Pinpointing Australia's coastal features

Three-quarters of the Australian population live within 40 km of the coast, and one in four lives no more than 3 km from the high-tide line.

Since the coast is coming under increasing pressure from recreation, mining, and many other activities, it is clearly important for us to know what is where. With this in mind researchers at the CSIRO Division of Land Use Research have recently compiled Australia's first inventory of coastal lands.

The inventory details the geology, landforms, vegetation, land use, and human population all round the coast of the mainland and Tasmania. (There simply was not time to include coral reefs and islands more than 1 km off shore.)

Don't imagine the researchers have just returned, tired but triumphant, from a trek along Australia's 30 000 km of coastline (the problems and philosophy of measuring the coast were discussed in *Ecos* 25). They carried out the survey at desks in Canberra, using about 7000 aerial photographs.

The researchers, chiefly Dr Robert Galloway and Dr Bob Storey, drew a line on the photographs 3 km inshore and divided the resulting coastal strip (about 2% of Australia's area) into 10-km sections.

Within each section they sampled the land much as botanists sample vegetation with a point quadrat: they marked on the photograph a grid of pinpricks representing points on the ground just over 1·7 (in fact $\sqrt{3}$) km apart and recorded for each point the geology (for example, limestone or mud), the landform (such as narrow inlet or transverse dunes), and the vegetation (mallee or mangrove, say).

In all, they categorized some 45 000 points.

Information was also stored on land use (such as market gardens or rainforest), soils, the appearance of the coast to an observer just off shore, and the local population recorded in the last two national censuses.

What is the best way to store all this information? The usual geographer's reference, a map, would be inconvenient in this case, not least because at a scale of 1 : 1 000 000 the coastlands would become a strip 3 mm wide and 30 m long!

The researchers chose to store all the information on a computer that can either print it out or summarize it as a map on which the coastline is represented by symbols denoting the feature or combination of features that interest the user.

Preliminary sampling suggests that 23% of the coast consists of sand dunes and sand plains, either bare or vegetated, with mud-flats making up a further 22%. Mangroves score 6%.

Before publishing a report on the inventory, Dr Galloway is keen to hear potential users' comments on the types of information stored and possible uses to which it may be put. This will enable him to modify the inventory if need be.

He also welcomes requests for information from the inventory. Recently, for example, somebody in Western Australia consulted it to find out what proportion of mangroves were in conservation areas, and the Defence Department extracted a list of potential coastal training sites; the computer was instructed to reject national parks, cliffs, towns, and so on.

As a 'spin-off' from the exercise, Dr Galloway has compiled a guide to the aerial photographs of the coast of Australia — who supplies them and how much they cost. If you would like this information, or if you wish to transfer ideas into or out of the inventory, write to Dr R.W. Galloway at the Division of Land Use Research.

The sampled points lie on a grid within a coastal strip 3 km wide.