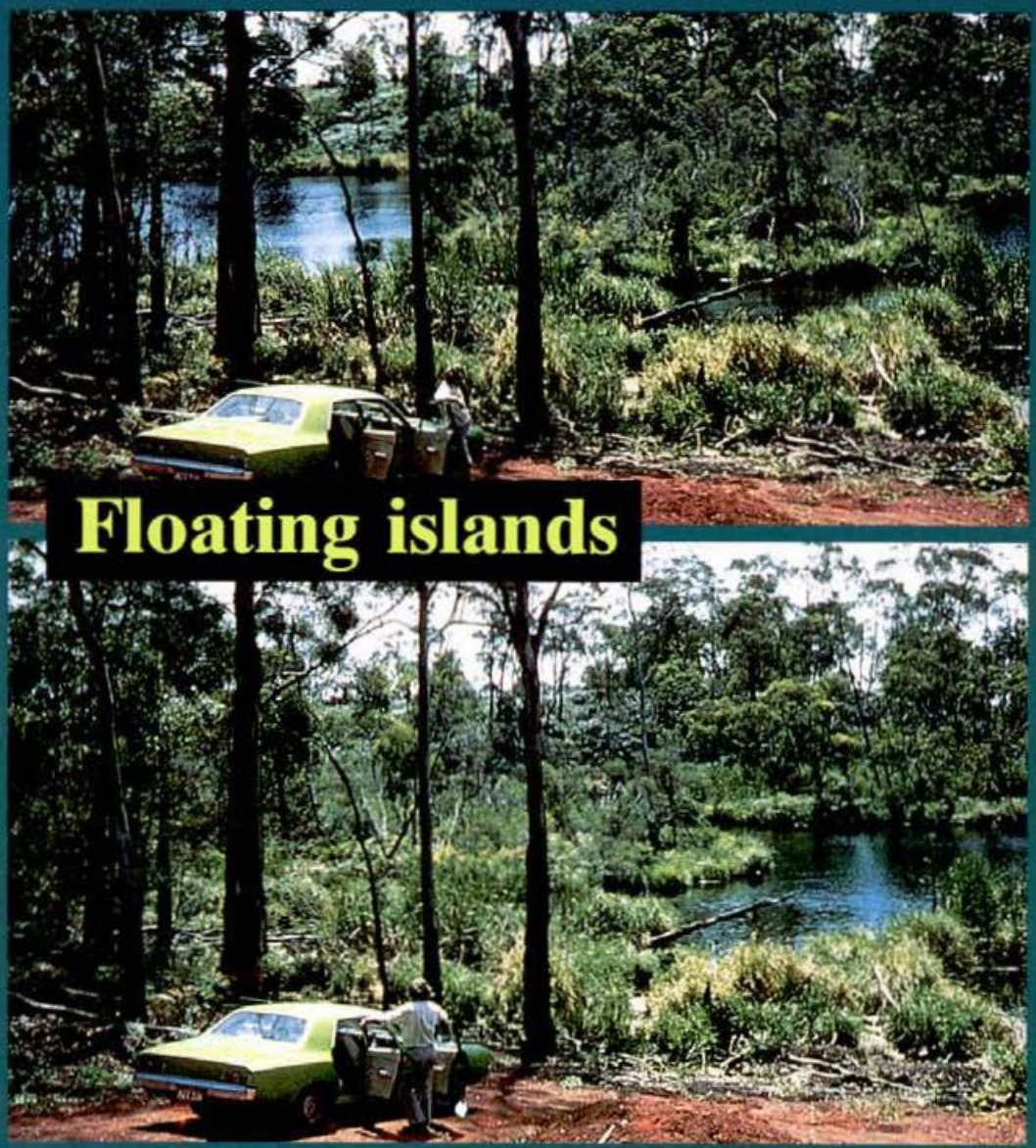
Floating islands



An island glides by. Taken a few minutes apart, these photos show one of the islands floating on Lake Pirron Yallock being coaxed along by the wind.

How do you explain islands—complete with trees 8 m tall—floating freely within a lake? How did the floating islands of Lake Pirron Yallock in western Victoria come to be?

Researchers who felt moved to answer this puzzle are Dr Jim Peterson, from the Geography Department at Monash University, Mr John Moresby of the CSIRO Division of Mineral Chemistry (now with the Division of Building Research), and Mr Frank Burns, a consulting engineer.

Whereas reed mats floating on a body of water are occasionally encountered, masses weighing hundreds of tonnes and sporting tall vegetation are extremely rare. There's nothing else like them in Australia, and they could well be unique.

The Pirron Yallock islands, near the Princes Highway just west of Colac, are protected as a Nature Reserve, and their meanderings mystify the many tourists who come to see them. According to local legend, you can foretell the weather by observing changes in their position.

The largest island is 30 m across and the smallest about 5 m; and, driven by the wind, the four islands are able to wander slowly for up to 200 m within the confines of the lake. (A number of other islands in the lake are apparently fixed.)

Using a variety of approaches, the researchers gathered clues to the islands' origins. They used an echo-sounder to determine the depth of the lake and the bottom profile. They took soil cores from the islands and analysed these to find out what the islands are made of. And they consulted aerial photographs, maps, and historical records to discover what changes the lakes have undergone.

The biggest clue was provided by geomorphology: Lake Pirron Yallock was formed after a 'recent' lava flow (possibly less than 8000 years ago) from the vicinity of nearby Mt Porndon. The researchers suggest that a surface crust formed before the molten lava underneath had finished draining away; this led to a collapse of the crust, forming numerous depressions, one of which we now know as Lake Pirron Yallock.

This explanation accounts for the flat bottom of the lake and its steep sides, characteristics that, fortuitously, prevent the islands from becoming permanently grounded. Next, it is suggested that thick layers of peat formed in the depression, for this is essentially what comprises the main body of the islands. Then, with a sudden rise in water level, the buoyant peat easily separated from the smooth hard basalt, and floating islands were born.

When did this happen? Not very long ago, it seems. Long-time residents remember when the lake was but a swamp, and the researchers believe that the islands formed in 1952 after the wettest year on record.

Apparently, human activity has also had a hand. Creating a causeway for the nearby Princes Highway has cut off the former southern outflow of the lake, preventing the water level from reverting to its previous swamp-condition level.

Nevertheless, the islands are very susceptible to water loss, and during the dry 1982/83 summer all of them became grounded. The water level has not increased much since then, and if the islands become grounded again, the danger is that the roots of trees growing on them may permanently anchor them to the spot.

One way or another, however, the islands appear doomed. If changes of water level don't get them, it's quite likely that the peat will slowly break up.

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The floating islands of Pirron Yallock, Victoria. F.L. Burns, J.F. Moresby, and J.A. Peterson. *Australian Society of Limnology, Bulletin* No. 10, 1985, 15–32.