The White Nape Crane

(Grus vipio)

By Derek Gibson

Introduction

The White Naped Crane can at first glance look the same as the majority of the other 15 species of crane. Grey body, red face and various black and white feathers. While maybe not as striking as the Red Crowned Crane (Grus japonensis), or maybe the outright flamboyant ness of the Crowned Cranes, and while not continuously drawing attention to itself with loud raucous calls, this fascinating gem of a bird is indeed well worth a second glance. Standing 120cm-130cm tall with red facial skin, surrounding an intensely orange eye, the white feathers on the back of the neck extend to the crown and the fore-neck is black. The overall body plumage is a subtle shade of greys and the wings range from white to dark grey, with red legs that flush with colour when in breeding condition, the males do tend to be slightly larger than the females.

Distribution

The White Naped Crane frequents cultivated fields of rice, marshes and estuaries, and lowland steppes or mixed forest steppe areas (Meine & Archibold 1996) with breeding grounds in Mongolia, North East China and areas of southeast Russia and wintering grounds in South and North Korea, Eastern Siberia, Japan and over the Yangtze River into Eastern China. Numbering around 4900 to 5300 individuals in the wild, the White Naped in common with other species, have suffered from habitat destruction and encroachment of civilization. World War Two and the Korean War in particular damaged many stopover points and Wintering areas. Together with other habitat related changes, for instance a change in agricultural practices, and illegal shooting, this has happened at least seven times in the Spassky District of Eastern Siberia in the Spring of 2005 (Albrecht Von Treuenfels 2005), (making the fact that the White naped is a protected species with laws to protect it a bit of a sham!). All have contributed to its general decline throughout its range. White Naped Cranes face additional threats on their wintering grounds. The wintering populations of White Naped and Hooded Cranes, (Grus monachus) are highly concentrated, increasing the risk of a disease outbreak. (Archibald G, Meine C.1996). The artificial feeding area at Izumi, Japan and the 103,000 hectare Dagurian Nature Reserve on the Uldza River in the Mongolian province of Dornod (part of the Mongolian-Chinese nature sanctuary that is home to the largest breeding colony of the White Naped Crane) offers some protection as does the Khinganski nature reserve in Russia, that raise eggs provided by American Zoos to bolster the populations,( Wikipedia 2008) but still this crane is classified by the IUCN as a vulnerable species, and are on Cites appendix 1.

Housing

Exmoor Zoo has had White Naped Cranes in its collection since 2003 when a breeding pair was received from the now closed Rhode Bird Garden. Both the male and female were pinioned and were considered to be adult upon arrival, and were placed in a paddock style enclosure measuring approximately 35 metres x 18 meters surrounded by a 2.5meter high perimeter fence. A house/shelter is positioned at the top of the enclosure by the main keeper entrance gate, so feeding and watering can be done with very little disturbance to the Cranes. The house gives protection against the more unpleasant weather that occasionally engulfs North Devon. A fresh water stream runs length ways throughout the pen and the bottom half of the paddock is very wet with many all year round pools naturally appearing.
The grass is left completely alone as are the rest of the native plant species that grow, these being Cow parsley (*Anthriscus sylvestris*), Flag iris (*Iris pseudacorus*), Stinging nettles (*Urtica dioica*), Red clover (*Trifolium repens*), White clover (*Trifolium pratense*), Sow thistle (*Silybum spp*), Greater plantain (*Plantago lanceolata*) and Devils bit scabious (*Succisa pratensis*). The top half of the pen has shorter grass (the lawnmower is dusted off twice a year just before and just after the breeding season) also planted with various plant specimens, including the wonderful Tree of Heaven (*Ailantus altissima*).

**Diet**

Here at the zoo the adult birds are fed twice a day at 9am and 3.30pm. The first feed consisting of 400 grams of mixed corn, 400 grams of waterfowl maintenance pellets, two crumbled slices of wholemeal bread and four day old chicks dusted with a vitamin supplement. 400 grams of oyster shell grit is added to the diet once a week. The second feed of the day is one chick each and one fish each. The morning feed tray is lifted on the second feed to discourage any unwanted vermin attention.

The birds are routinely wormed twice a year, in March and October with Panacur 2.5% oral suspension.

The cranes also spend a large portion of the day probing into the soft earth and into the flowering heads of the plants. Whether by luck or judgement, Exmoor Zoo is blessed with a seasonal abundance of all manner of invertebrates that coincide with the Cranes rearing season, these include Crane fly (*Tipulidae spp*), Maybugs (*Melolontha spp*), Common green grasshopper (*Omocestus viridulus*), thousands of Arachnids and over 80 species of British moth, all of which use the Zoos paddocks as breeding and feeding grounds, as well as numerous other species of Lepidoptera (Devon moth group 2006).

**Breeding**

The first breeding of the White Nape Crane in the United Kingdom seems to have happened at Woburn Park in 1908 (*Dave Coles*).

The first signs of a potentially good breeding season, is the unison calling, the female seems to initiate the display and utters two calls for each male call, with the male always lifting up his wings over his back and the female keeping her wings folded at her side (*Johnsgard PA, 1983*). Again as with other Crane species, the White Naped engages in complex dance displays which consist of synchronized dips, bows, head swings, wing spreading, leaps and flaps. Bits of grass and twigs even sods of earth are picked up and tossed into the air. The cranes really do seem to enjoy the courtship display.

Our first egg was laid on 23.2 2002 but unfortunately it proved to be clear, we had to wait until the 31.5 2003 before we had our first White Naped Crane chick. A chick was hatched by our pair; unfortunately the young bird succumbed after only one day.

To date Exmoor Zoo has bred,

2003= One hand reared (did not survive) reason for death, found dead in pen probably not cared for correctly by inexperienced male or female?

2004= Two hand reared, one parent reared.

2005= No young this year.

2006= Three hand reared (one did not survive) reason for death, protruding yolk sac,

2007= Five hand reared, one parent reared (did not survive) reason for death, heat stroke.

2008= Two hand reared.

We do make every effort to let the parents rear themselves, one of the major problems we face is being a Zoo in the country side we do attract our share of unwanted guests at night, in 2008 we lost our female, killed on the nest and her two eggs rolled away by what we are almost certain was a very aggressive Stoat (*Mustela erminea*). On those occasions when the first youngster is hatching, the second egg is taken and artificially incubated and reared, thus letting both parents care for the one chick. The dedication of both the male and the female to the youngster is an amazing sight to behold, constantly being fed insects; we have witnessed both parent birds with the chick in between them being fed by one then the other. Not
surprisingly the parent reared young seem to grow at an amazing rate. Again both adult birds seem to be in continual contact with the young crane, a series of low frequency rumbles being emitted and much louder whistles when the young one disappears in the long grass.

Of course when danger approaches, both the parent’s mantle and start to shout and call, and even rush at the intruder, wings out as tall as can be, giving a firm indication that ones presence is not welcome.

Over the years various species have shared the same enclosure with the adult White naped Cranes at Exmoor Zoo, those being, the Australian shelduck, (Tadorna tadornoides), Cape Barron Goose (Cereopsis novaehollandiae), Parma Wallaby, (Macropus Parma), and Bar headed Goose (Anser indicus). None of these species really interfered with them apart from the male Cape Barron, a bird that is far too aggressive for its own good! The young White naped are mixed at four to five months of age in a communal crane enclosure measuring approximately 35 meters x 26 meters and at its highest point the netted roof is 5meters high. This enclosure contains European (Grus grus), Demoiselle (Anthropoides Virgo), Sarus (Grus antigone), and East African crowned cranes (Balearica regulorum).

The birds in this enclosure are of different ages and different sex, young cranes are always mixed into the enclosure in twos to avoid any out and out aggression. To date all the birds have mixed together with little or no trouble, and after a few days it is apparent that they know what type they are, as birds of the same species stick together, all apart from one white naped crane born in 2007 he (DNA sexed) would not be tolerated by either white naped youngsters, even its own nest sibling or by any other crane.

Nesting

Observations of White Naped Crane nests in the wild indicate a flat structure of dry grass situated on an elevation amongst reeds and marshes (Soothill, Eric and Richard 1982), with both male and female incubating. At the Zoo it is very similar with the cranes nesting either on an elevated small island in the middle of a pond or around the edges. Again as in the wild, the nest is made from various reeds and grasses, and again as in the wild incubation duties are shared by male and female; one interesting point is that they have never reused an old nest site.

Egg propagation.

Two eggs are laid in a clutch in a season, but of course if the eggs are removed the female will recycle. The most eggs laid by one female here at Exmoor are nine in one season. All the eggs that are artificially incubated have their dimensions taken before being set, on average they are 88.61mm length x 60.35mm width. The eggs are a mottled brown on a cream base.

The eggs are set in an incubator at 37.5c with 50-55% R/H, any dirt is removed from the egg with a moist cloth. Eggs are candled at ten days to determine fertility, and not again until the chick has externally pipped, the egg is then transferred to the hatcher at a temperature of 37.2%c and as much humidity as possible. If the egg takes longer than forty eight hours to hatch after the initial pip, then it is assisted, luckily this has only happened once at Exmoor, and in that particular case the area of roughly 2cm of egg shell around the pip was gently removed and the membrane moistened, cheeping and purring noises were made by the keeper during this procedure, with the chick calling back, luckily the chick hatched successfully.

Chick management

Upon hatch, the young crane is weighed and transferred to a brooder set at 32c with as little humidity as possible to dry out and to recover from the stresses of hatching. All of the young White Naped Cranes have hatched between the hours of 7am through to 9am with only one exception and that was the chick that had to be helped from the egg.
If the chick is to be pinioned, then it is done within the first twenty four hours, keeping the chick calm at this point is very important, after pinioning has taken place the young are placed back in the quiet of the brooder.

The chick spends the first twenty four hours in the brooder, no food is given thus letting the young crane absorb the yolk sac, but boiled water allowed to cool with a water soluble probiotic is offered at regular intervals. The floor of the brooder is covered in a non slip rubber material to give the young crane a good foot hold and to help prevent any problems with splayed legs as they struggle to get to their feet, a small soft cuddly toy is given as “mum” to huddle up to.

The chick is weighed the next morning; on average they have lost between 10 to 12 grams. The method of handling used is the “scoop” when the chicks body is in the palm of the hand and the other hand gently placed over the back, the legs are in-between the fingers to afford a small amount of control, this method is used each day when weighing takes place up until the chick is fourteen days old (the chick is then to large to be handled safely in this way, the chick is carried like the adults from now on, under the arm, facing backwards with the legs “folded”).

The young Crane is then moved to the rearing pen measuring 100cm x 60cm x 50cm. with a heat source at one end set at 30c and gradually lowered to room temperature over the course of two weeks, again a non slip floor is important, we use carpet tiles as they are easy to keep clean. A small glass bowl 5cm deep x 8cm wide is given for water, with a calcium supplement added (glass because live food is dropped into the bowl, it is visible to the chick which encourages it to eat the live food and take a good gulp of water at the same time. A companion is placed in with the young crane, a day old Helmeted Guinea fowl (Numida melagris) seems to be a very good companion, other species we have tried like domestic chickens or bantams are of course good but the Guinea fowl tend to be as bright as a button and soon start to eat and drink thus encouraging the young crane to do likewise. When keeping two siblings together we have had to intervene and separate as soon as three days old because of aggression. Food is placed in the rearing pen in bowls as wide apart as possible giving the crane exercise, the food offered is insectivorous mix, Crushed soaked diet a and chick crumb, there is also a scattering of food cast onto the floor.

Live foods given to the young cranes are,
- Waxmoth larva,(Achroia grisella)
- Small crickets,(Gpyllus assimillis)
- Mealworms,(Tenebrio molitor)

The live food is presented to the chicks on tweezers after being submerged in water, the first feed tends to be only two wax moth larva then gradually through out the day the food quantity is increased and feeding happens seven to eight times a day, with the last feed by tweezers happening at 6pm- 6.30pm. Normally the young crane gets the hang of feeding itself quite quickly and is picking food up from the floor as soon as two days old, but still gets fed by the tweezers until day ten when the chick along with its companion bird is eating enough on its own, the feed bowls are refilled through out the day, and live food scattered in the pen at regular intervals giving the young crane food when ever it is required.

By the end of the first day the chick has usually been able to struggle to its feet and is starting to take its first rather hesitant steps. Exercise is so important for young cranes; here at Exmoor Zoo the chicks are encouraged to do so, they are walked in our children’s playground that backs on to the Zoos incubation and rearing station, if the birds are being walked while the Zoo is open quite an audience gathers,(after all who can resist a young crane?) giving us as Zoo keepers an ideal opportunity to talk to the public and chat about cranes, not only white naped but also the other six species we keep at the Zoo. The twice a day walks normally last for about three quarters of an hour, avoiding the heat of the mid day sun, the young cranes do seem to enjoy this time out of the rearing pen and are continually probing the long grass looking for insects and having a good old stretch of the wings.
Being birds with long legs, leg problems can occur, we have had a couple of problems in the past with slight bowing in the leg just below the ankle joint. We have a 2008 youngster with that very problem at the Zoo at the moment he is just as mobile as the female and the problem is only noticeable if stood head on, the bird does not seem unduly hampered by this at all.

A useful addition to our Crane rearing facility this year is a small elevated pool measuring 117cm x 60cm, when full the water at its deepest is 22cm and at its shallowest 10cm, this gives us another means of exercising young cranes in the future.

Young cranes grow extremely quickly, so they outgrow our initial rearing pen by the time they are three weeks old, they are then placed in pens measuring approximately 180cm x 70cm, staying in these pens until they are eight to ten weeks old then they are relocated to a larger enclosure were they stay until the time they are mixed in the communal Crane enclosure.

At present Exmoor Zoo holds one adult pair and two 2008 youngsters, are intention is to swap out one youngster to make up a potential second breeding pair of White Naped Cranes and carry on working with this rather beautiful species of Crane for many years to come.

References.

Johnsgard, Paul, A 1991 Crane music, University of Nebraska press.
Von Treunfels, Carl Albrecht 2006 The magic of Cranes, Abrams.
Coles, Dave. First breeding records for birds reared to independence under controlled conditions in the United Kingdom.
Archibald, George, Meine, Curt, D 1996. The Cranes, status survey and conservation action plan.

Photographs and graphs used in text,

- White Naped Crane, egg graph.
- White Naped Crane day one to day fourteen.
- White Naped Crane colt aged six months.
- White Naped Crane nest.
- Three young White Naped Cranes aged between six to seven months tucking into a bowl of soaked crushed Diet a.
- Day three.
- Nine months old.

Derek Gibson,
Head keeper,
Exmoor zoo,
South Stowford,
Bratton Fleming,
Barnstaple,
N, Devon.
EX314SG.
derek.r.gibson@btinternet.com
exmoorzoo@btconnect.com
White Naped Crane Eggs Laid

Weight gains in grams over the first fourteen days.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cree 2004</td>
<td>116</td>
<td>113</td>
<td>109</td>
<td>114</td>
<td>120</td>
<td>129</td>
<td>138</td>
<td>144</td>
<td>163</td>
<td>197</td>
<td>229</td>
<td>257</td>
<td>264</td>
<td>278</td>
</tr>
<tr>
<td>Pawnee 2004</td>
<td>119</td>
<td>109</td>
<td>115</td>
<td>127</td>
<td>136</td>
<td>152</td>
<td>168</td>
<td>184</td>
<td>196</td>
<td>222</td>
<td>237</td>
<td>249</td>
<td>263</td>
<td>279</td>
</tr>
<tr>
<td>Apache 2006</td>
<td>116</td>
<td>112</td>
<td>110</td>
<td>117</td>
<td>122</td>
<td>136</td>
<td>145</td>
<td>149</td>
<td>171</td>
<td>209</td>
<td>221</td>
<td>237</td>
<td>257</td>
<td>270</td>
</tr>
<tr>
<td>Crow 2006</td>
<td>115</td>
<td>105</td>
<td>117</td>
<td>124</td>
<td>130</td>
<td>151</td>
<td>172</td>
<td>196</td>
<td>223</td>
<td>242</td>
<td>275</td>
<td>292</td>
<td>319</td>
<td>347</td>
</tr>
<tr>
<td>Shawnee 2006</td>
<td>129</td>
<td>108</td>
<td>105</td>
<td>120</td>
<td>113</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abenaki 2007</td>
<td>129</td>
<td>108</td>
<td>115</td>
<td>121</td>
<td>128</td>
<td>135</td>
<td>144</td>
<td>151</td>
<td>161</td>
<td>177</td>
<td>186</td>
<td>200</td>
<td>211</td>
<td>232</td>
</tr>
<tr>
<td>Sauk 2007</td>
<td>126</td>
<td>110</td>
<td>119</td>
<td>127</td>
<td>136</td>
<td>141</td>
<td>149</td>
<td>157</td>
<td>166</td>
<td>181</td>
<td>199</td>
<td>217</td>
<td>229</td>
<td>241</td>
</tr>
<tr>
<td>Ioway 2007</td>
<td>131</td>
<td>121</td>
<td>125</td>
<td>132</td>
<td>139</td>
<td>149</td>
<td>155</td>
<td>162</td>
<td>170</td>
<td>179</td>
<td>188</td>
<td>198</td>
<td>215</td>
<td>230</td>
</tr>
<tr>
<td>Beothuk 2007</td>
<td>129</td>
<td>112</td>
<td>115</td>
<td>126</td>
<td>133</td>
<td>141</td>
<td>156</td>
<td>160</td>
<td>170</td>
<td>181</td>
<td>201</td>
<td>213</td>
<td>229</td>
<td>242</td>
</tr>
<tr>
<td>Choctaw 2007</td>
<td>127</td>
<td>117</td>
<td>120</td>
<td>129</td>
<td>141</td>
<td>152</td>
<td>166</td>
<td>183</td>
<td>189</td>
<td>222</td>
<td>240</td>
<td>256</td>
<td>260</td>
<td>273</td>
</tr>
<tr>
<td>Navajo 2008</td>
<td>126</td>
<td>112</td>
<td>112</td>
<td>119</td>
<td>127</td>
<td>138</td>
<td>153</td>
<td>169</td>
<td>193</td>
<td>219</td>
<td>250</td>
<td>281</td>
<td>314</td>
<td>336</td>
</tr>
<tr>
<td>Beaver 2008</td>
<td>110</td>
<td>98</td>
<td>96</td>
<td>110</td>
<td>119</td>
<td>132</td>
<td>148</td>
<td>160</td>
<td>180</td>
<td>199</td>
<td>210</td>
<td>224</td>
<td>243</td>
<td>269</td>
</tr>
</tbody>
</table>