Understanding the relationships between species traits and the environment is essential for assessment of functional diversity. The variation in avian plumage colouration has attracted much scientific attention for a long time. It is thought that the colouration of birds is a product of interaction between environmental and sexual selection forces. Using two complementary three-matrix approaches (fourth-corner and RLQ analyses) I investigate geographical variation in plumage colouration of birds living along environmental gradient of productivity in South Africa. I suppose that productivity of environment could explain the part of variation in colouration of species at large geographical scales. I compiled information about 14 plumage traits for 649 species. Co-inertia analysis revealed that more vari-coloured species (e.g. with more saturated and vivid plumage), species with carotenoids in feather, blue-green or predominantly black species occur mainly in productive habitats such as moist savannas and woodlands in the north-east of the country. On the contrary pale species (e.g. greyishbrown), whose feathers are brighter (have higher values of brightness), occupy arid habitats in the west. It shows that another pattern such as iridescence, sexual dimorphism and brightness of particular body region exhibit trends along this strong gradient of productivity. I suggest that the possible explanation laying behind the described geographical patterns are (i) variation in availability and diversity of resources required for creation of some feather pigments, (ii) effect of sexual selection and (iii) predation pressure on adult birds.