

I 次の文を読んで、問いに答えなさい。

If you haven't heard, there are traps everywhere in the tropical jungles of Panama. At least that's how Brett Seymoure sees it, and he knows better than just about anyone. Seymoure, a graduate student<sup>1</sup> with Arizona State University's School of Life Sciences, is one of six researchers who during the past year have conducted original ecological research at the Smithsonian Tropical Research Institute (STRi) in Panama.

Each step through the rainforest requires crawling through thick branches while watching for poisonous snakes and territorial primates.<sup>2</sup> Seymoure said the first barrier to overcome when getting involved in field research in Panama is to understand that you're not in control — you're at the mercy of a difficult, but endlessly fascinating, ecosystem.<sup>3</sup>

During their eight-month stay, the rainforest welcomed the wet season with a mighty storm. It started early evening and continued uninterrupted for four days — flooding the forest with warm rain, encouraging mold<sup>4</sup> and damaging sensitive equipment. Seymoure said that while they were in the rainforest, a layer of moisture constantly covered their equipment: Nothing ever really dries there.

Once the rain stopped and they could actually explore the jungle, the students had to cope with bullet ants, and with crocodiles in the middle of the road. “The ants won't kill you,” Seymoure said, “but their bites really hurt. Still, it's thrilling to be deep in the rainforest, experiencing such incredible biodiversity.”<sup>5</sup>

Peter Marting, on the other hand, is more excited about the ant bites than the others because he is studying the mutually beneficial relationship between Cecropia trees and Azteca ants. Among other characteristics, he has an interest in the defensive strategies of insects. Marting said that over the past ten years there has been increasing interest in non-human

personalities. He hopes his research will throw light on patterns in personalities displayed within ant colonies living in certain trees in the tropical jungle.

While the rainforest is rich in wildlife, it's not always easy to find the insects students need to study. Searching often involves looking between the thick vines<sup>6</sup> in the damp recesses<sup>7</sup> of the rainforest—trying to find a tiny hole in the ground, or higher up, in the tops of the trees. As fellow student Meghan Duell knows, it's difficult work. Duell studies neotropical stingless bees, which she finds by searching for nest entrances that are one-half to three-quarters of a centimeter in size. “Imagine trying to find that in the rainforest,” said Duell, “and the bees are super shy.” Her research focuses on how differences in body size affect physiology<sup>8</sup> and behaviors. Understanding the differences in small organisms such as bees could help researchers apply this knowledge to the design of microprocessors and other smaller technology.

Fortunately for Seymore, the organisms he is studying—Heliconius butterflies—are much more visible. Heliconius are common, slow moving and quite striking due to their vivid colors. He studies how the environment and other ecological factors affect the colors of these butterflies. But to do so, he needs clear skies, which are uncommon in the rainforest. Four months in the field can mean only 10 days to collect data for one experiment.

Adjusting to tropical fieldwork goes beyond the rain and coping with shy organisms. Transportation is a big issue, too. After loading a truck with technical equipment and driving up an unpaved road, collecting data can become a logistical<sup>9</sup> challenge. Plus, it's important that researchers be on the lookout for dangerous animals, because one wrong step could land them in a hospital far from their research site.

Researchers rely on local people to some extent—for example, to show

them where to buy supplies — but they aren't always available. The locals can only offer so much help at certain times. "You have to talk to people, and they don't always give you the best directions," Seymoure said.

Eric Moody, another researcher, had his own challenges with the locals. As a scientist studying a diverse group of fish, which are also a popular Panamanian food, he sometimes finds himself competing with residents for specimens.<sup>10</sup> "One time we went to a site where we knew there would be a lot of local kids around, so we decided to bring a bag of candy to keep them occupied while we tried to collect fish," Moody said. "But even then, we still had to surrender a few specimens."

Despite the complications, these scientists say they truly love what they do. The surprises and challenges in Panama are a price they eagerly accept in exchange for the gifts of investigation and adventure. While the rest of us see final published research findings, we don't often think about the passion and planning that go into making new discoveries. The ongoing research collaboration between Arizona State University's School of Life Sciences and STRI continues as new groups of students head to Panama's rainforest to put their classroom knowledge to the test in the field. They're sure to experience challenges along the way, but they'll also discover valuable insights about life on earth, and develop their scientific skills in the process.

(Adapted from a work by Melanie Sturm)

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(注)

1. graduate student 大学院生
2. primate (サルなどの) 霊長類
3. at the mercy of ~のなすがままになって
4. mold かび
5. biodiversity 生物多様性
6. vine つる性植物
7. damp recess 湿った穴や奥まった所
8. physiology 生理機能
9. logistical 輸送上の
10. specimen 標本

[1] 本文の意味, 内容にかかわる問い(A)~(D)それぞれの答えとして, 本文にしたがってもっとも適当なものを(1)~(4)から一つ選び, その番号を解答欄にマークしなさい。

(A) In what way does Panama's climate create problems for the researchers?

- (1) It becomes harder for them to get supplies.
- (2) It makes it difficult for them to maintain their equipment.
- (3) It becomes impossible to collect samples during the wet season.
- (4) It makes some animals more aggressive for several months of the year.

- (B) Why does Seymoure find it difficult to collect data on the creatures he is studying?
- (1) Because they are so small.
  - (2) Because the weather is often poor.
  - (3) Because pollution has caused their numbers to decrease.
  - (4) Because they are the same color as many of the plants in the rainforest.
- (C) Why did one researcher give things to the local children?
- (1) To distract them.
  - (2) As a sign of friendship.
  - (3) Because they offered to show him the way.
  - (4) Because the locals had never eaten such things before.
- (D) What does the author think about the students' research in Panama?
- (1) It should be funded by the university.
  - (2) The conditions have made it too dangerous to send future students.
  - (3) The difficulties students experience will help them improve as scientists.
  - (4) If students fail to publish their findings, the experience will have been a waste of time.

[2] 次の(1)～(5)の文の中で、本文の内容と一致するものには1の番号を、一致しないものには2の番号を、また本文の内容からだけではどちらとも判断し兼ねるものには3の番号を解答欄にマークしなさい。

- (1) Seymoure has been in Panama in the past twelve months.
- (2) Meghan Duell's research on bees was inspired by her interest in computer technology.
- (3) Many of the researchers have experienced homesickness.
- (4) The locals are thought by the researchers to be very reliable sources of information.
- (5) The researchers are all studying insects.

[3] 本文の内容をもっともよく表しているものを(1)～(5)から一つ選び、その番号を解答欄にマークしなさい。

- (1) Dangers of the Panamanian jungle
- (2) Endangered South American insects
- (3) The need for students to know more about the life sciences
- (4) The importance of and difficulties in conducting fieldwork in Panama
- (5) How students studying the jungle can become employed as environmental researchers