



ENGLISH
HERITAGE

REDUCTION OF CARBON FOOTPRINT FOR PREVENTIVE CONSERVATION

David Thickett

senior conservation scientist

david.thickett@english-heritage.org.uk



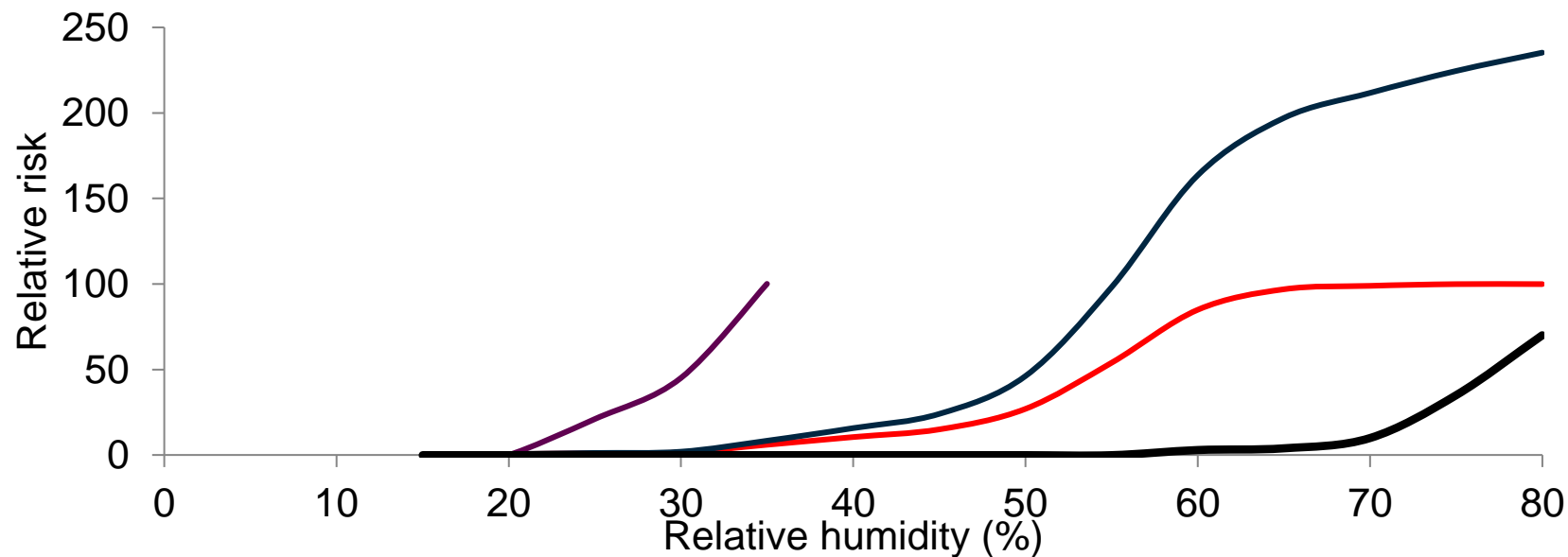
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MEASUREMENT

- Difficult as part of building/processes
- Separate metering through BMS
- Proportion through radiator temperatures
- Validated models for dehumidifiers in rooms and showcases
- Estimates for embedded carbon, PAS 2050
- Thickett, YOCOCU, ECR, 2020
- Thickett, IIC, Studies in Conservation 2022
- Lorenz Green Conservation Materials For European Heritage workshop 2021



WHAT DO WE NEED TO ACHIEVE



Average of 22 pieces of furniture

Damage function	Predicted AE damage instances (% of those measured)	Predicted instances when no AE observed (%)
IPI	63	0
Climate tool box	81	16
HERI-e	91	4

ENERGY TO CONDITION ROOMS

Comfort heating > conservation heating	over 200 rooms
Comfort heating > adaptive ventilation	12 rooms/tunnels
Comfort heating > dehumidifiers	35 rooms/tunnels
Adapted Denmark model/dehumidifiers	8 large stores
Dehumidifiers small store rooms	28 rooms
Fuel oil/gas > electric	43 rooms

Thickett et al IIC Studies in Conservation 2020

Lankester et al ICOM CC 2021

Thickett et al ICOM CC 2014

Zavier Rowe et al ICOM CC 2011

SHOWCASES

Room dehumidification > showcases
95% reduction in energy use

Conditioned showcases, 48%
reduction in carbon footprint, 2009
-2020, by

Understanding long term performance
of designs, modelling silica gel and
dehumidifier performance and carbon
footprints, measuring AERs and leakage
Upgrading 250 showcases
Testing vulnerability of materials

