Free satellite data key to conservation

Biodiversity is in crisis, with extinction rates orders of magnitude higher than background levels (1). Underfunded conservationists need to target their limited resources effectively. Over the past decade, satellite remote sensing has revolutionized our ability to monitor biodiversity globally, and is now used routinely, especially by nongovernmental organizations, to detect changes, set priorities, and target conservation action. The U.S. Geological Survey (USGS) unlocked highresolution Landsat data in 2008 (2), making data available online (3), and the Copernicus program from the European Commission subsequently made their data available as well (4). These resources have been instrumental to biodiversity research. Assessments of environmental changes such as deforestation are now readily available. The current spatial and spectral resolution of Landsat data make them appropriate to many conservation applications, and although they are not always ideal, pragmatic researchers with limited resources use them regularly. Conservationists have already called for these data to remain free (5). Consequently, the news that USGS may charge for data (6) is deeply troubling.

USGS has recently convened an advisory committee to determine whether users would be prepared to pay for increased spectral and spatial resolution images (7). Requiring users to pay would put these images beyond the reach of conservationists. It would halt time-series analyses that have been useful in monitoring the effects of climate change, land-cover change, and ocean surfaces, likely hindering the achievement of the Sustainable Development Goals (8). We urge the USGS to reconsider their position and continue to provide data from the Landsat program freely to all users.

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REFERENCES

- 1. J. DeVos et al., Cons. Biol. 29, 452 (2015).
- 2. C. Woodcock et al. Science 320, 1011 (2008).
- 3. USGS, Earth Explorer (https://earthexplorer.usgs.gov/).
- 4. European Commission, Copernicus (http://copernicus.eu/)
- 5. W. Turner et al., Biol. Conserv. 182, 173 (2015).
- 6. G. Popkin, Nature 556, 417 (2018).
- 7. USGS, Landsat Advisory Group undertakes a Landsat Cost Recovery Study (2018); www.usgs.gov/centernews/landsat-advisory-group-undertakes-a-landsatcost-recovery-study.
- 8. Sustainable Development Goals (https://sustainabledevelopment.un.org/?menu=1300).

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