

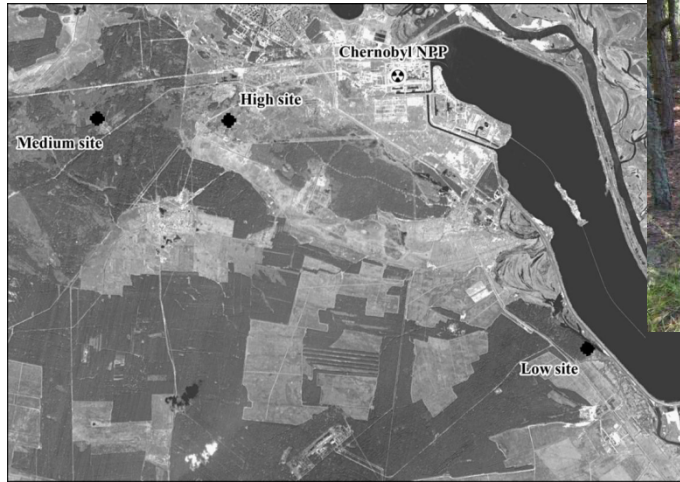
Nick Beresford
NERC CEH
[IAEA MODARIA WG8 chair)



**Centre for
Ecology & Hydrology**

NATURAL ENVIRONMENT RESEARCH COUNCIL

Chernobyl TLD small mammal study

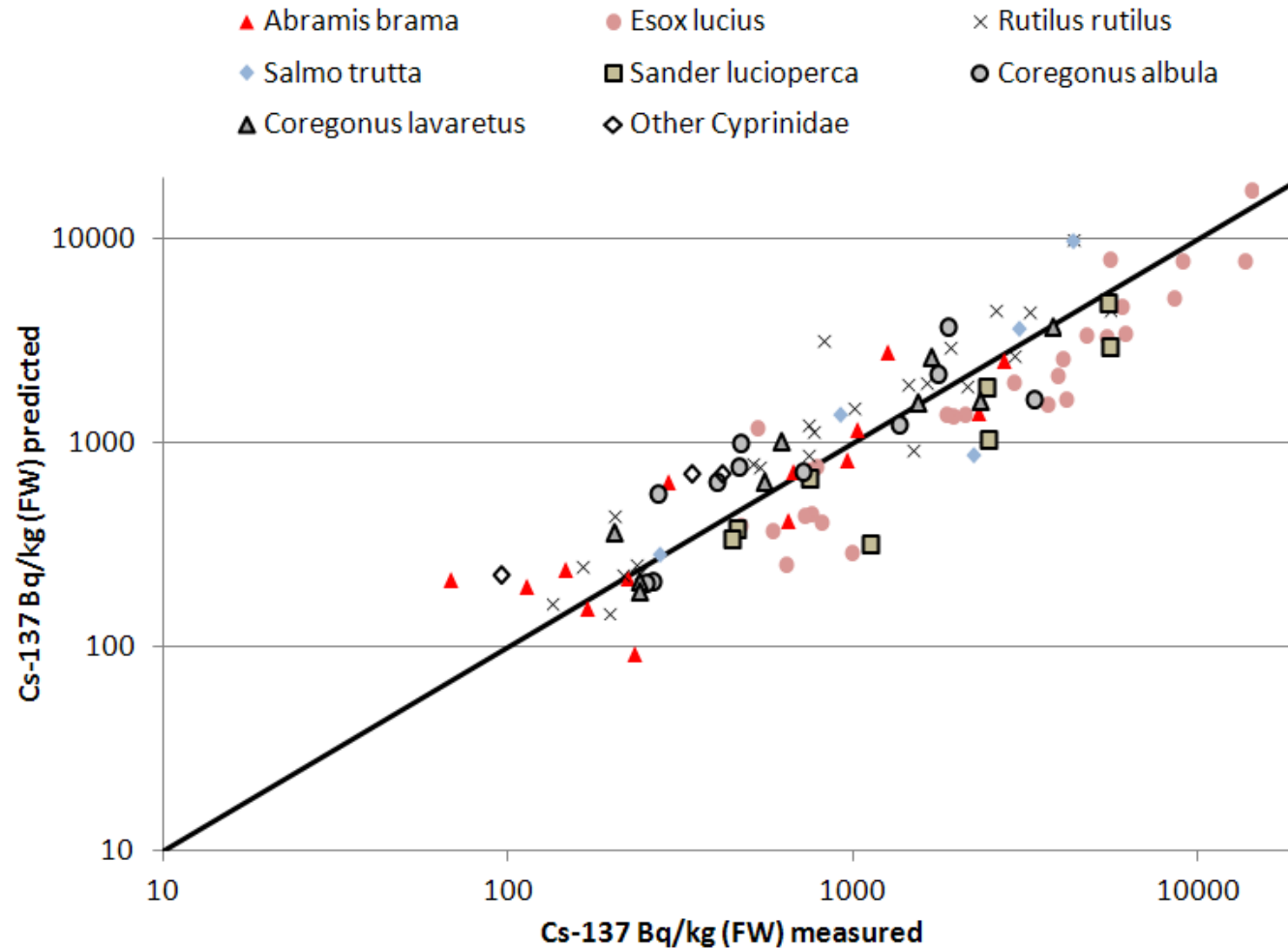


Species/site	TLD dose rate, 'corrected' ($\mu\text{Gy h}^{-1}$)				External dose rate, predicted ^b ($\mu\text{Gy h}^{-1}$)		
	Mean	SD	Min.	Max.	Mean	5th Percentile	95th Percentile
Low							
<i>C. glareolus</i>	2.11	0.62	1.43	2.64	1.75	0.63	3.71
<i>A. flavicollis</i>	1.49	0.60	0.46	2.57	1.48	0.54	3.15
Medium							
<i>C. glareolus</i>	13.1	6.21	4.65	38.1	9.21	3.22	19.1
<i>A. flavicollis</i>	17.2	12.6	8.87	51.4	7.80	2.73	16.2
High							
<i>C. glareolus</i>	66.5	42.3	36.5	96.4	20.7	9.61	37.2
<i>Microtus spp.</i>	43.7	14.7	23.9	77.6	20.7	9.61	37.2
<i>A. flavicollis</i>	43.2	0.30	43.0	43.4	17.6	8.15	31.5

Site	Soil activity concentrations ($\text{kBq kg}^{-1} \text{ DW}$)		
	^{134}Cs	^{137}Cs	^{90}Sr
Low			
Mean	0.007	7.37	2.20
SD	0.005	4.21	1.10
Min.	<0.004	1.70	0.85
Max.	0.02	23.7	5.99
Medium			
Mean	0.09	43.3	18.6
SD	0.21	25.7	14.9
Min.	0.0005	12.6	1.84
Max.	1.05	115	61.1
High			
Mean	0.10	97.7	56.5
SD	0.05	41.8	39.0
Min.	0.001	27.5	7.43
Max.	0.22	208	165

Alternative transfer approach

REML model, e.g. Cs-fish, test against independent data - **100 fish samples from 27 Finnish lakes**



Extending allometry

$$Y = aM^b$$

$$T_{B1/2} = \frac{\ln 2}{a_I f_1} CR_{org-diet} M^{0.25}$$

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ORIGINAL PAPER

Estimating the biological half-life for radionuclides in homeothermic vertebrates: a simplified allometric approach

N. A. Beresford · J. Vives i Batlle

All predictions within a factor of 5 (Sr, Cs, Co, I; mass range over 4-orders of magnitude)

..... adapted to reptile (Cs, Sr, Ra) (about to be) 'submitted'



IAEA EMRAS/MODARIA activities (e.g.'s)

- Comparison of dosimetry components
- Comparison of transfer modelling
- Five model-data scenarios
- Heterogeneous media concentrations
- **Animals – environment interactions**
- **Fukushima marine scenario**
- **Voxel v's ellipsoid modelling (inc RNs in GIT)**
- **Biological half-life compilation**

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..... *more in progress*