# Avifauna of Bridges in Co. Offaly

*Bridge over Silver River in Kilcormac, Co. Offaly*


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# TABLE OF CONTENTS



# INDEX OF FIGURES



# INDEX OF TABLES

## 1. PREFACE

Following the publication of *Bridges of Offaly County: an Industrial Heritage Review* (Hammond, 2005), suggestions were made to follow this up with a survey of the natural heritage value of bridges. Studies elsewhere have shown that bridges are a valuable habitat for certain species of birds and bats. Also, small-scale studies of the Dipper *Cinclus cinclus* populations in the rivers and streams in the vicinity of the Slieve Blooms have been ongoing for several years. In 2007, funding was made available through Laois and Offaly Heritage Offices (via the respective County Councils and the Heritage Council) to undertake bird and bat survey work on a sample of bridges in Cos. Laois and Offaly. This reports on the bird element in respect of this work.

I am extremely grateful to Catherine Casey (Laois Heritage Officer) and Amanda Pedlow (Offaly Heritage Officer) for undertaking this project, and supporting the work throughout.

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Particular thanks also go to all those landowners that allowed permission to cross their land to access bridges, especially Lord Rosse who allowed free access to bridges in Birr Castle Demense, and to all those that pointed me in the direction of bridges I would otherwise have struggled to find.

Alex. Copland
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## 2. INTRODUCTION

Recent studies (Shiel, 1999; Smiddy & O'Halloran, 2004) demonstrated bridges are important for a variety of wildlife. In terms of birds, two species use bridges regularly: Dipper (*Cinclus cinclus*) and Grey Wagtail (*Motacilla cinerea*). Grey Wagtail are often found at a variety of water edge habitat, but Dippers are unique in their dependence upon well-oxygenated (and unpolluted) watercourses which their main food (stream-bed invertebrates) need (Perry, 1986; Snow & Perrins, 1998).

Dippers build dome-type nests (similar to that of the Wren *Troglodytes troglodytes)* usually with the entrance above running water. Natural sites include crevices in rock faces, waterfalls, amongst tree roots or overhanging vegetation or built into river banks (Tyler & Ormerod, 1994). However, many Dippers exploit artificial sites for nest building, and bridges of the correct design and construction are widely used; indeed may be better than natural sites for successful breeding (Tyler & Ormerod, 1994). In Ireland, research that has included an evaluation of the use of bridges by Dippers (Perry, 1983; Perry & Agnew, 1993; Smiddy at al., 1995), suggest that between 83% and 94% of Dippers use bridges for nesting. Bridges are clearly very important nesting habitats for Dippers in Ireland.

The actual construction of a Dipper nest varies depending upon where it is located. If there are small holes in the bridge, with little room for additional nest material, then a small nest cup mat be all that is present. However, where the nest is built on a flat platform, the structure can be considerable. Common nest locations include crevices in stonework (Figure 1.1), on ledges, especially the flanges of girders (Figure 1.2), on stones jutting out from the bridge (Figure 1.3) or in Ivy cladding a bridge (Figure 1.4).

**Fig 1.1 Dipper nest in bridge cavity**
*Weir Bridge, River Little Brosna*

**Fig 1.2 Dipper nest on girder flange**
*Lacca Bridge, Delour River*

**Fig 1.3 Dipper nest on protruding stone**
*Annagh Bridge, Delour River*

**Fig 1.4 Dipper nest in Ivy**
*Bridge in Kilcormac, Silver River*

## 3. SURVEY METHODOLOGY

Within time and resource constraints of this project, it was not possible to survey all bridges within Cos. Laois and Offaly. A sampling strategy was therefore adopted. It was considered that approximately 50 bridges could be visited per county, and that bridge selection should be based on sampling entire watercourses. This approach allows a bridges over varying river habitat types, from narrow, fast-flowing (eroding) upland streams to wider, slower-flowing (depositing) lowland rivers.

In Offaly, four watercourses were initially selected for survey (River Camcor, River Little Brosna, Silver River and Clodiagh River (the part in Co. Offaly). An additional 11 bridges, on the eastern side of the Slieve Bloom Mountains around Kinnity and Clareen (where initial Dipper studies had been undertaken), were also included. In total, 72 bridges were considered for survey work.

The *Bridges of Offaly County: an Industrial Heritage Review* (Hammond, 2005), was consulted, and all bridges included for the selected rivers. Additional bridges were located by referencing Ordnance Survey Ireland *Discover Series* maps and from surveys in the field.

Fieldwork involved at least one early- and one late-season visit. Early visits were conducted between April and mid-May; late visits between mid-May and the end of June. An assessment of the suitability of the river and bridge at each site for breeding Dippers was carried out, and short notes on the bridge structure were also made. Bridges were thoroughly inspected for bird breeding activity, including under arches or spans, abutments and parapets. Records were also made of target bird species (Dipper and Grey Wagtail) in the vicinity of the bridge, along with any other bird species demonstrating behaviour that might suggest breeding or nesting at the bridge site. The presence of any old or inactive nests was also recorded.

## 4. RESULTS

The survey data collected for each individual bridge is given below. Data are arranged by watercourse from source to end. Where names are known, they are given along with (in brackets) Laois Industrial Archaeological Record (LIAR) codes (where known), townland and grid reference. Townlands are taken as the closest place name to the bridge from the Ordnance Survey Ireland *Discover Series* maps.

**River Camcor:**

Chain Bridge (035-030; Birr Castle Demense; 2057 2049)
Single-span wire suspension footbridge. River apparently suitable for Dipper, but bridge not suitable. No signs of breeding Dipper, nor any other bird species

Un-named (035-036; Birr Castle Demense; 2054 2049)
Single concrete span supported by metal girders. River and bridge both apparently suitable for Dipper, but no breeding evidence recorded. Old Grey Wagtail nest present.

Un-named (035-008; Birr; 2059 2046)
Triple-span masonry arch bridge. River and bridge both suitable for Dipper, with recent nest (possibly from 2007) present. No other breeding evidence for other bird species recorded.

**Bagnall's Bridge** (035-063; Birr; 2061 2046)
Metal footbridge. River apparently suitable for Dipper, but bridge not suitable. Location exposed with easy access in town park, so no improvements of bridge recommended. No other breeding bird species noted.

**Oxmantown Bridge** (035-011; Birr; 2062 2047)
Triple-span masonry arch bridge. River and bridge both apparently suitable for Dipper, although ledges could be provided to increase opportunities for breeding. No evidence of breeding Dippers. Old Robin nest present.

**Elmgrove Bridge** (035-012; Birr; 2067 2049)
Triple-span masonry arch bridge, named as '*Newbridge Street Bridge*' in bridges survey. River and bridge both suitable for Dipper, with active nest recorded (also one here in 2006). Grey Wagtail breeding in vicinity of bridge (nest not found).

**Springfield Bridge** (035-014; Clonoghil Lower; 2080 2046)
Double-span masonry arch bridge, widenende on upstream side with concrete spans. River and bridge both suitable for Dipper, with several nests present. None active in 2007, but breeding recorded here in 2006. Active Grey Wagtail nest present (along with several old nests) and old Wren nest noted.

**Fortel Bridge** (035-015; Long Island; 2099 2043)
Single concrete span with fenced parapet. River and bridge probably okay for Dipper, but provision of additional ledges is recommended. No evidence of breeding Dipper or any other bird species noted.

Un-named (036-025; Killinure; 2132 2054)
Single-span masonry arch bridge. River probably suitable for Dipper, and bridge apparently suitable, but no evidence of breeding recorded. Old Wren nest present.

**Carrig Bridge** (036-006; Kyle; 2160 2058)
Single-span masonry arch bridge. River and bridge both suitable for Dipper, with active nest present (also active in 2006). Old Wren nest also noted.

**Drumcullen Bridge** (036-008; Knockbarron; 2177 2061)
Triple-span masonry arch bridge. River apparently suitable for Dipper, but additional ledges could be provided on bridge. Old Grey and Pied Wagtail nests recorded.

Un-named bridge (036-009; Moneyguyneen; 2190 2066)
Single concrete span with fenced parapet. River apparently suitable for Dipper, but bridge unsuitable due to completely smooth rendering of underside. Provision of ledges is recommended. No evidence of breeding bird species.

**Castletown Bridge** (036-010; Moneyguyneen; 2200 2062)
Double-span masonry arch bridge. River apparently suitable for Dipper, but bridge could be improved for Dipper by addition of ledges. Old Wren nest present.

Un-named (036-026; Kinnity Castle; 2202 2060)
Metal footbridge in poor state of repair with incomplete deck. River apparently suitable for Dipper, but bridge not so. Due to state of bridge, addition of measures to improve bridge for Dipper is not recommended. No other bird species noted.

Un-named (036-023; Kinnity Castle; ??)
Footbridge recorded in bridge survey, but could not be located. Not surveyed.

Un-named (036-024; Kinnity Castle; 2203 2056)
Single-span masonry arch bridge. River and bridge both apparently suitable for Dipper, with (possibly) one very old Dipper nest noted. Old Grey Wagtail and Wren nests also present.

**Coneyburrow Bridge** (036-012; Castletown and Glinsk; 2208 2047)
Very high single concrete span, supported by metal girders and with underside of sheet metal. River and bridge apparently suitable for Dipper, but span may be too high for Dipper to use. No other breeding bird activity recorded.

Un-named (??; Castletown and Glinsk; 2208 2046)
Single concrete span with timber log sides. Forms access to private house, and not included in bridges survey. River apparently suitable for Dipper, but bridge may be too low for use as a nesting site. No other breeding bird species noted.

Un-named (??; Castletown and Glinsk; 2212 2043)
Double concrete span. River apparently suitable for Dipper, but provision of additional ledges on bridge is recommended. No evidence of breeding bird species recorded.

**River Little Brosna**
**New Bridge** (029-013; Clonragh and Glaster; 2017 2090)
Five-span masonry arch bridge. River and bridge both suitable for Dipper, with one old Dipper nest present. Active Grey Wagtail and Old Wren nest also recorded.

**Derrinsallow Bridge** (035-002; Derrinsallow; 2032 2079)
Triple-span masonry arch bridge. River and bridge both suitable for Dipper, but no evidence of breeding activity. Old Grey Wagtail and Wren nests present.
Un-named (??; Derrinsallow; 2032 2079)
Single span masonry arch bridge over mill laid. Watercourse (mill race) and bridge both suitable for Dipper, with active nest present. Old Dipper and Blackbird nests also recorded.

**Croghan Bridge** (035-006; Croghan; 2054 2056)
Triple-span masonry arch bridge. River apparently suitable for Dipper, but underside of arches rendered smooth – ledges need to be provided. No other breeding birds species noted.

Un-named (035-061; Birr Castle Demense; 2053 2055)
Triple-span masonry arch bridge. River and bridge both apparently suitable for Dipper, but no breeding evidence recorded. Old Wren nests present.

**Riverstown Bridge** (035-028; Riverstown; 2053 2035)
Five-span masonry arch bridge. River probably suitable for Dipper, but underside of bridge arches rendered smooth – ledges need to be provided. No evidence of any breeding bird species recorded.

**Sharavogue Bridge** (038-003; Sharavogue; 2057 1965)
Single-span masonry arch bridge. River probably unsuitable for Dipper (too deep and slow-flowing). Underside of bridge inaccessible, therefore not fully surveyed. No signs of any breeding bird species recorded, but bridge not fully surveyed.

**Brosna Bridge** (042-031; Brosna; 2080 1939)
Single-span masonry arch bridge. River probably unsuitable for Dipper (too deep and slow-flowing) and underside of bridge rendered smooth. No evidence of breeding bird species recorded.

Un-named (042-003; Brosna; 2083 1937)
Metal girder bridge (for disused railway). River probably unsuitable for Dipper (too deep and slow-flowing), but bridge apparently okay. No evidence of breeding bird species recorded.

Un-named (042-041; Drumakeenah; 2101 1918)
Single concrete span. River apparently suitable for Dipper, but ledges could be provided under bridge to provide Dipper nesting sites. No evidence of breeding bird species recorded.

Un-named (042-024; Loughanavatta; 2109 1904)
Single-span masonry arch bridge. River apparently suitable for Dipper, but ledges could be provided to improve nesting opportunities for Dipper. No evidence of breeding bird species recorded.

Un-named (042-021; Mount St. Joseph; 2095 1905)
Single-span masonry arch bridge, with arch split by single concrete pillar. River apparently unsuitable for Dipper, although bridge looks okay. No evidence of breeding Dipper recorded, but old Wren nest present.

**Milltown Bridge** (042-019; Milltown; 2070 1909)
Double-span masonry arch bridge. River probably unsuitable for Dipper, but bridge looks okay. No evidence of breeding Dippers recorded, but old Grey Wagtail nest present.

Un-named (??; Gortcreen; 2044 1918)
Double-span masonry arch bridge. River and bridge both apparently suitable for Dipper, but no evidence of breeding recorded. Old Wren nest present.

Un-named (??; Gortcreen; 2043 1917)
Single-span masonry arch bridge. River and bridge both apparently suitable for Dipper, but no evidence of breeding bird species recorded.

**Weir Bridge** (042-014; Druminduff; 2036 1916)
Triple-span masonry arch bridge. River and bridge both suitable for Dipper, with one recent nest (possibly active in 2007) recorded. No other breeding bird species noted.

**Silver River**

**Macartney's Aqueduct** (023-003; Derrycarney; 2138 2216)
Triple-span masonry arch aqueduct (carrying Grand Canal over river). River apparently suitable for Dipper, but underside of bridge may be too wet to for Dipper nesting. No evidence of breeding bird species recorded.

Un-named (023-019; Lumcloon; 2138 2201)
Metal girder bridge. River apparently suitable for Dipper, but bridge not suitable (too open). No breeding bird species recorded.

**Lumcloon Bridge** (023-006; Lumcloon; 2139 2198)
Double concrete span bridge. River and bridge both apparently suitable for Dipper. No evidence of breeding bird species recorded.

Un-named (023-020; Lumcloon; 2139 2197)
Metal girder bridge. River and bridge both apparently suitable for Dipper, but no evidence of breeding noted. Old Grey Wagtail, Wren and Swallow nests recorded.

Un-named (??; Lumcloon; 2140 2195)
Metal girder bridge (and metal girder footbridge immediately adjacent). River probably okay for Dipper, but neither bridge suitable. No evidence of any breeding bird species recorded.

**Millbrook Bridge** (023-008; Lumcloon; 2135 2188)
Single-span masonry arch bridge. River apparently suitable for Dipper, but additional ledges could be provided under bridge to increase nesting opportunities for Dipper. No breeding bird species recorded.

Un-named (023-021; Stonestown; 2127 2174)
Metal girder bridge (with single concrete span bridge immediately adjacent). River not suitable for Dipper, not either bridge. No evidence of breeding bird species recorded.

**Wooden Bridge** (031-001; Aghagoogy; 2127 2143)
Double-span masonry arch bridge. River and bridge both apparently suitable for Dipper, but no breeding evidence noted. Old Grey Wagtail, Wren and Swallow nests present.

**Barnaboy Bridge** (031-002; Kilnagall; 2175 2148)
Single concrete span bridge. River apparently suitable for Dipper, but ledges need to be provided for Dipper nesting sites. No evidence of Dipper breeding noted, but old Swallow nest present.

Un-named (031-003; Kilcormac; 2183 2142)
Double-span masonry arch bridge. River and bridge both suitable for Dipper, with active nest present (also here in 2006). Old Wren nest also recorded.

Un-named (031-021; Kilcormac; 2184 2141)
Single concrete span footbridge. River apparently suitable for Dipper, but bridge unsuitable. Very small and open, so any improvements for Dipper not recommended. No evidence of breeding bird species recorded.

Un-named (031-006; Kilcormac; 2186 2141)
Double concrete span bridge. River apparently suitable for Dipper, but ledges (or modification of existing ledges) required to encourage breeding Dipper. No breeding bird activity noted.

Un-named (??; Ballyboy; 2204 2140)
Double-span masonry arch bridge. River apparently suitable for Dipper, but arches of bridge probably too low for nesting. No evidence of breeding bird species recorded.

**Ballynacarrig Bridge** (032-001; Cappagowlan; 2226 2136)
Triple-span masonry arch bridge. River and bridge both suitable for Dipper, with active nest present (also here in 2006). Old Wren nest also present.

Un-named (??; Soldier's Hill; 2248 2127)
Single concrete span bridge. River and bridge both apparently suitable for Dipper, but no breeding evidence recorded. Old Grey Wagtail nest present.

**Ardara Bridge** (032-006; Cadamstown; 2230 2090)
Single-span masonry arch bridge, in very poor/dangerous state of repair (and difficult to access). River and bridge both apparently suitable for Dipper, but no breeding evidence noted. Probable old Wren nest present (high up on arch – impossible to get close enough to be certain of identity).

Un-named (037-001; Cadamstown; 2227 2085)
Single-span masonry arch bridge. River and bridge both apparently suitable for Dipper, but underside of bridge inaccessible, so not surveyed. No bird species recorded using bridge.

Un-named (037-003; Magherabane; 2237 2072)
Set of concrete pipes carrying unsurfaced track over river. Not suitable for Dipper.

## Clodiagh River

**Rahan Bridge** (016-008; Rahan; 2257 2256)
Single-span masonry arch bridge. River and bridge both apparently suitable for Dipper, but no evidence of breeding noted. House Sparrow colony in ivy under arch and old Wren nests present.

**Charleville Aqueduct** (016-020; Kilgortin; 2286 2249)
Triple-span masonry arch bridge carrying canal over river. River and bridge both apparently suitable for Dipper, but no evidence of breeing recorded. Active Grey Wagtail nest present.

**Annamoe Bridge** (016-025 Kilgortin; 2291 2244)
Triple-span masonry arch bridge. River and bridge both suitable for Dipper, with odl nest present (although no signs of recent use). Old Swallow nest also recorded.

**Mucklagh Bridge** (016-029; Mucklagh; 2311 2228)
Triple-span masonry arch bridge. River and bridge both suitable for Dipper with recent nest present (very difficult to access and see, so uncertain if active in 2007). Active Grey Wagtail nest also recorded.

Un-named (016-053; Mucklagh; 2310 2228)
Single concrete span bridge. River apparently suitable for Dipper, but ledges needed to be provided to encourage Dippers to breed (although may not be necessary due to proximity of Mucklagh Bridge). No evidence of breeding Dipper, but old Swallow nests present.

Un-named (??; Clonagh West; 2308 2209)
Double-span masonry arch bridge. River apparently suitable for Dipper, but provision of ledges would improve chances of Dippers breeding at site. No evidence of breeding Dipper, but old Wren nest present.

**Clonad Bridge** (024-005; Clonad; 2313 2194)
Single masonry arch and one concrete span. River and bridge both apparently suitable for Dipper, with old nest present. Old Grey Wagtail and Swallow nests also recorded.

**Gorteen Bridge** (025-006; Gorteen; 2340 2171)
Triple-span masonry arch bridge. River and bridge both suitable for Dipper, with at least four old Dipper nests recorded. Old Grey Wagtail nest also present.

**Additional Bridges**
In addition to the main survey sites/bridges above (selected on a watercourse basis), some additional bridges were also included in the survey due to proximity of these sites to the main survey sites listed. As with the main survey sites, the bridge name is given in **bold**, followed in brackets by: OFIAR Code (if known); townland and Grid Reference. All watercourses are relatively small, and no names are recorded on the OS *Discovery Series* maps.

**Glenafelly Bridge** (039-007; Glenafelly; 2202 2013)
Single-span masonry arch bridge. River and bridge apparently suitable for Dippers, although provision of additional ledges would likely be of benefit. No evidence of breeding Dipper and one, very old nest present: possibly Wren.

Un-named (??; Cumber Upper; 2198 2023)
Single concrete span with concrete abutments. River apparently suitable for Dipper, but bridge requires ledges to provide nesting oppoirtunities. No evidence of any breeding bird species recorded.

**Ballyshane Bridge** (036-014; Ballyshane; 2185 2041)
Single-span masonry arch bridge. River and bridge both suitable for Dipper, with one old nest (active in 2005) present. No other bird species noted.

**Clonfosse Bridge** (036-007; Ballincur; 2174 2054)
Single-span masonry arch bridge with arch fully rendered on underside. River probably too narrow at bridge for Dipper, and bridge not suitable. No evidence of breeding bird species recorded.

Un-named (??; Hundredacres; 2193 1997)
Single-span masonry arch bridge. River probably too small for Dipper, and arch of bridge very low so probably not suitable for nesting. No evidence of any breeding bird species recorded.

**Ahagurty Bridge** (039-006; Longford; 2171 2009)
Single-span masonry arch bridge. River and bridge apparently suitable for Dipper, although provision of additional ledges may encourage nesting. No evidence of Dipper breeding noted, but old Wren nests present.

**Lofus Bridge** (039-001; Derrybeg; 2148 2023)
Single-soan masonry arch bridge. River and bridge suitable for Dipper with nest (possibly 2007) present. Old Wren nests also recorded.

**Breaghmore Bridge** (036-015; Bellhill; 2145 2035)
Double-span masonry arch bridge. River and bridge both apparently suitable for Dipper, although provision of additional ledges may encourage breeding. No evidence of breeding Dipper recorded, but old Grey Wagtail nest present.

**Knockarley Bridge** (039-010; Newtown; 2160 1996)
Single-span masonry arch bridge. River and bridge apparently suitable for Dipper, although provision of additional ledges may encourage nesting. No evidence of Dipper breeding noted, but old Grey Wagtail and Wren nests present.

**Pass Bridge** (036-005; Pass; 2166 2069)
Single-span masonry arch bridge. River and bridge both apparently suitable for Dipper, but no breeding evidence recorded. Old Wren nest present.

## 5. DISCUSSION

### 5.1 Bird Species of Bridges in Co. Offaly

A total of 69 bridges were surveyed (one of the survey sites, a footbridge on the River Camcor, could not be located; two of the survey sites (Sharavogue Bridge on the River Little Brosna and the bridge over the Silver River in Cadamstown) could not be accessed underneath for survey work), and evidence of eight bird species potentially using bridges as breeding sites was recorded (see Table 5.1). Dipper nesting was confirmed at 15 (22%) of these bridges. Grey Wagtail, including unidentified wagtail nests, were present at 16 (23%) sites, Wren at 22 (32%), Swallow at 6 (9%) and nests of Pied Wagtail, Robin, Blackbird and House Sparrow recorded at one bridge each. Pied Wagtail were recorded near several bridges, and they probably accounted for one or more of the Grey Wagtail nests (inactive wagtail nests are very difficult to allocate to definite species. The use of bridges by Robin (which nested in a tussock of grass on a parapet ledge outside one bridge) and House Sparrow (a colony of at least seven nests was recorded amongst thick ivy on the side and another one bridge) were the only species not also recorded during studies in Cork and Waterford (Smiddy & O'Halloran, 2004).

**Table 5.1 Bird Species recorded (by river) during survey**

| River | Number of Bridges | Dipper | Grey Wagtail | Wren | Swallow | Other Species |
|---|---|---|---|---|---|---|
| **Camcor** | 18 | 4 (3) | 4 | 5 | | Pied Wagtail<br>Robin |
| **Little Brosna** | 15 | 3 (2) | 3 | 5 | | Blackbird |
| **Silver** | 17 | 2 (2) | 3 | 5 | 3 | |
| **Clodiagh** | 8 | 4 (1) | 4 | 2 | 3 | House Sparrow |
| **Other/Unknown** | 11 | 2 (1) | 2 | 5 | | |
| **Total** | **69** | **15 (9)** | **16** | **22** | **6** | |

**NOTE:** For Dipper, the number refers to the total number of bridges where nests were present. The number in brackets refers to the total number of active nests.

The remainder of this discussion focuses on the use of bridges by Dipper, since this is the main bird species dependent upon bridges to provide nesting opportunities, and conservation measures targeted at this species will likely have benefit for other bridge-nesting bird species (notably Grey Wagtail).

### 5.2 Bridge-nesting Dipper Desnities

The density of bridges with Dippers is shown in Table 5.2. River lengths are approximate, and run from the furthest upstream bridges to the end of the surveyed section (either where it joins another river, or where the last surveyed bridge was located). Densities varied from 0.12 on the River Camcor to 0.06 on the River Little Brosna (due to the approximate river length measurements, accuracy for densities is given in the Table 5.2 to one decimal place).

**Table 5.2 Bridge and bridge-nesting Dipper densities on watercourses**

| River | River length surveyed (km) | Number Bridges | Density (bridges/ km river) | Dipper nests (active) | Density (Dippers/ km river) |
|---|---|---|---|---|---|
| **Camcor** | 24.1 | 18 | 0.7 | 3 | 0.1 |
| **Little Brosna** | 35.4 | 15 | 0.4 | 2 | 0.1 |
| **Silver** | 32.8 | 17 | 0.5 | 2 | 0.1 |
| **Clodiagh** | 16.6 | 8 | 0.5 | 1 | 0.1 |
| **Other/Unknown** | - | - | - | - | - |
| **Total/average** | **108.9** | **58** | **0.5** | **8** | **0.1** |

One study in Scotland, which looked at the breeding density of Dippers on a river system, recorded an average density of 0.85 nests per km of river (Wilson, 1996). However, this varied greatly on different parts of the system, with densities ranging from 0.18 to 1.66 nests per km. Similar studies elsewhere in Europe (summarised in Wilson, 1996), show similar variability in densities. It should be noted that the densities in Table 5.2 do not reflect the density of breeding Dippers on the rivers, since only bridges were surveyed, and that the estimate here will be lower than the population as a whole. In Co. Laois (for work undertaken in conjunction with this survey), densities ranged from 0.4 Dippers/km river to zero, averaging 0.2 Dippers/km for the study as a whole. The data collected for this study in Co. Offaly suggest that the densities recorded here are at the lower end of the scale.

## 5.3 Suitability of Bridges for Dippers

If breeding densities of Dippers are low, as suggested here, then it may be worth considering how to increase the population. With such a large proportion of the Irish population dependent upon bridge sites for nesting (Perry, 1983; Perry & Agnew, 1993; Smiddy at al., 1995), and with bridges potentially offering a better nesting habitat than natural sites (Tyler & Ormerod, 1994), the provision of nesting sites at bridges can be a simple, rapid and effective approach for increasing numbers (Tyler & Ormerod, 1994).

Table 5.3 shows the number of bridges where the habitat (i.e. the river system and bridge structure) are apparently suitable for breeding Dippers. A bridge consisting of concrete pipes, or one that has a very low span will not be suitable for Dippers irrespective of the river. It also shows the number of sites where habitat and the bridge itself are suitable for nesting Dippers. Finally, it shows the actual number of bridges with Dipper nests and the occupancy rate by Dippers of suitable sites.

Overall, the occupancy of sites where habitat and bridge is suitable is moderate, with 16 out of 29 sites (55%) having evidence of nesting Dippers (in Laois, this figure is 75%). However, 18 of the 47 bridges surveyed are not suitable for Dipper, despite being located on apparently suitable river stretches, and having the right structural types for Dippers to nest.

**Table 5.3 Suitability of bridges for Dippers**

| River | Number of Bridges | No. where habitat suitable | No. where habitat and bridge suitable | No. Dipper nests | Occupancy (%) of suitable sites |
|---|---|---|---|---|---|
| **Camcor** | 18 | 11 | 6 | 5 | 83 |
| **Little Brosna** | 15 | 10 | 7 | 3 | 43 |
| **Silver River** | 17 | 9 | 6 | 2 | 33 |
| **Clodiagh River** | 8 | 8 | 6 | 4 | 67 |
| **Other/Unknown** | 11 | 9 | 4 | 2 | 50 |
| **Total** | **69** | **47** | **29** | **16** | **55** |

The only suitable bridge that is unused on the River Camor is in Birr Castle Demense. It may be that there is too much disturbance at this bridge for use by Dippers; indeed another apparently suitable bridge on the River Little Brosna in the Demense is also unused. There are, however, regular sightings of Dipper on the rivers here, suggesting that they may be nesting within the Demense, but at a non-bridge site(s) where disturbance is not a factor.

Another of the unused bridges on the River Little Brosna is Derrinsallow Bridge, where a Dipper nest is located immediately adjacent to the bridge on the mill laid. The remaining two suitable bridges on the River Little Brosna are located together near Gortcreen. It may be that the river here is actually unsuitable for Dipper – the two bridges immediately downstream are both over very slow-flowing stretches of river where there are few riffles. As a result, the water is likely to be poorly oxygenated and the aquatic invertebrates that make up the Dippers diet are likely to be at lower densities.

The lower stretches of the Silver River, downstream of Kilcormac, tends to be slow flowing and somewhat canalised, especially in the bog areas. These stretches of river are generally unsuiatable for Dipper, and it is probably that the three apparently suitable but unused bridges in this river section occur at sites where the watercourse bed is suitable for Dipper, but stretches immediately up-and down-stream are not, hence the lack of Dipper useage. Similarly, the two unused bridges on the Clodiagh River are also both on the lower end which may not be wholly suitable for Dipper.

## 6. CONCLUSIONS AND RECOMMENDATIONS

The data from this survey is very restricted in area. Nevertheless, within the survey area, there are many bridges that are important for breeding birds. However, the main function of bridges is not to provide bird nesting habitats, but to provide infrastructure. This primary role of bridges, coupled with increasing demands on Ireland's infrastructure, will often mean that wildlife conservation is a minor consideration (if it is considered at all) when bridge assessments are carried out. Clearly, the functional maintenance of bridges is essential., However, modifying, repairing or replacing bridges can be undertaken with little impact on wildlife depending upon the nature of the work. It is therefore recommended that those working on bridges within the county are provided with training in identifying Dipper nests, and also in appropriate measures to safeguard existing sites.

The timing of bridge maintenance work outside the bird breeding season (for Dipper, this would be March to August) will limit any impacts on breeding populations. Furthermore, where bridges have been used as nesting sites, the simple replacement of nesting ledges or boxes can easily bee incorporated into any maintenance work. Identification of Dipper nests is relatively easy, since they are big, obvious structures (see Figs 1.1 – 1.4).

As well as maintaining the suitability of bridges for existing nesting sites, there is also the opportunity to increase the number of suitable bridges. Where habitat requirements meet those of the Dipper (in terms of river quality and bridge structure) the simple addition of nesting ledges or boxes could increase the Dipper population in the area. River stretches where all suitable bridges are occupied, but where there are additional bridges that could be modified to benefit Dipper can be targeted. Similar priority could also be afforded to unsuitable bridges occurring on a river system where bridges both upstream and downstream are being used. From this survey, four bridges on the River Camcor, three on the River Little Brosna, one on the Silver River and two on the Clodiagh River meet these requirements. A second phase of work could then target the remaining eight bridges identified in this survey. Even if Dippers do not use such nesting ledges, they may be of benefit to other species such as Grey Wagtail. Annex 1 contains details for the provision of nesting boxes and ledges for Dippers. This could easily be adapted and circulated to all those involved in bridge maintenance throughout the county.

A full survey of breeding Dippers on a selection of the watercourses studied (looking for bridge and non-bridge nesting territories) would be useful in evaluating and monitoring any work undertaken.

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## ANNEX 1: DIPPER NEST BOX AND PLATFORM

Two designs for providing nesting sites for Dipper are illustrated below. Both designs can be made from exterior grade (marine) plywood or from timber planks 225mm (9") wide and 25mm (1") thick (if timber is used, it should be treated with a non-toxic wood preservative (such as *Sadolin*)).

Artificial nest sites should be located high enough above the water level so that there is no risk of the nest getting washed away by high water levels. Such sites will often be used during winter by roosting birds, so winter water level should also be a consideration. They should also be positioned away from ledges where predators, such as Otter, Mink or Rat cannot get access to the nest.

Both designs require sturdy fixings to the structure of the bridge. In all cases, positioning should be carefully considered so as not to damage the bridge structure. Holes in brackets or back-boards should be lined up with appropriate fixing points on the bridge (such as gaps in stonework with solid, stable mortar) and fixed in place using screws with masonry plugs before attaching them to the box/platform.

**1: Nest Box**

This open-fronted nestbox (Fig 1) can be used where there is no cover above the proposed site (e.g. on the outside of a bridge parapet or where the bridge deck may be open). For ease of fitting, a back can be added to the box, made from a sheet of plywood or hardboard, or small metal brackets can be positioned as appropriate. A lip, no more than 50mm (2") high, can be added to the front of the box.

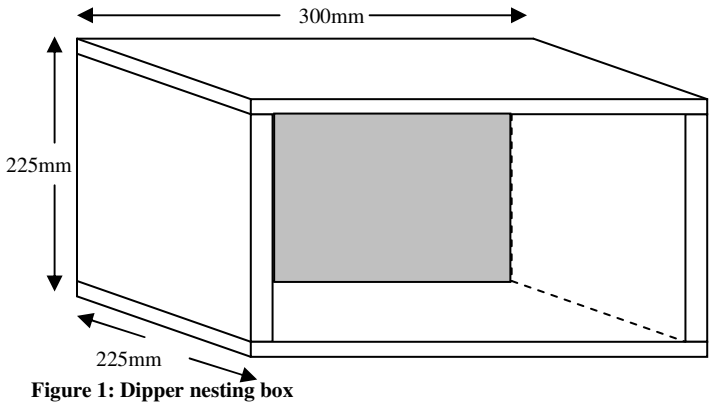


**Figure 1: Dipper nesting box**

**2: Nest Platform**

The platform (Fig 2) is designed for use under bridges where it will be sheltered from the weather. Its shape allows it to be fitted to vertical pillars or abutments, the underside of horizontal spans, or anywhere along the curves of an arch (Fig 3). The boards should all be the same shape and size. Depending upon the location, fixing can either be with a timber backboard (as illustrated) or with metal brackets (also illustrated – dotted lines). Similarly, the addition of brackets may be needed to support the boards depending upon position of fixing.

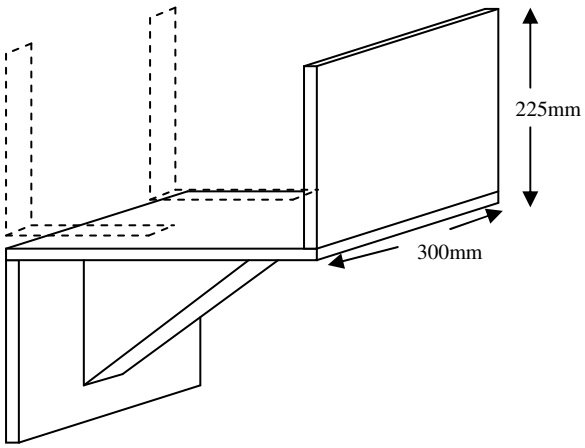


**Figure 2: Dipper nesting platfrom**

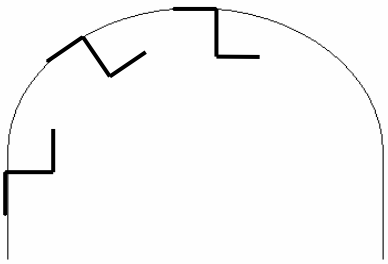

**Figure 3: Siting of platforms under arch**