

令和4年度（2022年度）

東北大学大学院理学研究科 地学専攻
博士課程前期2年の課程 入試問題

英語

令和3年8月26日 10:00～11:20 実施

注意事項

1. 机の上には受験票、筆記用具、時計以外は置かないこと。
2. 携帯電話や音の出る機器などは、電源を切ってかばんの中に入れること。
3. 試験開始の合図があるまで、問題冊子を開かないこと。
4. 試験時間は10:00から11:20までである。
5. 試験中大きな地震が発生した場合、試験監督の指示に従うこと。
6. 問題は、英語1、英語2の大問2問からなる。解答は解答用紙の指定されたところに記入すること。

英語 1 次の英文を読み、問 1、問 2 に日本語で答えよ。

Over the next decade or two, society has a narrow window of opportunity to radically redefine our relationship with the planet, so as to reduce risks of dangerous global changes that could otherwise seriously degrade Earth's life-support systems. We call for planetary stewardship as a framework for science and society to rapidly reduce anthropogenic damage to the biosphere. Ecologists and the ESA must collaborate with other natural and social scientists – as well as with practitioners, resource harvesters, land managers, decision makers, and other concerned citizens – to explore solutions. Humankind's past actions have already committed the planet to a substantially altered future; the task ahead is to find creative and scientifically defensible actions that minimize risks of further resource or ecosystem degradation and maximize opportunities to sustain and restore natural ecosystems and the services they provide.

Planetary stewardship requires that decision makers and stakeholders be well-informed about how global change is likely to affect households, resources, livelihoods, and quality of life. They must also learn how local actions and reactions to change could feed back to influence the trajectory of planetary change. To provide this information, ecologists must redouble their efforts to understand and forecast ecosystem changes across multiple scales.

The ESA is well positioned to lead this effort because the collective interests and expertise of its 10000 members encompass a tremendous range of ecological skills and perspectives. These interests range from global biogeochemical cycles to regional and local populations and ecosystems, and include, increasingly, the ways that current and past human cultures have responded to and shaped natural ecosystems and landscapes. ^(a)More than ever, we must address urgent questions that span these areas and scales of interest. How will responses to climate change by particular species and size classes of plants at particular landscape positions affect hydrology and redistribution of moisture back to the atmosphere? How can indirect effects in food webs trigger surprises as ecosystems respond to change? What types of environmental change did aboriginal human cultures create and endure? What practices did they use to sustain resources and ecosystems, especially through periods of environmental change? What mistakes did they make?

^(b)Our collective expertise should be marshaled to hone our forecasts of the ecological consequences of projected environmental changes; to identify the elements and interactions that make ecosystems resilient; and to inform decision makers about likely consequences of mitigation and adaptation measures society must make, both to anticipated changes and to the unexpected.

The traditional ecological knowledge community and many ecological researchers share a deep interest in the natural history of organisms and landscapes. This provides an opportunity for sharing the knowledge and practices that have created a “sense of place” that, together with scientific information and approaches, may inform continued stewardship during times of rapid change. Similarly, farmers, ranchers, fishers, reserve managers, and wilderness advocates bring perspectives and understanding of how society might protect and benefit from the services that sustainable, healthy ecosystems provide. (c) Within the next 20 years, it is projected that 80% of the world’s population will be living in cities; as a result, there are critical challenges in maintaining a sense of place and of planetary responsibility in our children – to connect neighborhoods or city blocks to the planet. This will require mixing local with worldwide scales of dialogue, knowledge sharing, innovation, and education.

Scientists are often trained to think and communicate in a dispassionate, “values-neutral” style, while other members of society are more openly values-driven, with motives ranging from short-term profit to long-term stewardship. Scientists typically seek general, fundamental principles that will aid understanding and prediction in systems beyond the ones they have studied. Traditional, resource harvesting and urban ecological knowledge, in contrast, are intensely local, supported by familiarity with, and often a commitment to, a specific place. Stewardship on a planetary scale requires that humans profoundly reorient their endeavors – social, economic, scientific, and cultural – to reduce the risk of environmental disasters, increase resilience to inevitable change, and foster a personal commitment to the landscapes and ecosystems we wish our grandchildren to inherit.

Planetary stewardship is bigger than ecology. It requires intense engagement across the sciences, humanities, and engineering. However, ecology brings to this effort a special understanding of the complex cross-scale interactions that underpin Earth’s life-support systems. Therefore, ecologists are obliged to be among the leaders who will define society’s path to planetary stewardship for the 21st century and beyond.

(以下を一部改変, Power, M. E. & Chapin III, F. S. (2009). Planetary stewardship. <https://esajournals.onlinelibrary.wiley.com/doi/full/10.1890/1540-9295-7.8.399>)

注) anthropogenic 人間が原因の, ESA アメリカ生態学会, trajectory 軌道, practitioner 弁護士, household 家族, livelihood 生活, redouble 倍増する, endure 耐える, marshal 集める, hone 磨きをかける, sustainable 持続可能な

問1 下線部 (a), (b), (c) を和訳せよ。

問2 この文章から, Planetary stewardship とは, どのような概念と判読されるか。5 行以内で述べよ。

英語2 あなたにとっての著名人物(存命でも故人でも)に会って, 質疑応答をする機会があるとする。あなたなら, 誰にどんな質問をするか。また, なぜそういう質問をするか。8 行以内で英作文せよ。なお, 採点に際しては, 英文が的確に書かれているかのみを評価する。