

Hoof Wall Separation Disease (HWSD)

More information on HWSD and the work of the Connemara Pony Research Group can be found at: <http://connemara-pony.blogspot.com>

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Over the past 15 years there has been an increasing awareness worldwide, of a problem with the hoof structure in a subset of our beloved Connemara ponies.

Hoof Wall Separation Disease is an **autosomal recessive genetic disorder** of the hoof wall. All four feet will be affected. It should not be confused with White Line Disease (WLD)



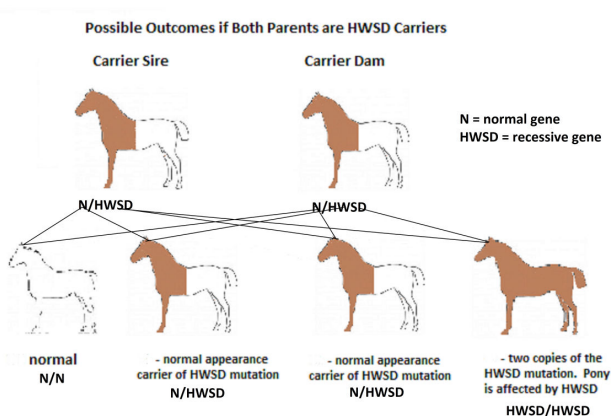
The condition has been identified in all countries where Connemara ponies are bred, in both local and imported stock. If a pony has inherited this condition, it will be born with it, and in severe cases damage can be seen in foals as young as 2 - 3 weeks of age. HWSD is not an acquired condition.

We are unsure why, but there is consensus that there are degrees of severity with this condition; some can be managed and some of these ponies need to be euthanased.

Environment and nutrition may be contributing factors, but these are not the **cause**.

The cause is a genetic mutation which results in the hoof wall growing in a defective manner. Splits occur within the layers of the hoof wall and these layers break away when they come into contact with the ground.

The Patterns of Inheritance in HWSD follow basic Mendelian principles.



A carrier parent donates either a normal copy of the gene or a mutated version, to each of its foals, in equal proportion. When the carrier is mated to a non-carrier of the mutant gene, the resultant foal has equal chances of being normal or being a carrier.

When two carrier parents are mated the chance of producing a HWSD affected foal is 1:4

When an affected HWSD parent produces a foal, every foal will be a carrier.

By genetic testing all breeding stock for the HWSD mutation, it becomes possible to avoid matings which have the potential to produce HWSD affected foals.



Dr Robert Eustace of the Laminitis Trust (UK), originally described the condition as "coconut-matting hooves", as the borders of the hoof wall appears rough and frayed.

HWSD, sadly, does not respond to treatment whether topical hoof treatments or feed supplements which are used to promote healthy hoof growth.



The hooves do not hold traditional shoes well as the hoof wall fractures around the nail sites. The older type adhesives, used for glue on shoes appear to exacerbate the breakdown of the hoof wall. The new generation adhesives appear to perform better in this regard.

How wide spread is HWSD in the Connemara pony population worldwide?

Pedigree research indicates that the problem was already present in at least two ponies recorded in Volume 1 of the CPBS Stud Book. These ponies are known as 'common ancestors'.

There is unlikely to be a Connemara pony anywhere in the world which does not have at least one of these common ancestor ponies in its pedigree. Some bloodlines have a higher incidence of affected progeny than do others; the number of HWSD carrier ponies seen in any one country is a reflection of the particular blood-lines of the original imported population (foundation lines for each country) and any subsequent recent imports. One example of a line with a high affected rate is the 'Irene' line of ponies.

IMPORTANT: ALL BREEDERS MUST UNDERSTAND THAT NO HWSD CARRIER OR AFFECTED PONY SHOULD BE EXCLUDED FROM BREEDING PURELY BECAUSE OF HWSD STATUS.

Excluding carrier/affected ponies from the breeding population will contract the gene-pool further in an already compromised population. If a pony was good enough to breed from before being tested, it's still worth breeding from when its carrier-status is known.

Do not stop breeding with a pony because it has one mutated one gene!

What all breeders **CAN DO** is to test their breeding ponies and establish the HWSD status of each. Then by merely breeding HWSD affected or carrier ponies **ONLY** to HWSD clear ponies, no more affected ponies will ever be bred again.

The Connemara Pony Research Group initiated the work which has led to the discovery of the HWSD mutation. The research was funded in the main, by donations made by concerned people from around the world.

Additional funding was sourced from the Morris Foundation and Merial.

The genetic research was conducted by the Bannasch Laboratory (UC Davis). The scientists from Bannasch discovered the mutation and have developed the screening test.



The HWSD test is conducted by extracting DNA from hair roots from either the mane or tail; the same method which is used for DNA profiling and colour testing. The test is presently only available from the Veterinary Genetics Laboratory of UC Davis, USA.

Full instructions on how to collect and submit samples for testing are available here:

<http://www.vgl.ucdavis.edu/services/HoofWallDisease.php>

Test results page:

<http://connemara-pony.blogspot.co.nz/p/hwsd-tested-ponies.html>