

Tropical ecology research

SIR — The table below is compiled from the monthly listings of ecological publications in *Current Advances in Ecological Sciences* between 1979 and 1983. The journal (published by Pergamon, Oxford) cites an annual average of 15,000 recent ecological publications in about 2,000 source journals worldwide, under 56 major categories which I have condensed to 14 topics. The table shows a declining annual trend in tropical ecological research publications from 2.93 per cent of the global total for ecological publications in 1979 to about 1 per cent in 1983. The decline is also evident in each of the 14 areas listed except for tropical ecology (*sensu stricto*).

The major areas of research shown in the table are: (1) plant and animal interaction covering host/parasite relationships, competition and interaction of man and micro-organisms (24.2 per cent); (2) plant and animal communities — sociology, population dynamics and behaviour (14.0 per cent); and (3) growth, diseases and adaptation (11.3 per cent). Very little (0.2–2.4 per cent) tropical research work was done in (1) micrometeorology and the use of artificial environments for studying the functions of tropical plants and animals; (2) water relations and hydrology; and (3)

the ecology of various tropical plant communities as ecosystems.

The above trends indicate that tropical ecological research has been utilitarian, with emphasis on topics of direct benefit to mankind especially for food production. However, in view of the spread of desertification — which now affects 34 countries in Africa — and the economic crisis caused by the prolonged drought during 1982–83 in more than 24 African countries, including some coastal countries in the wet tropics, I think that much more emphasis should be placed on tropical ecological research dealing with water relations, hydrology and climate.

What is responsible for the decline in tropical ecological research publications? Can it be due to the effects of the economic recession and inflation on research work at universities and governmental institutions in developing countries in the tropics? One trend which has been obvious during the period is the massive migration of seasoned university staff and scientific research workers from the poorer developing countries in Africa to the more affluent developing countries in Africa as well as to the industrialized countries outside the continent. This brain-drain may have

contributed to the decline in ecological research work in the tropics; other factors may be the paucity of research funds and facilities, and of the trained middle level manpower needed to support field work.

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Classic errors

SIR — R. H. Wright and R. E. D. Cattley (*Nature* 303, 568; 1983) and M. Macnamara (*Nature* 307, 590; 1984) discuss the possible meaning of Homer's "wine-dark" sea. Wright and Cattley propose a chemical answer to the problem, suggesting that wine when mixed with the alkaline water of the Peloponnese would turn blue. Macnamara, following W. B. Stanford's observation that the Mediterranean can look wine-red, assumes that the primary question is to account for the redness of the sea, and makes the extraordinary assertion that Homer "mentions only red wine in his epics".

Wright and Cattley have not faced up to the implications of the Ionian origins of Homer and much of Greek culture up to at least the seventh century BC. What happened in the Peloponnese may be irrelevant compared with what happened in Asia Minor.

And (*pace* Macnamara) wine in Homer can be black as well as red. At *Odyssey* 5.265 and 9.196 we meet the phrase *σκόρον...μελανος οινουιο*, "a wine-skin of dark (black) wine". Thus "wine-dark sea" may mean a black sea no less than a red sea.

The Homeric adjective *οινωψ* (wine coloured) occurs in the variant forms *οιωψ* in Sophocles and *οινωπος* in other Greek writers. At *Iliad* 18.562 we find *μελανες...βιστρυες*, ("a bunch of black grapes"); similarly, Sophocles (*Oedipus at Colonus* 674-5) applies *οινωψ* to ivy-berries. In fact wine was often described as "sparkling" in Homer (see *Iliad* 1.462 and 4.259), and the particular element of the sea which is important in the Homeric *οινωπα ποντον* is the sparkle of light reflected in the otherwise dark sea. Thus Theophrastus of Straton (*De Coloribus* 2.8) uses *οινωπος* to mean "black mixed with bright light". It may be (as Stanford believes) that *οινωπα ποντον* *sometimes* refers to a red sea. But this does not have to be the case, and to concentrate exclusively on the redness is to miss the real point. The sea is seen as a dark force, menacing and unpredictable (compare the primary meanings of the verb *πορφυρω* and the adjective *πορφυρεος*), and in this, as in wine, the light and the Sun are reflected (in the words of the poet) "in daggers of bright gold".

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Trends in tropical ecological research 1979–83

	1979	1980	1981	1982	1983	Total (%)
General tropical ecology (historical, biogeography, dynamics of ecosystems)	43	38	16	16	10	123 (9.5)
Plant and animal communities	57	41	43	16	25	182 (14.0)
Productivity and energy	29	16	10	7	9	71 (5.5)
Plant/animal interactions	111	94	55	22	31	313 (24.2)
Biogeochemical cycles and nutrition	18	11	11	9	6	55 (4.2)
Water and hydrology	5	4	4	5	3	21 (1.6)
Growth, diseases and adaptation	51	45	26	14	10	146 (11.3)
Autecology, genecology and crop ecology	29	30	18	12	10	99 (7.6)
Micrometeorology and artificial environment	1	1	0	0	0	2 (0.2)
Soil biology, erosion, humus and microbes	22	20	5	7	6	60 (4.6)
Environmental problems (hazards, conservation, wildlife, pollution, weed and pest control)	26	22	26	13	21	108 (8.3)
Land use, surveys, remote sensing and statistical sampling	16	8	6	3	7	40 (3.1)
Tropical ecology	2	0	4	18	21	45 (3.5)
Forest, grasslands, freshwater and microbial ecology	5	9	11	5	1	31 (2.4)
Total entries for the tropics	415	339	235	147	160	1,296 100
% Of total entries (all subjects)	2.94	3.59	1.97	0.62	1.09	-