XXIX INTERNATIONAL UNION OF GAME BIOLOGISTS CONGRESS

SURVIVAL RATES OF RADIOTagged RED-LEGGED PARTRIDGES (Alectoris Rufa L), CAPTIVE REARED BY PARENTS OR ARTIFICIALLY HATCHED AND BROODED.
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The survival rates of red-legged partridges artificially hatched and brooded (Incubator) or naturally hatched and brooded by their own parents in small flying pens (Parents), were evaluated in 28 radio-tagged red-legged partridges. Results showed that all the partridges of the group Incubator deceased within 80 days after release and only 4 partridges (28.5%) of the group Parents were still alive after 100 days from their release in the wild. Other raising and/or adapting techniques must be studied and tested in the field to improve survival rates.
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Abstract: the survival rates of red-legged partridges artificially hatched and brooded (Incubator) or naturally hatched and brooded by their own parents in small flying pens (Parents), were evaluated in 28 radio-tagged red-legged partridges. Results showed that all the partridges of the group Incubator deceased within 80 days after release and only 4 partridges (28.5%) of the group Parents were still alive after 100 days from their release in the wild. Other raising and/or adapting techniques must be studied and tested in the field to improve survival rates.

Introduction: The red-legged partridge has suffered a notable decline in 95% of its original European range, especially during the last two decades (Aebischer and Potts 1994, Aebischer and Lucio 1997; Rocamora and Yeatman-Berthelot 1999). Following some local extinction of the specie, several small populations of red-legged partridges (*Alectoris rufa* L.) has been reconstituted in Italy with captive-raised partridges. The survival and the reproduction rate of the captive raised animals produced with the actual technologies are, however, dramatically low (Bagliacca *et al*, 2006). Consequently, the rearing technologies must be modified to improve the survival rate of the captive-born partridges after release. For this reason we carried out a preliminary research in order to evaluate the survival rates in differently raised red-legged partridges.

Methods: In a no-hunting area of Florence Province (Central Italy), 28 reared partridges, about seventy days old, were released during the September month. All the partridges were captive reared: 14 partridges (8 males and 6 females) had been artificially hatched and brooded (Incubator) and 14 partridges (6 males and 8 females) had been reared in small flying pens (Bagliacca *et al*, 2008), where they had been naturally hatched and brooded by their own parents (Parents). Partridge chicks of the two groups, Incubator and Parents, were equipped with a radio necklace tag (Biotrack TW3 + 10-28, less than 3-4% of the partridge weight); both groups were localised two-three times a week until January 2009. Estimated survival rates of the released partridges were analysed in relationship to the rearing method by Kaplan-Meier method (SAS, 2002).
**Results and discussion:** The survival rates did not show any statistical difference in relationship to the different rearing technique. All the partridges of the group Incubator deceased within 80 days after release and only 4 partridges of the group Parents were still alive after 100 days from their release in the wild. Even if the reduced number of radio tagged birds might justify the absence of statistically significant differences, the survival rates were very far from acceptable losses, also in the Parents group (only 28.5% of the partridges survived after 100 days from release). The radio tags we used might have contributed to the high mortality rates, since the tags were slightly too heavier for the red-legged partridges (the body weight of the partridges at release were only 352 g ± 33.0 and 386 g ± 80.9, in Incubator and Parent groups, respectively).

**Conclusions:** The direct semi-natural captive-reproduction of the red-legged partridges in small grass-floor pens seem to be not sufficient for the obtaining of acceptable survival rates of the captive raised red legged partridges. This technique remain very useful for the correct captive breeding of reproducers, since artificial incubation bypasses the effects of natural selection and, inevitably, subjects reared partridges to the biasing effects of the artificial incubation (Bagliacca *et al*, 2004). However, other raising and/or adapting techniques must be studied and tested in the field to obtain acceptable survival rates for the captive raised red-legged partridges.

**References:**


Ornithologiques de France/Ligue pour la Protection des Oiseaux, Paris
SIMA (Sistema de Información Municipal).
Institute Inc 2002.

Pictures and tables

Table - One-way Anova By group (observations or Sum Wgts: 14+14=28).

<table>
<thead>
<tr>
<th></th>
<th>Incubator Mean</th>
<th>Incubator Std Error</th>
<th>Parents Mean</th>
<th>Parents Std Error</th>
<th>Prob &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body weight</td>
<td>352</td>
<td>33.0</td>
<td>386</td>
<td>80.9</td>
<td>0.312</td>
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<tr>
<td>Tarsus length</td>
<td>52.7</td>
<td>1.56</td>
<td>54.4</td>
<td>2.37</td>
<td>0.135</td>
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<tr>
<td>Tarsus diameter min</td>
<td>4.0</td>
<td>0.29</td>
<td>4.7</td>
<td>0.41</td>
<td>0.004</td>
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<tr>
<td>Tarsus diameter max</td>
<td>5.5</td>
<td>0.40</td>
<td>6.1</td>
<td>0.49</td>
<td>0.051</td>
</tr>
<tr>
<td>Tarsus + spur *</td>
<td>6.3</td>
<td>0.66</td>
<td>8.5</td>
<td>2.03</td>
<td>0.083</td>
</tr>
<tr>
<td>Remiges length</td>
<td>14.8</td>
<td>0.86</td>
<td>15.2</td>
<td>0.79</td>
<td>0.320</td>
</tr>
</tbody>
</table>

* Measured only in males (Observations or Sum Wgts: incubator 8, Parents 6)

Table – Survival rates of the differently reared red-legged partridges.

One-way Anova By group (observations or Sum Wgts: 14+14=28)

<table>
<thead>
<tr>
<th>Thesis</th>
<th>Released</th>
<th>Dead</th>
<th>Survived %</th>
<th>Prob &gt;ChiSq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>14</td>
<td>10</td>
<td>28.6%</td>
<td>0.146</td>
</tr>
<tr>
<td>Incubator</td>
<td>14</td>
<td>14</td>
<td>0.0%</td>
<td>0.515</td>
</tr>
</tbody>
</table>

Survival Plot
Survival rates of radiotagged red-legged partridges (Alectoris rufa L.), captive reared by parents or artificially hatched and brooded.

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Introduction

The red-legged partridge has suffered a notable decline in 95% of its original European range, especially during the last two decades (Aebischer and Potts 1994, Aebischer and Lucio 1998, Rocamora and Yeatman-Berthelot 1999). Following some local extinction of the species, several small populations of red-legged partridges (Alectoris rufa L.) has been reconstituted in Italy with captive-raised partridges. The survival and the reproduction rate of the captive raised animals produced with the actual technologies are, however, dramatically low (Bagliacca et al. 2006). For this reason we carried out a preliminary research in order to evaluate the survival rates of the red-legged partridges in relationship to two different rearing technologies.

Methods

In a no-hunting area of Florence Province (Central Italy), 28 reared partridges, about seventy days old, were released during the month of September. All the partridges were captive reared: 14 partridges (8 males and 6 females) had been artificially hatched and brooded (Incubator) and 14 partridges (6 males and 8 females) had been reared in small flying pens (Bagliacca et al. 2008), where they had been naturally hatched and brooded by their own parents (Parents). Partridge chicks of the two groups, Incubator and Parents, were equipped with a radio neck tag (Biotrack TW3 + 10-28, less than 3-4% of the partridge weight); both groups were localised two-three times a week until January 2009. Estimated survival rates of the released partridges were analysed in relationship to the rearing method by Kaplan-Meier method (SAS, 2002).

Results and discussion

All the partridges of the group Incubator deceased within 80 days after release. Only 4 partridges of the group Parents were still alive after 100 days from their release in the wild. The survival rates of both groups were very far from acceptable losses, only 28.5% of the partridges survived after 100 days from release also in the Parents group. The radio tags we used might have contributed to the observed high mortality rates, since the tags were slightly too heavier for the red-legged partridges. However the direct semi-natural captive-reproduction of the red-legged partridges in small grass-floor pens seem to be not sufficient to obtain acceptable survival rates of the captive raised legged partridges. This technique remain very useful for the correct captive breeding of reproducers, since artificial incubation bypasses the effects of natural selection and, inevitably, subjects reared partridges to biasing effects (Bagliacca et al. 2004).

Conclusions

Other raising and/or adapting techniques must be studied and tested in the future with the aim to obtain acceptable survival rates for the released captive raised red-legged partridge.

Table - One-way ANOVA By group (observations or Sum Wgts: 14+14=26).

<table>
<thead>
<tr>
<th>Incubator</th>
<th>Parents</th>
</tr>
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<tbody>
<tr>
<td>Mean</td>
<td>Standard Error</td>
</tr>
<tr>
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References