

STREAM EXPERT UNDERSTANDS MEANDERING

How do you restore the meandering path of a stream? Stream expert Jasper Candel developed a channel path predictor as an indispensable aid.

The Netherlands has countless brooks, streams and rivers, large and small, that wind their way through the countryside. All those meandering paths look the same to laypeople, but PhD candidate Jasper Candel (Soil Geography and Landscape) knows better. Each bend has its own history. He studied the winding paths of the Dommel, Drentsche Aa and Overijsselse Vecht rivers.

SOIL KNOWLEDGE

The three rivers he studied flow in valleys with different soil compositions. That was a deliberate choice, explained Candel, as precisely those differences between sand, loam and clay determine to a large extent where the water flows. According to Candel, restoring streams is pointless without a thorough knowledge of the morphological and geological aspects of the soil.

'At present, bends are reintroduced wherever there is room, without knowing anything about the natural processes. They look at old maps to determine the meandering path 200 years ago and that becomes the reference point. But does the shape back then fit today's conditions? Rather than taking a reference point, you should restore the process that led to those bends. You have to un-

derstand how a stream got those bends if you are to avoid having to actively maintain the stream for decades to come.'

Candel surveyed the path taken by the three rivers in meticulous detail. He delved deep into the streams' geological history using earth drilling, radar measurements, radiocarbon dating and optically stimulated luminescence. Candel 'understands' the streams. He then used that understanding to create a channel path predictor, a model that predicts the path taken by any alluvial stream based on a few variables.

ALLUVIAL STREAMS

'Alluvial streams are streams that shape their own flood areas through the transport of sediment,' explains Candel. 'Mountain streams don't fit in this category, for instance.' Give him the soil composition, the valley's gradient and the volume of water flowing through it and his model will calculate the probability of a certain meandering path. According to Candel, the biggest cost item in restoring streams is buying out farmers. 'The question is whether that extra land is needed, whether the stream *can* meander in the way they want.' Candel also questions the shape given to the new bends. Those bends are mostly simple shapes whereas the natural path is often complex with sharp angles. Candel says that produces more interesting nature. **IRK**

