• Dr Stanford’s thesis for his [Fellowship in the Royal College of Veterinary Surgeons] FRCVS, was on metabolic bone disease in African Grey Parrots. In the following slide note the bends in the soft bone from improper diet.
Wood Pigeons

- English wild pigeons received at the wild life rehabilitation center of the RSPCA had the same condition as the African grey parrots.
- Note the soft bill and the bent bones on the radiograph in the next slide.
? FAILURE OF CALCIUM METABOLISM

UV Vit D3

Dietary Vit D₃

ACTIVE

liver

kidney
Increased mechanical activity

X-section of limb bones vs body mass
### Fate of Wood Pigeons Admitted to Stapeley Grange RSPCA Wildlife Hospital in 2005 (n=397)

<table>
<thead>
<tr>
<th>Outcome on Admission</th>
<th>Number of Birds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Released</td>
<td>120</td>
</tr>
<tr>
<td>PTS &lt; 48hrs</td>
<td>160</td>
</tr>
<tr>
<td>PTS &gt; 48hrs</td>
<td>100</td>
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</tbody>
</table>

![Bar chart showing the fate of wood pigeons on admission.](chart.png)
IS THIS A PROBLEM?

• 110 wood pigeons euthanased after 48 hours were responsible for 2347 days of hospitalisation.
• Huge welfare and cost implications.
• Many were subsequently euthanased due to MBD so did we cause it or did they come in to the clinic with it?
RSPCA Funded Study

Design best protocol for triage and rehabilitation of Wood Pigeons
Retrospective Review of Metabolic Bone Disease in Wood Pigeons (n= 1367)
X ray all wood pigeons admitted in 2006
Each radiograph independently assessed

Placed into three groups:

1) Skeletally normal
2) Moderate MBD = 1 bone deviated
3) Severe MBD = more than 1 bone deviated
Normal Wing

Abnormal Wing
Incidence of Metabolic Bone Disease in all Wood Pigeons

Radiographic evidence of MBD at Triage
44% of all wood pigeons had MBD compared with card data suggesting 8%.

- Missing MBD so should radiograph all wood pigeons at triage?
Normal Wood Pigeon
SKELETALLY NORMAL 12 WEEK OLD WOOD PIGEON

12 WEEK OLD WOOD PIGEON WITH METABOLIC BONE DISEASE
Quantitative Evaluation of Histopathological Changes in MBD

Diagram showing the comparison of hypertrophic zone length across different disease statuses and bone types (tibiotarsus and humerus).
Computed Tomography (CT)
Normal 6 week old grey parrot

6 week old grey parrot with severe MBD

CT SCANS IN PARROTS
Quantitative Analysis of CT Scans

Mean cortical BMD (mg/cm²)

<table>
<thead>
<tr>
<th>Disease_status</th>
<th>Tibiotarsus</th>
<th>Humerus</th>
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<tbody>
<tr>
<td>0</td>
<td>33</td>
<td>34</td>
</tr>
<tr>
<td>1</td>
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</table>

Bone
- Tibiotarsus
- Humerus
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