

UPDATED FOR JULY-2023 CHANGES

# TOEFL iBT PRACTICE TESTS

SET

1

**8** FULL-LENGTH TESTS WITH ANSWER KEY  
DOWNLOADABLE AUDIO  
AUDIO SCRIPTS & SAMPLE RESPONSES

# TOEFL iBT PRACTICE TESTS

## *SET 1*

Completely UPDATED for the July-2023 changes

DR. HIKMET SAHINER

ISBN: 978-605-289-036-3

**ALL RIGHTS RESERVED.** This book contains material protected under International Laws and Treaties. Any unauthorized reprint or use of this material is prohibited. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system without express written permission from the author.

## PREFACE

Do you need to practice for the TOEFL test? Why not study with the ultimate guide on the market that contains 8 full-length authentic TOEFL tests? TOEFL iBT Practice Tests, Set 1 will satisfy all your test prep practice needs so that you can achieve the highest score on the real test. This book contains eight TOEFL® practice tests with authentic reading, listening, speaking, and writing questions, plus an answer key and sample answers for each test. This guide reflects the all the latest changes and updates to the test, including the change to the Writing Section in July, 2023.

You also get a downloadable audio file for the listening, speaking, and writing sections. With sample responses to the Speaking and Writing Sections, you will learn how to construct a proper answer and how to integrate your speaking, listening, and writing skills to demonstrate English proficiency.

The book features:

- 8 full-length authentic TOEFL tests
- Downloadable audio for all the listening, speaking and writing sections
- Audio scripts for all the listening, speaking, and writing questions

- Answer keys for the reading and listening test sections
- Sample responses for all the speaking and writing tasks

# PRACTICE TEST 1

## READING

### NATURAL SELECTION

Of all the great intellectual revolutions that have taken place in human history, the theory of evolution is among the foremost to have drastically changed our perception of the world and of our place in it. A well-articulated theory of evolution was put forth by Charles Darwin who amassed a great body of evidence in support of this theory. Published in 1859, Darwin's popular volume *On the Origin of Species by Means of Natural Selection* contained extensive evidence for this theory in excess of 500 pages. The publication of the book created a commotion, and all the copies were sold on the day of its release. The publication was not embraced unanimously, as members of the religious community along with some scientific peers rejected Darwin's ideas. The majority of scientists, however, appreciated the power of Darwin's arguments. Even today, the suitability and validity of Darwin's theory and its place in science curricula are still subjects of heated debate in school boards, and a whole body of debate has grown up around the controversy.

The theory of evolution posited by Darwin has four major themes. First of all, organisms have changed over time, and the ones living today are dissimilar from those that existed in previous times. Furthermore, many creatures that once existed are now extinct. The world is not constant, but changing. The fossil record provided sufficient evidence for this view. Secondly, through a process of branching, all organisms originate from common ancestors. Over time, populations with common ancestors diverge into different species which remain related due to their common ancestry. Thus if one were to trace back far enough in time, common ancestors would be found among any pair

of given organisms. This point provides an explanation for the similarities found among organisms within the same classification. Their degree of similarity derives from shared traits inherited from their common ancestor. Thirdly, change occurs gradually over a long span of time. This was supported by the fossil record and was consistent with the fact that no abrupt appearance of a novel species has ever been observed by naturalists. Lastly, the mechanism of evolutionary change was natural selection. This was the most significant and revolutionary aspect of Darwin's theory, and it deserves to be considered in greater detail.

To better understand the nature of natural selection, an examination of Galapagos finches is warranted. The Galapagos Islands are unique in that species inhabiting the islands cannot be found elsewhere in the world although similar creatures may be found on the west coast of South America. What struck Darwin were the slight differences observed between the birds on neighboring islands. Darwin reasoned that these differences were due to the fact that the various species inhabited different environments.

Darwin identified 13 species of finches in the Galapagos Islands. He was perplexed by this discovery when he learned that there was only one species of this bird on the mainland of South America nearly 600 miles to the east where they had all presumably originated. He noted the differences in beak size and shape between the Galapagos finch species while noting that these variations were related to differences in diet. Finally, he came to the conclusion that the finches arrived to the islands from South America and dispersed to different environments where they had little choice but to adapt to the different conditions. Over successive generations, they gradually changed in ways that allowed them to get enough food and survive to reproduce. The term adaptive radiation is the popular term used today in reference to this process of branching evolution where different populations of a species learn to adapt to different ecological niches thus becoming reproductively isolated and ultimately separate species.

Darwin ascertained that any given population consists of individuals that are all slightly different from one another to some extent. Those individuals

having a variation that gives them an advantage in staying alive long enough to successfully reproduce are the ones whose traits will most likely be succeeded to the next generation. Subsequently, their traits become more common leading to the evolution of the population. Darwin called this process "descent with modification." The Galapagos finches provide an excellent example of this process. Among the birds that ended up in arid environments, the ones with beaks better suited for eating cactus got more food. Consequently, they were more likely to survive to maturity and mate. In other environments, birds with beaks that were better suited to extract nectar from flowers or to consume hard seeds were at an advantage. In fact, it seemed that nature did indeed select the varieties best adapted to survive and reproduce. Adaptations that better enable finches to survive and reproduce in their local environments gradually become dominant within the species, leading to differentiation. This process is known as natural selection.

Darwin did not think that the environment produced variations within finch populations. He correctly theorized that variation preexisted as a result of slight genetic mutations during reproduction and that the process of natural selection merely ensured that those which were most advantageous would persist through successive generations. Proponents of Darwin's theory described this process as the "survival of the fittest."

This differed vastly from the French naturalist Lamarck's assertion that the environment somehow amended the shape of individuals and that these acquired modifications were then inherited.

## **Paragraph 1**

Of all the great intellectual revolutions that have taken place in human history, the theory of evolution is among the foremost to have drastically changed our perception of the world and of our place in it. A well-articulated theory of evolution was put forth by Charles Darwin who amassed a great body of evidence in support of this theory. Published in 1858, Darwin's

popular volume *On the Origin of Species by Means of Natural Selection* contained extensive evidence for this theory in excess of 500 pages. The publication of the book created a commotion, and all the copies were sold on the day of its release. The publication was not embraced unanimously, as members of the religious community along with some scientific peers rejected Darwin's ideas. The majority of scientists, however, appreciated the power of Darwin's arguments. Even today, the suitability and validity of Darwin's theory and its place in science curricula are still subjects of heated debate in school boards, and a whole body of debate has grown up around the controversy.

**1. According to paragraph 1, Darwin's ideas were at first not fully accepted because**

- A. his ideas were too religious for ordinary people to accept
- B. his ideas lacked concrete evidence
- C. he was not in a position to disseminate his ideas
- D. his ideas were in contrast to the religious beliefs of the time

## **Paragraph 2**

The theory of evolution posited by Darwin has four major themes. First of all, organisms have changed over time, and the ones living today are dissimilar from those that existed in previous times. Furthermore, many creatures that once existed are now extinct. The world is not constant, but changing. The fossil record provided sufficient evidence for this view. Secondly, through a process of branching, all organisms **originate** from common ancestors. Over time, populations with common ancestors diverge into different species which remain related due to their common ancestry. Thus if one were to trace back far enough in time, common ancestors would be found among any pair of given organisms. This point provides an explanation for the similarities found among organisms within the same classification. Their degree of similarity derives from shared traits inherited from their common ancestor. Thirdly, change occurs gradually over a long span of time. This was

supported by the fossil record and was consistent with the fact that no abrupt appearance of a novel species has ever been observed by naturalists. Lastly, the mechanism of evolutionary change was natural selection. This was the most significant and revolutionary aspect of Darwin's theory, and it deserves to be considered in greater detail.

**2. The word originate in paragraph 2 is closest in meaning to**

- A. separate
- B. extract
- C. invent
- D. derive

**3. According to paragraph 2, which of the following ideas supports Darwin's idea that there was gradual and slow change of organisms over time?**

- A. There is no record of the sudden rise of a new species.
- B. Organisms usually pass on their characteristics to subsequent generations *over* a long period of time.
- C. Species living today are similar to those that existed in the past.
- D. It took many years for the mechanism of evolutionary change, natural selection, to do its work.

**4. Why does the author mention it deserves to be considered in greater detail in paragraph 2?**

- A. to introduce a new theory in paragraph 3 which is in contrast to one in paragraph 2
- B. to point out the lack of details in Darwin's theory
- C. to relate the topic of paragraph 2 to that of paragraph 3



D. to stress how important Darwin's theory is

### Paragraph 3

To better understand the nature of natural selection, an examination of Galapagos finches is warranted. The Galapagos Islands are unique in that species inhabiting the islands cannot be found elsewhere in the world although similar creatures may be found on the west coast of South America. What struck Darwin were the slight differences observed between the birds on neighboring islands. Darwin reasoned that these differences were due to the fact that the various species inhabited different environments.

#### **5. Darwin believed that the distinction between the birds on neighboring islands was due to differences in**

- A. gene composition
- B. food supplies
- C. natural predators
- D. lineage

### Paragraph 4

Darwin identified 13 species of finches in the Galapagos Islands. He was **perplexed** by this discovery when he learned that there was only one species of this bird on the mainland of South America nearly 600 miles to the east where they had all presumably originated. He noted the differences in beak size and shape between the Galapagos finch species while noting that these variations were related to differences in diet. Finally, he came to the conclusion that the finches arrived to the islands from South America and dispersed to different environments where they had little choice but to adapt to the different conditions. Over successive generations, they gradually changed in ways that allowed them to get enough food and survive to

reproduce. The term adaptive radiation is the popular term used today in reference to this process of branching evolution where different populations of a species learn to adapt to different ecological niches thus becoming reproductively isolated and ultimately separate species.

**6. The word perplexed in paragraph 4 is closest in meaning to**

- A. baffled
- B. convinced
- C. fostered
- D. disproved

### **Paragraph 5**

Darwin ascertained that any given population consists of individuals that are all slightly different from one another to some extent. Those individuals having a variation that gives them an advantage in staying alive long enough to successfully reproduce are the ones whose traits will most likely be succeeded to the next generation. Subsequently, their traits become more common leading to the evolution of the population. Darwin called this process "descent with modification." The Galapagos finches provide an excellent example of this process. Among the birds that ended up in arid environments, the ones with beaks better suited for eating cactus got more food. Consequently, they were more likely to survive to maturity and mate. In other environments, birds with beaks that were better suited to extract nectar from flowers or to consume hard seeds were at an advantage. In fact, it seemed that nature did indeed select the varieties best adapted to survive and reproduce. Adaptations that better enable finches to survive and reproduce in their local environments gradually become dominant within the species, leading to differentiation. This process is known as natural selection.

**7. Which of the sentences below best expresses the essential information in the highlighted statement in the passage? Incorrect answer choices**

**change the meaning in important ways or leave out essential information.**

- A. Successful reproduction gives individuals an advantage in surviving, allowing them to pass on their traits to the next generation.
- B. Individuals who survive to reproduce can pass on their superior characteristics to the next generation.
- C. Those individuals who live for a long time in a certain area have an advantage over those who do not, successfully transmitting their traits to the next generation.
- D. Individuals whose characteristics are superior to others are more likely to survive and successfully reproduce.

## **Paragraph 6**

Darwin did not think that the environment produced variations within finch populations. He correctly theorized that variation preexisted as a result of slight genetic mutations during reproduction and that the process of natural selection merely ensured that those which were most advantageous would persist through successive generations. Proponents of Darwin's theory described this process as the "survival of the fittest." This differed vastly from the French naturalist Lamarck's assertion that the environment somehow amended the shape of individuals and that these acquired modifications were then inherited.

**8. According to paragraph 6, with which of the following ideas would Lamarck agree?**

- A. Nature chose those with the most suitable beak shape during the evolution of the finch populations.
- B. The fittest individuals within the finch populations have never been modified by their environments.

- C. The individuals with superior traits within the finch populations were chosen by the nature, and they changed their environments.
- D. Variances made by the environment were passed on from generation to generation within the finch populations.

## Paragraph 2

The theory of evolution posited by Darwin has four major themes. First of all, organisms have changed over time, and the ones living today are dissimilar from those that existed in previous times. Furthermore, many creatures that once existed are now extinct. The world is not constant, but changing. The fossil record provided sufficient evidence for this view. [■] Secondly, through a process of branching, all organisms originate from common ancestors. Over time, populations with common ancestors diverge into different species which remain related due to their common ancestry. [■] Thus if one were to trace back far enough in time, common ancestors would be found among any pair of given organisms. This point provides an explanation for the similarities found among organisms within the same classification. Their degree of similarity derives from shared traits inherited from their common ancestor. [■] Thirdly, change occurs gradually over a long span of time. [■] This was supported by the fossil record and was consistent with the fact that no abrupt appearance of a novel species has ever been observed by naturalists. Lastly, the mechanism of evolutionary change was natural selection. This was the most significant and revolutionary aspect of Darwin's theory, and it deserves to be considered in greater detail.

**9. Look at the four squares [■] that indicate where the following sentence could be added to the passage. Where would the sentence best fit?**

**The fact that similar organisms congregate in the same geographic location could also be explained by this rationale.**

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

**10. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. *This question is worth 2 points.***

**Natural selection is one of the cornerstones of modern biology.**

- 
- 
- 

### **Answer Choices**

- A. Darwin's theory of evolution developed based on the idea that all organisms have derived from common ancestors and have changed slowly over time with the nature playing a pivotal role.
- B. Species are not static but constantly evolving.
- C. Darwin witnessed the difference in beak size and shape among Galapagos finches.
- D. The finches of the Galapagos Islands demonstrate the evolutionary process through which a single lineage gives rise to species adapting to diverse environmental niches.
- E. The most fit individuals in a population have survived by a process through which heritable traits that are advantageous for survival and reproduction are chosen by the nature and become more common.
- F. Many criticisms have been and are being made against the Darwinian view of evolution.

# BARBED WIRE

Life in the American West underwent drastic changes due to a series of patents for a simple tool that helped ranchers tame the land: barbed wire. Beginning with Micheal Kelly in November 1868 and ending with Joseph Glidden in November 1874, the U.S. Patent Office issued nine patents to American inventors for improving wire fencing. The new fencing not only simplified the work of ranchers and farmers, but it significantly affected political, social, and economic practices throughout the region. The sudden advent of this highly effective tool as the favored fencing method had an effect on life in the region as profound as that of the rifle, six-shooter, telegraph, windmill, and locomotive.

Fencing methods were so ineffective before the advent of barbed wire that wide and undefined prairies and plains yielded to range management, farming, and finally, extensive settlement. As the use of barbed wire increased, however, wide open spaces became less wide, less open, and less spacious, and the days of the free roaming cowboys were numbered. Before the invention of barbed wire, livestock grazed without boundaries, competing for fodder and water. Most of the properties in the working farms were unfenced and open for the cattle and sheep to wander around. Cattle owners, unhindered by fenced property lines, annually took their herds on long cattle drives and finally arrived at slaughterhouses situated near the urban railheads to make shipping convenient. Therefore, when barbed wire was invented, the range became closed, and cowboys were no longer free.

The widespread use of barbed wire brought about dramatic and permanent changes in life on the Great Plains. Land and water, once available to all, were fenced off by ranchers and homesteaders with some predictable results. Increasingly isolated from what was once regarded as free resources in territories like Texas, New Mexico, Colorado, and Wyoming, cattlemen first

filed land-use petitions and then waged fierce range wars against the farmers who owned the property. By degrees, a discernible change came about as to who controlled the land and, thus, wielded the superior power.

Also, barbed wire radically changed the way the nomadic native Americans lived. Further driven off the lands that had always been available, they began calling barbed wire "the Devil's rope." Fenced-off land meant that cattle herders became more and more reliant on the dwindling public lands, thus making them overgrazed. The severe winter of 1886, at its peak in a great January 1887 blizzard, wreaked further havoc on the cattle market; losses amounted to more than \$20 million in Wyoming alone. As a result, largescale, open-range cattle enterprises came to an end.

Whereas barbed wire signified the range wars and the end of widespread open grazing land for livestock in the American West, it also became a commonly used commodity elsewhere, especially during land warfare. Many early European castles were surrounded by pointed spears or palisades for protection. Barbed wire rapidly replaced these and other tools made to protect people and property from trespassing. The military formally began using barbed wire in 1888, when British military manuals first encouraged its use.

In the midst of the Spanish-American War (1898-1998), Teddy Roosevelt's Rough Riders decided to use barbed-wire fencing to help protect their camp. In the turn of the century in South Africa, five strands of wire were connected to blockhouses as a way of protecting the British troops from intruding Boer commandos. During World War I (1914-1919), barbed wire was used as a military weapon: it formed a formidable barrier along the front, starting from Switzerland and reaching as far as the English Channel. Also, it became a generic instrument for prisoner confinement; the image of dead bodies caught on the wires of a concentration camp fence has become the symbol for war's destruction. Barbed wire is now typically used as a part of the containment wall of prisons worldwide.

Barbed wire also has other industrial uses that engage less emotion. When

used on construction and storage sites and around warehouses, it safeguards supplies and people and keeps out unwanted trespassers. All in all, it has turned out to be both extremely effective and important in modifying traditional practices during both war and peacetime.

## Paragraph 1

Life in the American West underwent drastic changes due to a series of patents for a simple tool that helped ranchers tame the land: barbed wire. Beginning with Micheal Kelly in November 1868 and ending with Joseph Glidden in November 1874, the U.S. Patent Office issued nine patents to American inventors for improving wire fencing. The new fencing not only simplified the work of ranchers and farmers, but it significantly affected political, social, and economic practices throughout the region. The sudden advent of this highly effective tool as the favored fencing method had an effect on life in the region as profound as that of the rifle, six-shooter, telegraph, windmill, and locomotive.

**1. In paragraph 1, the author mentions the rifle, six-shooter, telegraph, windmill, and locomotive as examples of tools that**

- A. followed the invention of barbed wire
- B. most Americans considered to be more important than barbed wire
- C. emerged right before the invention of barbed wire
- D. influenced life in the American West as much as barbed wire did

## Paragraph 2

Fencing methods were so ineffective before the advent of barbed wire that wide and undefined prairies and plains yielded to range management, farming, and finally, extensive settlement. As the use of barbed wire



increased, however, wide open spaces became less wide, less open, and less spacious, and the days of the free roaming cowboys were numbered. Before the invention of barbed wire, livestock grazed without boundaries, competing for fodder and water. Most of the properties in the working farms were unfenced and open for the cattle and sheep to wander around. Cattle owners, **unhindered** by fenced property lines, annually took their herds on long cattle drives and finally arrived at slaughterhouses situated near the urban railheads to make shipping convenient. Therefore, when barbed wire was invented, the range became closed, and cowboys were no longer free.

**2. Which of the sentences below best expresses the essential information in the highlighted statement in the passage? *Incorrect answer choices change the meaning in important ways or leave out essential information.***

- A. As wide-open spaces became less wide, less open, and less spacious, the use of barbed wire increased, which led to the rise in the number of the free roaming cowboys.
- B. The use of barbed wire limited the kinds of land free roaming cowboys could exploit; therefore, many of them left for more open spaces.
- C. When barbed wire became more common, boundless spaces decreased, and the days of the free wandering cowboys gradually came to an end.
- D. Since cowboys roamed freely over wide areas, open spaces decreased, which necessitated the use of barbed wire.

**3. The word **unhindered** in paragraph 2 is closest in meaning to**

- A. undamaged
- B. unlimited
- C. untreated
- D. unchanged

### Paragraph 3

The widespread use of barbed wire brought about dramatic and permanent changes in life on the Great Plains. Land and water, once available to all, were fenced off by ranchers and homesteaders with some predictable results. Increasingly isolated from what was once regarded as free resources in territories like Texas, New Mexico, Colorado, and Wyoming, cattlemen first filed land-use petitions and then waged fierce range wars against the farmers who owned the property. By degrees, a discernible change came about as to who controlled the land and, thus, wielded the superior power.

**4. According to paragraph 3, which of the following is among the anticipated results brought about by barbed wire?**

- A. disputes over land-use
- B. advent of homesteaders
- C. invention of other fencing methods
- D. improved status of cowboys

**5. The word **discernible** in paragraph 3 is closest in meaning to**

- A. insignificant
- B. relevant
- C. considerable
- D. reliable

### Paragraph 4

Also, barbed wire radically changed the way the nomadic native Americans lived. Further driven off the lands that had always been available, they began calling barbed wire "the Devil's rope." Fenced-off land meant that cattle

herders became more and more reliant on the dwindling public lands, thus making them overgrazed. The severe winter of 1886, at its peak in a great January 1887 blizzard, wreaked further havoc on the cattle market; losses amounted to more than \$20 million in Wyoming alone. As a result, largescale, open-range cattle enterprises came to an end.

**6. According to paragraph 4, nomadic Americans began to call barbed wire "the Devil's rope" because**

- A. rope was used to make barbed wire
- B. nomadic Americans were injured by barbed wire
- C. the cattle herds got killed accidentally by barbed wire
- D. barbed wire reduced the amount of grazing space available to the nomadic Americans

**7. Why does the author mention a great January 1887 blizzard in paragraph 4?**

- A. to stress the severity of the negative effect that weather conditions had on the cattle market
- B. to give an example of the events which intensified the negative effects of barbed wire
- C. to show the case of the most severe loss in the cattle market resulting from bad weather condition
- D. to explain the usefulness of barbed wire in overcoming natural disasters

## **Paragraph 6**

In the midst of the Spanish-American War (1898-1998), Teddy Roosevelt's Rough Riders decided to use barbed-wire fencing to help protect their campus. In the turn of the century in South Africa, five strands of wire were

connected to blockhouses as a way of protecting the British troops from intruding Boer commandos. During World War 1 (1914-1919), barbed wire was used as a military weapon: it formed a **formidable** barrier along the front, starting from Switzerland and reaching as far as the English Channel. Also, it became a generic instrument for prisoner confinement; the image of dead bodies caught on the wires of a concentration camp fence has become the symbol for war's destruction. Barbed wire is now typically used as a part of the containment wall of prisons worldwide.

**8. The word **formidable** in paragraph 6 is closest in meaning to**

- A. protective
- B. foremost
- C. great
- D. precise

### **Paragraph 6**

**■** In the midst of the Spanish-American War (1898-1998), Teddy Roosevelt's Rough Riders decided to use barbed-wire fencing to help protect their campus. In the turn of the century in South Africa, five strands of wire were connected to blockhouses as a way of protecting the British troops from intruding Boer commandos. **■** During World War 1 (1914-1919), barbed wire was used as a military weapon: it formed a formidable barrier along the front, starting from Switzerland and reaching as far as the English Channel. **■** Also, it became a generic instrument for prisoner confinement; the image of dead bodies caught on the wires of a concentration camp fence has become the symbol for war's destruction. **■** Barbed wire is now typically used as a part of the containment wall of prisons worldwide.

**9. Look at the four squares **■** that indicate where the following sentence could be added to the passage. Where would the sentence best fit?**

**Even until today, the use of barbed wire is widespread as a means of protecting and safeguarding military equipment and setting territorial boundaries.**

Where would the sentence best fit? Click on a square [■] to add the sentence to the passage.

**10. Directions: An introductory sentence for a brief summary of the passage is provided below. Complete the summary by selecting the THREE answer choices that express the most important ideas in the passage. Some sentences do not belong in the summary because they express ideas that are not presented in the passage or are minor ideas in the passage. *This question is worth 2 points.***

**Barbed wire had profound effects on life in the American West.**

- 
- 
- 

### **Answer Choices**

- A. Because of the harsh winter of 1886, the cattle market incurred a great loss, totaling more than \$20 million in Wyoming alone.
- B. In any event, Barbed wire has proved both highly useful and highly significant in altering traditional practices of life in American society.
- C. Teddy Roosevelt ordered to use barbed wire fencing for military purposes during the Spanish-American War.
- D. Barbed wire brought about severe resistance from cowboys as it ended the era of widespread open land, changing the way they lived.
- E. Barbed wire played a variety of roles in many different fields other than

merely protecting farmland.

F. Cattlemen and property-owning farmers fought a never-ending series of range wars due to the use of barbed wire.

## **OPPORTUNISTS AND COMPETITORS**

An organism needs to consume energy to grow, reproduce, and metabolize daily. However, since sources of energy are limited, all organisms are obliged to make a systematic plan to allocate the limited energy to growth, reproduction, maintenance, and storage. Although the matter of storage is important, and the energy costs of maintenance are quite constant, most energy is allocated between growth and reproduction. In fact, the allotment of the energy between growth and reproduction is genetically determined; this is why all members of a species possess similar physiological traits.

With a smaller proportion of the energy allotted to growth, an organism can divert most of its energy to reproduction. Organisms with this extreme mechanism are called "opportunists." On the other hand, "competitors," organisms at the opposite extreme, expend most of their resources on growth, dedicating a smaller amount to reproduction.

Opportunists have a massive reproduction rate, and in most cases, their offspring are very small. They reproduce at an early age and have a short generation time: they are short-lived and cannot survive more than a year. Their offspring receive little or no parental care. Species with this reproductive pattern overcome the massive loss of their offspring by

producing so many unprotected young that a few of them will survive to reproduce many offspring to begin the cycle again. Examples can be found in algae, bacteria, rodents, annual plants such as dandelions, and most insects. They reproduce and disperse rapidly when conditions are favorable or when a disturbance opens up a new habitat or niche for invasion, as in the early stages of ecological succession. Changes in the environmental conditions by disturbances can allow opportunist species to gain a foothold. However, once settled, their population may decrease dramatically when the environment changes unfavorably or more competitive species invade. Therefore, most opportunist species undergo irregular and unstable boom-bust cycles in their population size. To ensure their survival, opportunists are forced to continually invade new areas to compensate for being displaced by more competitive species.

Competitors take an entirely different approach from that of opportunists. These organisms use relatively little energy for reproduction. They reproduce late in life, since they spend most of their energy for nurturing and protecting their offspring until they reach reproductive maturity. They have a small number of offspring with a long generation time. Consequently, their offspring develop in the safety of the womb and are born fairly large. Growing slowly, they are nurtured and protected by one or both parents until they become reproductive. As a result of this reproductive pattern, a few large and strong individuals are born to compete for resources and reproduce a few offspring to repeat the cycle. They prosper under competitive circumstances when their population is within the carrying capacity of the environment. However, many competitors, especially those with long generation times and low reproductive rates such as elephants and rhinoceroses, are susceptible to extinction.

Taking on reproductive patterns between the extremes of opportunists and competitors, many organisms switch from one strategy to the other under certain circumstances. The reproductive pattern of a species may give it a temporary advantage, but ultimately its population size is determined by the availability of a befitting habitat for individual organisms in a specific area. Regardless of how fast a species can reproduce, there can be no more dandelions than a habitat can accommodate and no more zebras than a