting territories and mating information. They also use displays in partner and chick recognition, and in defense against intruders.

Ex. 2. Read the text and complete the gaps (1–4) with the sentences (a–d)

a) *Another reason may be mistiming in returning to the nesting area;*

b) *Males arrive first to the rookeries to establish and defend their nesting sites;*

c) *The shape varies among species;*

d) *In some penguin species, a female selects the same male from the preceding season to mate with;*

e) *Some penguin rookeries number millions of birds.*

Most penguin species are monogamous (one male breeds with one female during a mating season); however, research has shown that some females may have one to three partners in one season and some males may have one or two partners.

Mate selection is up to the female, and it is the females that compete for the males. 1. _____ . Adélie penguins have been documented re-pairing with the previous year's mate 62% of the time. Chinstraps re-paired in 82% of possible cases, and gentoos re-paired 90% of the time. When a female selects a different mate it is usually because her mate from the previous season fails to return to the nesting area.

2. _____. If they arrive at different times and miss each other, one or both penguins may obtain new mates.

Studies have shown that individuals of most penguin species return each year to the same rookeries. In addition, most penguins return to the same nesting site within the rookery. Studies have indicated that fidelity

to the previous year's nest site was 99% for male Adélie penguins, 94% for chinstraps, and 63% for gentoos.

Rockhoppers appear to have an amazingly precise breeding timetable, with males returning to the spot of their former nest virtually on the same day each year, regardless if weather or environmental factors have changed from the previous breeding season. **3.** _____ . In a study on Adélie and chinstrap penguins, females arrived one day and five days after the males, respectively.

When it is time to breed, mature birds return to the rookery where they hatched. This results in large numbers of penguins at a single rookery rather than penguins colonizing new areas. **4.** _____ .

Various penguin species may share a particular rookery site. It is not uncommon to find gentoos nesting near Adélie and chinstrap penguins for example, but nesting areas within the rookery are kept segregated by each species.

Eggs may be white to bluish or greenish. **5.** _____ . In Humboldt and Adélie penguins the egg is more or less round. In emperor and king penguins the egg is rather pear-shaped, with one end tapering almost to a point. With this elliptical shape, if an egg falls off of the feet of a parent bird, the egg will roll in a circle instead of away from the parent.

Ex. 3. Read the text and find the answers to the questions:

- 1. How do penguins feed when incubating their eggs?*
- 2. How long is the incubation period?*
- 3. What is the incubation temperature for penguins?*
- 4. What can be the cause for reproductive failure?*

Incubation is the time spent warming the egg before it hatches. With the exception of emperor penguins, partners take turns incubating eggs, allowing each mate to leave to feed for several days at a time.

A female emperor penguin transfers a single egg to the top of her mate's feet. The female goes to sea to feed while the male incubates the egg. She returns several weeks later, usually just before the egg is ready to hatch, to relieve her mate so that he may feed. The male fasts throughout the courtship, nesting, and incubation periods. He lives off reserves of body fat which may be 3 to 4 cm thick, and loses up to 45% of his body weight.

The incubation period varies with species. It may be as short as one month, or as long as 62 to 66 days for emperor penguins.

The incubation temperature for penguins is approximately 36°C; it is a bit lower for the larger species. Emperor penguins can maintain an incubation temperature of 31°C in an environment that is -60°C.

The greatest single cause for reproductive failure in some species is the mistiming between parents for nest relief during incubation. This usually occurs when the female fails to return from a foraging trip before the male deserts the nest. A male will spontaneously leave the nest and eggs when the motivation to feed overcomes that for incubating eggs.

Ex. 4. Match the first (1–7) and the second (a-g) part of the paragraphs that constitute the text about penguins' behavior.

1) Their funny gait causes smiles, and their extreme ability to swim, astonishment and admiration. While they have many characteristics similar to other seabirds such as the need to nest in large colonies, there are other fascinating facts about their behaviour both on land and in water. Most penguin species are pelagic; this means that while in the ocean, they stay near the surface, and they do not spend much time underwater. However, penguins are experienced divers, and some species can stay underwater for several minutes...

2) Indeed, they are clumsy on the ground compared to their grace in the water. Often they walk with short steps, but others prefer to jump from rock to rock. Sometimes, over the ice and snow, they have a peculiar way of traveling: sliding on their bellies!...

3) As you know, penguins cannot breathe underwater, so they have to reach the surface to get air. When traveling, they jump out of the water while moving forward; an activity called porpoising, a maneuver similar to the one made by porpoises and dolphins for the same reason...

4) Penguins are not aggressive animals either with other animals or humans. Scientists presume that this behaviour is due to the low number of predators in their natural habitat...

5) Some species are highly territorial and will defend their nest vigorously, as the Gentoo penguin (*Pygoscelis Papua*). Many individuals can become involved in disputes over territory in the nesting areas. It has been observed African penguin males (*Spheniscus demersus*) chasing others while vigorously waving the wings until they catch the victim and aggressively stroke them with their beaks...

6) Another peculiar behaviour occurs in colonies of the species that

belong to the gender *Spheniscus*. Sometimes couples or two individuals with no intention to reproduce move in a way that seems to be dancing the tango, and then flick their beaks against each other, like swords...

7) All penguins frequently groom their plumage to remove parasites and keep it healthy. This activity is crucial for them because their plumage under optimal conditions insulates them from the cold and icy water preventing a lethal drop in their body temperature. ...

a) ...However, crested penguins show a more temperamental behavior, as they engage in fights more frequent than other species. The Erect-crested Penguin (*Eudyptes sclateri*) is a good example of this: when the males leave their partner and the nest looking for food, males without nest or not breeding, attack incubating females, who are virtually defenseless. Sometimes they have no choice but retreat and watch their eggs destroyed.

b) ...Yes, they rest on their belly and glide across smooth surfaces, pushing themselves with the help of their legs and fins. This behaviour is called tobogganing, and its primary purpose it is to save energy.

c) ...Regarding speed, many species reach about 2 m/s but the emperor penguin (*Aptenodytes forsteri*) is slightly faster. In contrast, the little penguin (*Eudyptula minor*), the smallest species, usually swim at a slower speed.

d) ...A gland next to the base of their tail produces a specialized oil. When penguins pass their beaks around that area, they spread the oil throughout their feathers, keeping them healthy. Grooming behavior varies among species, while some species take care of their plumage by themselves, others, like the African penguin (*Spheniscus demersus*), primp their peers and even use their legs for that.

e) ...Penguin smaller species usually do it when they need to travel faster and reduce the energy expenditure consumed when swimming at high speed because the air exerts less resistance on their bodies than water. Larger penguin species do not do it often; King penguin (*Aptenodytes patagonicus*) almost never do it and the emperor penguin never.

f) ...This usually happens for two reasons: to establish social order and as a prelude to mating.

g) ... However, among all, probably the chinstrap penguin is the most aggressive, and it is more likely that they engage in fights than other species, contrasting with the peaceful emperor penguin.

UNIT 5. ELEPHANTS

Ex. 1. Read the text and answer the question:

Why are elephants important?

Elephants are among the most intelligent of the creatures with whom we share the planet, with complex consciousnesses that are capable of strong emotions. Across Africa they have inspired respect from the people that share the landscape with them, giving them a strong cultural significance. As icons of the continent elephants are tourism magnets, attracting funding that helps protect wilderness areas. They are also keystone species, playing an important role in maintaining the biodiversity of the ecosystems in which they live.

During the dry season, elephants use their tusks to dig for water. This not only allows the elephants to survive in dry environments and when droughts strike, but also provides water for other animals that share harsh habitats.

When forest elephants eat, they create gaps in the vegetation. These gaps allow new plants to grow and create pathways for other smaller animals to use. They are also one of the major ways in which trees disperse their seeds; some species rely entirely upon elephants for seed dispersal.

On the savannahs, elephants feeding on tree sprouts and shrubs help to keep the plains open and able to support the plains game that inhabit these ecosystems.

Wherever they live, elephants leave dung that is full of seeds from the many plants they eat. When this dung is deposited the seeds are sown and grow into new grasses, bushes and trees, boosting the health of the savannah ecosystem.

Ex. 2. Read the text and match paragraphs 1–6 with the headings a–d.

- a) *General characteristics;*
- b) *Size;*
- c) *Diet;*
- d) *Population;*
- e) *Habitat;*
- f) *Behavior;*
- g) *Reproduction.*

1. African savannah elephants are found in savannah zones in 37 countries south of the Sahara Desert. African forest elephants inhabit

the dense rainforests of west and central Africa. The Asian elephant is found in India, Sri Lanka, China and much of Southeast Asia.

2. Elephants are the largest land animals on Earth. They have characteristic long noses, or trunks; large, floppy ears; and wide, thick legs. There are two species of elephant. The Asian elephant and the African elephant live on separate continents and have many unique features. Of the two species, African elephants are divided into two subspecies (savannah and forest), while the Asian elephant is divided into four subspecies (Sri Lankan, Indian, Sumatran and Borneo). Asian elephants have been very important to Asian culture for thousands of years – they have been domesticated and are used for religious festivals, transportation and to move heavy objects.

3. Elephants eat grasses, roots, fruit and bark. They use their tusks to pull the bark from trees and dig roots out of the ground. Elephants are also known to eat crops like banana and sugarcane which are grown by farmers. An elephant has an appetite that matches its size. An adult can eat 136 kg of food in a day.

4. African elephants are the larger of the two species. They grow 2.5 to 4 meters from shoulder to toe and weigh 2,268 to 6,350 kilograms. Asian elephants can grow up to 2 to 3 m from shoulder to toe and weigh up to 4,990 kg.

5. Male elephants are called bulls and females are called cows. After mating, the cow will be pregnant for around 22 months. When the baby elephant is finally born, it can weigh around 91 kg and stand about 1 m tall. A baby elephant is called a calf. At birth, a calf's trunk has no muscle tone, therefore it will suckle through its mouth. It takes several months for a calf to gain full control of its trunk. As the calf grows, it will gain 2 to 3 lbs. every day until its first birthday. By the time they are 2 or 3 years old, calves are ready to be weaned. Male calves will wander off on their own, while females will stay with their mothers. When they are 13 to 20 years old, they will be mature enough to have their own young. Elephants live 30 to 50 years in the wild.

6. Elephants form deep family bonds and live in tight matriarchal family groups of related females called a herd. The herd is led by the oldest and often largest female in the herd, called a matriarch. Herds consist of 8–100 individuals depending on terrain and family size. When

a calf is born, it is raised and protected by the whole matriarchal herd. Males leave the family unit between the ages of 12–15 and may lead solitary lives or live temporarily with other males.

Elephants are extremely intelligent animals and have memories that span many years. It is this memory that serves matriarchs well during dry seasons when they need to guide their herds, sometimes for tens of miles, to watering holes that they remember from the past. They also display signs of grief, joy, anger and play.

Recent discoveries have shown that elephants can communicate over long distances by producing a sub-sonic rumble that can travel over the ground faster than sound through air. Other elephants receive the messages through the sensitive skin on their feet and trunks. It is believed that this is how potential mates and social groups communicate.

7. At the turn of the 20th century, there were a few million African elephants and about 100,000 Asian elephants. Today, there are an estimated 450,000–700,000 African elephants and between 35,000–40,000 wild Asian elephants.

Ex. 3. Arrange the parts of the text (a–g) in the chronological order.

a) Wild African elephants sleep for the shortest time of any mammal, according to a study. Scientists tracked two elephants in Botswana to find out more about the animals' natural sleep patterns.

b) Elephants in zoos sleep for four to six hours a day, but in their natural surroundings the elephants rested for only two hours, mainly at night. The elephants, both matriarchs of the herd, sometimes stayed awake for several days. During this time, they travelled long distances, perhaps to escape lions or poachers.

c) To find out more about their sleeping habits in the wild, Prof Manger and his research team fitted the scientific equivalent of a fitness tracker under the skin of the animals' trunks. The device was used to record when the elephants were sleeping, based on their trunk staying still for five minutes or more.

d) They only went into rapid eye movement (REM, or dreaming sleep, at least in humans) every three or four days, when they slept lying down rather than on their feet. Prof Paul Manger of the University of the Witwatersrand, South Africa, said this makes elephant sleep unique.

«Elephants are the shortest sleeping mammal - that seems to be related to their large body size,» he told BBC News.

e) They also want to find out more about REM sleep in elephants. REM sleep is believed to be critical in laying down memories. It is a type of sleep seen across the animal kingdom, in mammals and birds and even lizards. Most mammals go into REM sleep every day.

f) Generally, smaller-bodied mammals sleep for longer than larger ones. For example, sloths sleep for around 14 hours a day, while humans sleep for around 8 hours. How elephants survive on so little sleep remains a mystery. The researchers are planning follow-up studies on more elephants, including males.

g) Both elephants were followed for five weeks, giving new insights into their natural sleep patterns. «We had the idea that elephants should be the shortest sleeping mammal because they're the largest,» said Prof Manger. «Why this occurs, we're not really sure. Sleep is one of those really unusual mysteries of biology, that along with eating and reproduction, it's one of the biological imperatives. We must sleep to survive.»

Ex. 4. Which of the findings (1–7) illustrate that elephants can:

- a) identify languages;*
- b) can use tools;*
- c) understand human body language;*
- d) show empathy;*
- e) mourn their dead;*
- f) mimic human voices;*
- g) have extraordinary memories.*

1. Researchers recently observed evidence that elephants might understand human pointing. They tested this by pointing at food hidden in one of two identical containers, and observing which container a group of captive African elephants approached. Without any previous training, the elephants picked the correct container almost 68 percent of the time. That's only about 5 percent lower than how one-year-old human babies perform on similar tests. When researchers stood between the containers and did not point, the elephants approached them randomly.

2. A recent study observed Asian elephants comforting one another when distressed. The elephants in the study used both physical contact and vocal sounds as forms of comfort, stroking one another with their trunks and emitting small chirps. The study concluded this behavior is «best classified with similar consolation responses by apes, possibly based on convergent evolution of empathic capacities».

3. Elephants can remember routes to watering holes over incredibly long stretches of time and space. This is necessary for elephants that live in the desert where water is scarce. Research also shows that elephants often form close bonds with companions, and can recognize them even after long periods of separation. In 1999, two elephants named Shirley and Jenny, once companions in a circus, reunited at The Elephant Sanctuary in Tennessee after more than 20 years apart. Their immediate bonding could cast no doubts on their immediate recognizing each other.

4. An Asian elephant named Koshik baffled researchers in 2012 when they realized he could say five words in Korean. «If you consider the huge size of the elephant and the long vocal tract and other anatomic differences, for example he has a trunk instead of lips... and a huge larynx, and he is really matching the voice pitch of his trainers, this is really remarkable», said Dr. Angela Stoeger, a lead author of a study about Koshik that appeared in *Current Biology*. While it is almost certain Koshik doesn't comprehend the meaning of the words, the researchers believe he began mimicking sound as a way to bond with humans, which were his only form of social contact during his formative years.

5. In 2010, a 7-year-old Asian elephant named Kandula impressed researchers by utilizing tools from his surroundings to reach fruit that had been strategically placed just beyond his reach. After watching the fruit, tantalizingly, for a few days, Kandula had an «aha moment.» He found a large plastic block, rolled it over, and stepped on it, propping himself up just far enough to reach the fruit with his trunk. While Kandula's «aha moment» didn't happen immediately, it stuck with him. He repeated the trick with other tools, and even figured out how to stack blocks to reach even higher. Similarly, elephants have been known to use sticks to scratch themselves in areas they couldn't otherwise reach. Others have been observed digging a hole to reach drinking water, and then plugging the hole with a ball formed from chewed bark to prevent the water from evaporating, thus saving it for later use.

6. It would be a stretch to say elephants, or any other animals, understand death in the same way humans do. But elephants have demonstrated fascinating reactions to the deaths of their kind, often displaying what appear to humans as symptoms of grief and mourning. They caress the bones of the dead with their trunks and will stand near the body of the deceased for hours. Sometimes they even try to bury the remains. They don't behave this way toward the remains of other animals.

7. Researchers at the University of Sussex in Brighton, UK have discovered that African elephants can distinguish differences in human gender, age, and ethnicity purely by the sound of someone's voice. If the voice belongs to a person who is more likely to pose a threat, the elephants switch into defensive mode. To test this, researchers found two Kenyan men from different ethnic groups, the Maasai and the Kamba. The Maasai have a history of killing wild elephants, while the Kamba do not. The researchers recorded the two men saying, «Look, look over there, a group of elephants is coming,» in their different languages, and played these recordings to elephant family groups at Amboseli National Park in Kenya. When the elephants heard the Maasai, they showed signs of fear, huddling together and moving away from the voice. But the same phrase spoken by a Kamba man evoked no reaction from the elephants. What's more, the same recordings made by women and children of either tribe left the elephants unfazed, suggesting they can not only distinguish between ethnic groups, but between age and gender as well, knowing that men are the most likely to pose a threat, especially Maasai men.

UNIT 6. CROWS

Ex. 1. Read the text and find the answers to the questions:

1. *Why are crows thought of as extremely intelligent?*
2. *How are they useful?*

Crows are familiar over much of the world: large, intelligent, all-black birds with hoarse, cawing voices. They are common sights in treetops, fields, and roadsides, and in habitats ranging from open woods and empty beaches to town centers. They usually feed on the ground and eat almost anything – typically earthworms, insects and other small animals, seeds, and fruit but also garbage, carrion, and chicks they rob from nests. Their flight style is unique, a patient, methodical flapping that is rarely broken up with glides.

Crows are extremely intelligent birds. They are known for their problem-solving skills and amazing communication skills. For example, when a crow encounters a mean human, it will teach other crows how to identify the human. In fact, research shows that crows don't forget a face.

Many types of crows are solitary, but they will often forage in groups. Others stay in large groups. A group of crows is called a murder. When one crow dies, the murder will surround the deceased. This funeral isn't just to mourn the dead, though. The crows gather together to find out what killed their member. Then, the murder of crows will band together and chase predators in a behavior called mobbing. With some crow species, the yearlings and non-mating adults live in a group called a roosting community.

Some crows migrate while other crows don't migrate in the common sense. They will travel to warmer areas of their territory, when needed.

Crows can be harmful to crops, but they also may prevent damage by eating insect pests. Recent studies have shown that 60 to 90 percent of insects eaten by crows are agricultural pests.

As foragers, they also clean up dead animals and garbage. In fact, crows are often blamed for overturning garbage cans; however, the real culprits are usually raccoons or dogs.

Ex. 2. Read the text and complete the gaps (1–4) with the sentences (a–d).

This is when the previous years' young help raise the newest brood.

- a) *Both male and female are similar in appearance;*
- b) *Although it has a variety of other calls which are important to their system of communication;*
- c) *Sometimes difficult to find, the nest is placed 18 to 60 feet above ground in a tree near the trunk;*
- d) *Young males will return to their parents if their first attempt a mating and nesting are unsuccessful;*
- e) *This behavior may not be seen very often as they mate for life;*
- f) *After about five days, their eyes open for the first time;*
- g) *These birds tend to be opportunistic feeders, eating whatever is available.*

The American Crow is 17 to 21 inches in length. All black with a fan-shaped tail. **1.** _____ . This birds voice is the best way to distinguish it from other all black birds. The voice is a long, descending «caaaw». **2.** _____ .

The mating habits of this bird take place on the ground. The male bird has a courtship display of facing the female and fluffing his body feathers. Then he partially spreads his wings and tail and proceeds to bow repeatedly while uttering a brief rattling song. **3.** _____ . Pairs already mated do not usually have courtship displays. Pairs that are unsuccessful at breeding may return to their families. Should a mate die, the surviving mate will attempt to find a new mate at sometime.

These birds also demonstrate cooperative breeding. **4.** _____ . It's not unusual for males to wait a few years before mating.

They are very secretive around its nest. While noise is a mainstay of its behavior in other areas, the nesting site is quiet. **5.** _____ . Made of twigs, sticks, lined with bark, grass and moss. The nest is about 12 inches in diameter.

The female lays 3 to 7 eggs that are bluish green with brown marks. Incubation is primarily done by the female with the male close by and sometimes feeding her. Incubation last about 18 days.

The young are born blind and flesh colored. **6.** _____ . Both parents feed the young, receiving help from previous years young. At five weeks of age the fledglings will leave the nest. The parents will continue feeding them for a while after leaving the nest.

Only one brood a year. If nesting is interrupted, they may attempt to re-nest. **7.** _____ .

The diet of these birds consist of insects, and small reptiles. They will also eat eggs and nestlings of other birds. Also feeding on carrion, fruit, and crops such as corn. **8.** _____ . These birds are the most wary while feeding. Feeding in flocks of 5 to 7 birds, they will arrive on their feeding territory landing in the trees. While most will begin feeding on the ground, one or more will remain in the trees watching for predators.

Ex. 3. Arrange the parts of the text (a–g) in the chronological order.

a) At the five sites, a scientist donned the caveman mask before catching and banding some wild crows. Getting trapped is never a fun experience, and upon their release, the ex-captives loudly "scolded" their assailant with a threatening caw. Seeing this, other birds who had been sitting nearby joined in the fray, swooping down to harass the neanderthalic visitor.

b) You don't want a crow for an enemy. In 2011, a team from the University of Washington published a remarkable study about the brainpower of local crows. The researchers' goal was to figure out how well the birds could identify human faces. So, in the name of science, they went out and bought two Halloween masks: one resembled a caveman, the other looked like Dick Cheney (former US Secretary of Defence). It was decided that the caveman getup would be used to threaten the birds, while the Cheney mask was relegated to control status.

c) Over a period of several years, both masks were regularly worn by team members on strolls through all five test spots. Without fail, the caveman mask was greeted by angry scolds and dive-bomb attacks from crows, including many who'd never been captured or banded, while the birds largely ignored the Dick Cheney mask.

d) The moral of this story? Mind your manners around crows. Because if you mistreat them, they won't forget you and neither will their friends, or the next generation.

e) Amazingly, the caveman disguise continued to provoke a hostile response five years into the experiment, even though the team had stopped trapping crows after those first few site visits. And some of the birds who antagonized the mask-wearer weren't even alive back when the whole thing started. The younger crows couldn't possibly have seen the imitation caveman grab an acquaintance of theirs, but they scolded it anyway.

Clearly, the grudge had been passed on; birds were still attacking the mask as recently as 2013.

Ex. 4. Which of the facts (1–7) illustrate that:

- a) when a crow dies, its neighbours may throw a funeral;*
- b) older siblings can help their parents raise newborn chicks;*
- c) crows have regional dialects;*
- d) can learn to read traffic lights;*
- e) mourn their dead;*
- f) proportionally the brains of some crows are bigger than those of humans;*
- g) crows can make and use tools;*
- h) crows could cause blackouts.*

1. Like a lot of intelligent animals, most crows are quite social. For instance, American crows spend most of the year living in pairs (they usually mate for life) or small family groups. During the winter months, they'll congregate with hundreds or even thousands of their peers to sleep together at night in a sprawling communal unit called a roost. Come nesting season, a mated pair of crows might be lucky enough to receive chick-rearing help. Juvenile birds are frequently seen defending their parents' nest from predators. Other services they can provide include bringing food to mom and dad, or feeding their younger siblings directly. One study found that 80 percent of American crow nests surveyed had a helping hand. And some birds become regular nest assistants, providing aid to their parents for over half a decade.

2. The sight of a dead crow tends to attract a mob of a hundred or more live ones. During this ritual, the live crows almost never touch the dead one, which rules scavenging out as a motive. Why do they do this? Some studies suggest that the mass gathering is part of a survival strategy: The birds are learning about threats and seem hesitant to revisit any spot where they've encountered a dead crow, even if food is plentiful there.

3. The New Caledonian crow has a brain that weighs just 0.26 ounces. But relative to its body size, that brain is huge, accounting for 2.7 percent of the bird's overall weight. By comparison, an adult human's three-pound brain represents 1.9 percent of their body weight. Of all the living birds, crows, ravens, and parrots have the biggest brain-to-body size

ratios. And in lab experiments, these avians show a degree of cognition that puts them on par with the great apes. In fact, research has shown that they have a much higher density of neurons in their forebrains than primates do. The amount of neurons in this region is thought to correlate with a given animal's intelligence. Theoretically, having more neurons translates to better cognitive reasoning. Thus, it looks like crows, ravens, and parrots have enviable minds indeed.

4. Since the 1990s, crows have experienced a population boom in Japan, where, not coincidentally, delicious garbage is more plentiful than ever before. This is bad news for power companies. Urban crows like to nest on electric transformers and will often use wire hangers or fiberoptic cables as building materials for their nests. The result was an epidemic of crow-caused blackouts in major cities around Japan. Between 2006 and 2008, the corvids stole almost 1400 fiberoptic cables from Tokyo power providers, and according to the Chubu electric company, crows are responsible for around 100 power failures per year in their facilities alone.

To fight back, Chubu started installing artificial «love nests». Made with non-conductive resin, the nests are placed on company towers high above the power lines, where the birds are unlikely to cause any trouble. The strategy seems to be working: 67 percent of the faux nests are currently in use, making life a lot easier for Chubu employees.

5. Apart from the famous caw crows emit a number of other sounds. Each one sends out a different message; for example, cawing can be used as a territorial warning or a way for crows to signal their location to relatives. This avian language isn't homogeneous; two different populations of crows may have slight differences. As ornithologist John M. Marzluff and author Tony Angell noted in their 2005 book «In the Company of Crows and Ravens», the calls these birds use «vary regionally, like human dialects that can vary from valley to valley». And there's more. If a crow changes its social group, the bird will try to fit in by talking like the popular guys. «When crows join a new flock,» Marzluff and Angell wrote, «they learn the flock's dialect by mimicking the calls of dominant flock members» .

6. In Japan, carrion crows (*Corvus corone*) use cars like oversized kitchen appliances. The birds have learned to take walnuts, a favorite treat, over to road intersections, where they put the hard-shelled snacks down onto the pavement. The crow then waits for a passing vehicle to smash the

nut, after which it will swoop down and eat the delicious interior. It's a risky trick, but the crows aren't usually run over because (unlike some people) they've figured out what traffic lights mean. Carrion crows wait until the light turns red before flying down to place the un-cracked nut on the road. The second the light goes green, the crow takes off to watch the nut get run over from afar; it will even wait for the next red to scoop up the nut's insides. This behavior isn't limited to just one corvid species: American crows have been observed doing the same thing in California..

7. Lots of non-human animals, including chimpanzees and orangutans, create useful implements which help them survive in the wild. The New Caledonian crow is one of only two species on the planet that can craft its own hooks in the wild. The other is called *Homo sapiens*. The South Pacific avian uses the hooks, which are made from pliable twigs that the crows bend using their beaks and feet into a J-shape, to extract insects from tight crevices.

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