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Davy et al 2017 Discussion

Google Forms <forms-receipts-noreply@google.com> Tue, Nov 29, 2022 at 4:51 PM
To: sgroves@umces.edu

Thanks for filling out Davy et al 2017 Discussion

Here's what was received.

Edit response

Davy et al 2017 Discussion

Email *

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How does this paper challenge or expand your conception of what defines a “habitat”?

This study provides notable advances to the conception of three-dimensional habitats and incorporation of airspace as a fundamental ecological resource. While I consider airspace to be a novel consideration, the use of fluid bodies and depth as habitat has foundation in freshwater, marine, rainforest, and soil ecology. From this perspective, the manuscript did not challenge my prior conceptions. I found the authors' proposals for conservation and type designation to be more novel.

Name one way in which a concept from terrestrial conservation can be directly applied

to conservation in the airspace.

Many of the tall forestscapes consider the role of free/impeded movement from the forest floor to levels of the canopy. While the usable atmosphere is not as easily discretized as these subhabitats, it may be useful to consider such prior studies during the advent of airspace ecology. For example, prior research has documented the ecological and monetary loss associated with shortening trees (due to deforestation, shorter lifespans, and slower growth), this type of loss is similar to the fragmentation and unsuitability of airspaces due to pollution and manmade obstructions. From this standpoint, creating aerial reserves may be justifiable and similar to marine protected areas and terrestrial reserves. This type of conservation would require significant legal and philosophical advances from the general public.

Describe the physical characteristics (e.g. temperature and oxygen levels) of the basoaerial, mesoaerial, and epiaerial layers of the troposphere and the primary anthropogenic threats present in each layer.

The basoaerial habitat denotes the airspace extending from the top of the adjacent terrestrial habitat, upward to an absolute altitude of 1 km, at which the temperature has dropped 10°C below that of the air directly above the adjacent terrestrial or aquatic habitat. Threats to organisms in basoaerial habitat include collisions with vehicles, aircraft, wind turbines and buildings (775). The mesoaerial habitat includes the 1–8 km altitude habitat and is characterized by steadily decreasing temperatures (-10°C/km) and decreasing oxygen levels as altitude increases. Anthropogenic threats include light pollution and aircraft collisions (776). The epiaerial habitat plunge toward -56°C at the tropopause. The altitude of the tropopause, which defines the upper limit of epiaerial habitat, varies with latitude. The epiaerial habitat ranges from 8m to 17 km , depending on latitude. Threats include cruising aircraft and light pollution (776).