NOTORNIS

is the journal of the Ornithological Society of New Zealand (Inc.)

Editor: B. D. Heather,
10 Jocelyn Crescent
SILVERSTREAM

Volume 32 **Part 4** **December, 1985**

DISTRIBUTION OF YELLOWHEADS (Mohoua ochrocephala) IN NEW ZEALAND

By P. D. GAZE

ABSTRACT

Historical records show that Yellowheads were once present in most forest habitats of the South Island and Stewart Island but they have become less widespread over the last 100 years. Disappearance from some areas was rapid at the end of the last century but Yellowheads survived in other forests until quite recently. Reasons for this decline should be investigated in the hope that appropriate management may prevent this species from becoming endangered.

INTRODUCTION

The Yellowhead (*Mohoua ochrocephala*) belongs to the subfamily Malurinae, which on the New Zealand mainland also includes the Whitehead (*Mohoua albicilla*), Brown Creeper (*Finschia novaeseelandiae*) and the Grey Warbler (*Gerygone igata*). With the exception of the ubiquitous Grey Warbler, all three species are associated mainly with forest and are frequently found in small very vocal flocks. The Whitehead is restricted to the North Island and some offshore islands (Falla *et al.* 1979), where it has in places adapted to exotic plantations and seral vegetation. The Brown Creeper occurs in the South Island and Stewart Island, and Yellowheads are now found only in the South Island. Brown Creepers are characteristically found in forests of simple structure such as high-altitude beech (*Nothofagus*) and mature exotic plantations (*Pinus* spp., *Pseudotsuga menziesii* and *Larix* spp.). The Yellowhead is confined to native forest, where its already disjunct distribution has become even more restricted in recent years. This study was initiated by the Ornithological Society of New Zealand to record the present distribution of Yellowheads and to compare this with historical records. Members contributed many of the records directly from notebooks or through their contributions to the Society's Bird Mapping Scheme (Bull *et al.* 1985).

METHOD

The distribution of Yellowheads is discussed by regions as shown in Fig. 1. When locality names are used they are followed by the relevant 10 000 yard grid square in brackets. All records, including many not referred to specifically in the text, are filed by square number with the Society's Recording Scheme.

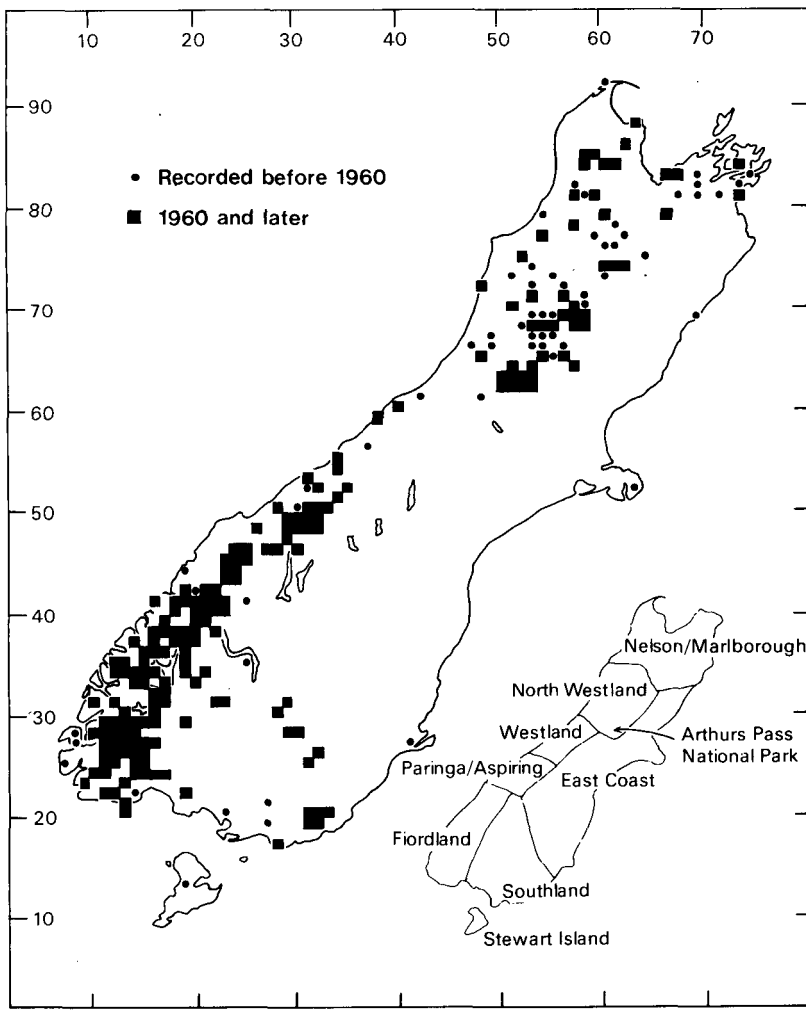

FIGURE 1 — Distribution of Yellowheads

DISTRIBUTION

Nelson/Marlborough

The reduction in the range of Yellowheads has been most dramatic in this region. Today the species is almost absent, although early collectors had little trouble obtaining specimens. In the 1890s, Buller collected Yellowheads from Cape Farewell (6092) and Woods collected at Pelorus Bridge (6982). During the 1920s and early 1930s, Stead obtained specimens from the Nelson area and O'Connor from Gowan Bridge (5977). Yellowheads must have begun to disappear from their former range by the 1920s because Moncrieff (1925) recorded that they had apparently vanished from the forests around Nelson.

North of the Buller River, records exist from a number of localities where Yellowheads were seen regularly up to the 1950s (K. Westbrook, pers. comm.). Trends in the distribution of the species are difficult to establish for areas that are seldom visited; however, in recent years several ornithologists have traversed this heavily forested area without seeing Yellowheads (R. Buckingham, R. Jackson, P. Lusk and K. Walker, pers. comm.). None were recorded by DSIR ornithologists in the southern part of Big Bush (6177) during hundreds of visits at all times of year between 1962 and 1973 (R. Taylor and B. Thomas, pers. comm.). Yellowheads were recorded until 1975 in regular visits to Flora Stream (6184) and Cobb Valley (6084). Apart from a sighting of one bird near the Flora Saddle in 1984, there have been no recent records from this area despite frequent visits by naturalists. In 1978 a single bird was seen in the hills behind Nelson (6683; A. Parrott, pers. comm.).

In two areas, however, the birds have been reliably seen on several occasions over the last few years: Little Wanganui Saddle on the Wangapeka Track (5781) and 70 km northeast on the bush edges of Pikikiruna Range above Abel Tasman National Park (6286). This latter location is historically interesting because it is where H. Guthrie-Smith studied and photographed the Yellowhead (Guthrie-Smith 1936). If Yellowheads still breed in the Nelson region, these may be the only two localities.

Yellowheads were once widespread throughout the forested areas of Marlborough and the Richmond Range, and Forster collected the type specimen in 1773 from Queen Charlotte Sound (7483). According to Handly (1896) Yellowheads were common in Marlborough, but never in large flocks. In 1942, writers to the *Marlborough Express* reported Yellowheads as common 30-40 years previously in various localities in the inner Sounds and parts of Richmond Range, although they were no longer present. Oliver (1930) recorded that Yellowheads were in forested areas of Marlborough but had disappeared from D'Urville Island. The species did not decline suddenly from all areas of Marlborough because, during the 1950s, Nevil Matthews (pers. comm.) recorded large flocks from Leatham River (6475). D. V. Zumbach (pers. comm.) saw Yellowheads in the upper Wairau (6274) on one occasion during the mid-1960s. In recent years, two sightings have been made in the Richmond Range, one at Lake Chalice (6679; Guest 1975) and another on the Whangamoa Saddle (6783; Guest 1976). In 1970, Yellowheads were possibly heard on Mt Robertson (7381; S. Kennington, pers. comm.). The only evidence that Yellowheads might still breed in Marlborough comes from a report of five birds near the summit

of Mt Stokes in Queen Charlotte Sound (7384). These birds were reported by Bob Ryan and Peter Brady, who saw and heard them in the company of Brown Creepers on 12 March 1985. In November 1985, I also saw these birds.

North Westland

The former presence of Yellowheads in Nelson Lakes National Park is well known. Moncrieff (1925) described Yellowheads at Lake Rotorua (6076) as being the second most common bird after the Tui (*Prosthemadera novaeseelandiae*). Yellowheads were still plentiful in the 1930s, when Guthrie-Smith saw them, and in 1944 Stidolph (1971) found six birds in 350 acres of forest at Gowan Bridge (5977). At Lake Rotoiti, Alex McConochie believed that Yellowheads had almost disappeared by the 1920s, and yet D. Cummings found the species plentiful in the Speargrass and Howard Valleys in the mid-1950s (Bull 1965). DSIR ornithologists found none during numerous visits to the Travers, Speargrass, Maud and Howard Valleys between 1962 and 1975 (R. H. Taylor, pers. comm.). Yellowheads were, however, occasionally encountered in the Travers, Sabine and D'Urville Valleys up until the 1970s. Zumbach (1965), referring to the D'Urville River (6073 and 6074), said that Yellowheads could be heard frequently at certain times of the year but were not often seen. Kikkawa (1966) did not find Yellowheads during seven days in the same area at the head of Lake Rotoroa in 1961, and DSIR orniithologists did not record them during more than 120 visits to the lower D'Urville Valley and Mt Misery (including over 6000 five-minute bird counts) since 1973. The last report of Yellowheads within the Park was from the Sabine Forks (6074) in 1977 (B. Enting, pers. comm.).

A similar decline occurred in the beech forests surrounding Reefton and Lewis Pass. In 1910, "coveys of Yellowhead" were recorded from the Inangahua Valley (O'Reagan 1966). J. Creighton (pers. comm. to J. R. Jackson) observed Yellowheads frequently in the Maruia Valley between 1930 and 1935 but observed his last bird in that locality near the treeline on Mt Crosscut (5672) in 1938. The same observer and others regularly recorded Yellowheads from Lewis Pass and the upper Maruia, with Creighton seeing one on the west face of Faerie Queen (5871) in 1950. In January 1984, Dean Buzan (pers. comm.) heard a Yellowhead at three localities on the West Bank of the Maruia River (5671). Yellowheads were reported from the Lewis Pass road (5868 and 5869) until the mid-1970s (J. R. Jackson, pers. comm.). The species persisted through the 1960s at nearby Lake Daniells (5770), where Zumbach (1972) reported flocks of up to 20 birds, and in April 1984, G. Harrow saw three Yellowheads there and another near Lake Christabel (5669).

I know of only three records from the Paparoas. In the 1960s one was recorded near Punakaiki (4872; Grant 1972) and in 1979 another at Hawkes Crag (5275) near the Buller River. In 1973 Cowlin (1974) reported the species from the headwaters of the Otututu River (5173). Penniket (1955) and Onley (1980) did extensive bird research in these forests and failed to record Yellowheads. During the mid-1970s, ornithologists from DSIR spent well over 200 person days in the forests of the eastern Paparoas and southern Victoria Range south to Lake Hochstetter. During this period the only Yellowhead encountered was at Merrijigs (5371).

Yellowheads have been recorded from beech forest south from Springs Junction to the Taramakau and Hurunui Rivers. Large flocks of up to 200 birds were recorded by Smith (1888) around Lake Brunner, and good numbers persisted in the Upper Grey, Robinson and Ahaura Rivers through to the 1950s (J. R. Jackson, pers. comm.). Since then, reports have been infrequent and of few birds, although in 1982 Marion Lane (pers. comm.) recorded Yellowheads from the junction of the Wainihinihi and Taramakau Rivers (4865).

The dramatic loss of Yellowheads from this region during the past 30 years is made more apparent by extensive ornithological research in recent years by DSIR, Wildlife Service and Forest Service staff, who recorded no Yellowheads (Morse 1981).

Arthur's Pass

Arthur's Pass National Park is probably the most northerly place where Yellowheads are present in sustainable numbers. The species is occasionally encountered in the tributaries of the Waimakariri River on the eastern side of the Park, particularly the Mingha, Sudden, Hawdon and Poulter River valleys (50-5362). The abundance and habitat use of Yellowheads within the Park have been studied by Read (1984), who reported some contraction in their range. Sightings from the Otehake River, Arthur's Pass township and the Taramakau River during the late 1960s and early 1970s have apparently not been repeated since. Although apparently absent from the Puketeraki Range, Yellowheads have recently been reported from the Hurunui Valley (Jackson 1974).

Westland

Yellowheads are rare in Westland. In the 1860s, Douglas reported them as common (Pascoe 1957), but since then few historical records exist between the Taramakau River in the north and Paringa in the south. Hamilton (1878) recorded Yellowheads from Okarito (3859). Cockayne and Teichelmann (1930) noted that Yellowheads had been present at Franz Josef and Fox Glaciers (3756) at the turn of the century but had disappeared by 1930. In 1949 a single Yellowhead was reported from near Lake Ianthe (4261; J. Penniket, pers. comm. to J. R. Jackson). During the 1960s, isolated reports occur from Mt Hercules (4060) and the Manakaiaua (3454; O'Donnell & Dilks 1983). In 1976, D. Onley (pers. comm.) saw a Yellowhead at Okarito, and R. Laing (pers. comm.) saw the species in 1982 and B. King (pers. comm.) in 1983, as recorded by O'Donnell & Dilks (1983). In the early 1980s, during a survey of birdlife in over 200 000 ha of forest from the Whataroa River south to the Karangarua River, Yellowheads were not found (G. McSweeney, pers. comm.). Detailed surveys of Hunts Beach, Makawhio and Bruce Bay State Forests in 1983-84 by Wildlife Service did not record Yellowheads. In April 1985 a single bird was recorded by DSIR staff working in dense kahikatea forest in Hunts Beach State Forest (R. Stewart, pers. comm.).

Paringa/Mt Aspiring

Yellowheads occur sparingly at Lake Paringa (3153; McKenzie 1961) and elsewhere in this vicinity. In 1983/84, Yellowheads were only rarely encountered by Wildlife Service staff working in silver beech (*N. menziesii*) forest in the hill country around Lakes Paringa and Moeraki (C. O'Donnell, pers. comm.). In July 1984 I heard one bird on the north bank of the Paringa

River 3 km above the highway (3252). Reports of Yellowheads through the Haast Pass (3149) and in the tributaries of the Makarora River occur frequently in Classified Summarised Notes and in personal correspondence. Yellowheads have been recorded several times recently in the Landsborough River, including a flock of 18 birds seen by Bruce Robertson (pers. comm.) between Kea Flat and Hinds Flat (3451). The birdlife of Mt Aspiring National Park has been well researched in recent years and Yellowheads were found to be widely distributed in many of the eastern catchments but nowhere were they common (Child 1981).

Fiordland

Yellowheads are widespread through Fiordland but appear to be more common in the beech forests to the north and east. This opinion was also stated by Dorizac (1972), who decribed Yellowheads as abundant in the tall forests of Fiordland but less so in the southwest. Data in the Ornithological Society's Bird Mapping Scheme (Bull *et al.* 1985) show a similar trend with a greater proportion of records listing Yellowheads from the squares at the head of Lake Te Anau. Yellowheads were on Resolution Island (0828) early this century (Henry 1908). Reischek (1884, 1887) recorded Yellowheads as common along the coast of western Fiordland, but there are few recent records and many of the contributors to the mapping scheme did not find them. Yellowheads were recorded in Dusky Sound (1128) by Robertson (1982), and Kim Morrison (pers. comm.) recorded them as well distributed along the Lake Hauroko-Dusky Sound-Lake Manapouri track in October/November 1984. Reid (1970) described the birds of the Takahe study area in the Murchison Mountains in central Fiordland: Yellowheads were recorded on nine of 22 visits between 1949 and 1969. On only one of those visits was the species common enough to be called "quite plentiful".

Southland

A stronghold of the species must be in the forests of the Routeburn Valley to the head of Lake Wakatipu (2140). Many records have been submitted from this area both to the Bird Mapping Scheme and through personal communications. In November 1983, Yellowheads were the most common bird in the red beech (*N. fusca*) of the Caples Valley (2139; G. P. Elliott, pers. comm.).

Elsewhere in Southland the distribution is disjointed but closely follows the distribution of beech forest. Examples of these isolated populations are: Longwood Range (1922; Bull *et al.* 1985), Rowallan State Forest (1724; E. Spurr, pers. comm.), Takitimu Mountains (1929; Nilsson 1972) and the Eyre Mountains (2231; Sutton 1972). Recent records have also been obtained from the Blue Mountains (3226; A. Austin and M. Foord, pers. comm.), the headwaters of the Waikaia River (2830, etc.), Leithen Bush (2928) and Tautuku Forest (3219, etc.; Buckingham 1982). Early this century Fulton (1907) described Yellowheads as quite scarce in the Catlins, but these birds have continued to survive in low numbers to the present day.

Early records show the species to have been present in the vicinity of Invercargill (2719; Philpott 1919). Fulton (1907) recorded them as being found sparingly at Wyndham (2721). As recently as 1979, Yellowheads were found at Otara (2817).

East Coast

Few records exist of Yellowheads in Canterbury and Otago. A specimen in the Canterbury Museum was collected near Kaikoura (6969) by Buller in 1891. A nest was recorded by Potts (1869) from the headwaters of the Wilberforce River (4861). Hope (1927) recorded that Yellowheads had almost disappeared from Canterbury but that 25 years before they had been plentiful in flocks of up to 30 birds in the 'main bush'. The Canterbury Museum holds a number of Yellowhead eggs collected from Banks Peninsula and Akaroa (6352) about the turn of the century. Turbott (1969) recorded the comments of a Mrs Duxbury that Yellowheads survived in small numbers in the forest remnants of Banks Peninsula up to about 1900 but disappeared shortly after this. The forests in this area had been largely destroyed by fire between 1859 and 1863. The last record for the Peninsula is a specimen collected by Waite from Akaroa in 1910 and now in the Hokitika Museum.

Several specimens collected from the vicinity of Dunedin (4127) by W. Smyth at the turn of the century are now in the Auckland and Canterbury Museums. Fulton (1907) described Yellowheads as having once been common at Taieri and around Dunedin but having disappeared by the time of writing. Large flocks were recorded near Dunedin by Bathgate (1922), but these disappeared with removal of the forest. As late as 1946 Yellowheads were recorded from the bushed valleys still existing behind Dunedin (Dunedin Naturalists Field Club 1949).

Stewart Island

Yellowheads on Stewart Island were regarded by Fulton (1907) as still being common, and Oliver (1930) included Stewart Island in the distribution of Yellowheads on the basis of a report from Cockayne (1909). Williams (1962) disputed this report as he doubted Cockayne's ornithological ability and the lack of other sightings or museum specimens. However, a long-time resident, Roy Traill, claimed in 1962 in a letter to J. R. Jackson that both he and his elder brother had seen one. In another letter (1963), Traill stated that they are no longer seen. Both men were familiar with the species from South Island bush. Two Stewart Island specimens are in the Otago Museum collection.

DISCUSSION

The distribution of Yellowheads had been considerably reduced over the past 100 years. Unlike other species such as the Saddleback (*Philesturnus carunculatus*), Kokako (*Callaeas cinerea*) and Piopio (*Turnagra capensis*), which declined rapidly towards extinction with the introduction of predators, the Yellowhead has declined gradually in both distribution and flock size through to the present day. There is evidence for a decline in Yellowheads in all parts of the country except eastern Fiordland. The most noticeable decline has been from the north of the South Island south to the Hurunui and Taramakau Rivers (Fig. 1). This process has been progressive, with the birds in the beech forests of the Grey River being the last to disappear. The decline may be continuing further south, affecting the Yellowhead in Arthur's Pass National Park. The virtual absence of Yellowheads between Arthur's Pass and Paringa corresponds well with the absence of beech forest (which has not recolonised this area since the last glaciation). Although there is good evidence that Yellowheads were once common in podocarp and hardwood forests of Westland

and Stewart Island, most recent records are from beech forests. Pascoe (1957) quoted Charles Douglas describing Yellowheads as "... at one time very common all over the country but now they must be very rare — cats again — I haven't seen one in years". Douglas was presumably referring to South Westland, where he lived from 1868 to 1900. This apparent affinity with beech forests is again emphasised in Waitutu State Forest, where in 1983 G. P. Elliott (pers. comm.) found Yellowheads in the silver beech (*N. menziesii*) but not in adjacent podocarp forests.

In 1888 Buller described the Yellowhead as being "... quite as common as the preceding species [Whitehead] formerly was in the North" (Turbott 1967). The Whitehead was once abundant throughout the North Island but disappeared from large areas with the clearing of the forest (Oliver 1930) and has not returned to the northern parts of the island. However, Buller's statement implies that the reduction of Whiteheads was more widespread and dramatic than this. South of the Coromandel Peninsula, Whiteheads are now common and in some areas have colonised exotic forest and seral vegetation (pers. obs.).

This decrease in numbers and retraction of the range towards the south, which occurred with Whiteheads in the North Island, is happening with Yellowheads in the South Island. The reason for the gradual decline of Yellowheads is not known. On the east coast, loss of habitat may be the major cause, but the birds have also disappeared from large areas of intact forest in Nelson and North Westland. The introduction of rodents, mustelids and cats cannot be entirely blamed for the decline because the Yellowhead still survives in parts of Fiordland which have large numbers of some of these predators. Disease may be an explanation but no information exists.

Research on Yellowheads, preferably at Arthur's Pass, may reveal whether their distribution is still diminishing or whether they are beginning to stabilise and perhaps recover. The cause of the reduction should also be investigated, with a view to management of the species if necessary. If the number of nests being preyed on is affecting the population significantly, the use of nest boxes may be justified.

ACKNOWLEDGEMENTS

Most of the data presented have been provided by members of the Society through their contributions to the Bird Distribution Mapping Scheme and the Classified Summarised Notes of *Notornis*. Two ornithologists, Dick Jackson and Peter Child, have been particularly helpful in supplying information on the distribution of Yellowheads. Their knowledge comes from an enthusiasm for venturing into the mountains and actively searching for such rarer species. This paper has also benefited from local knowledge provided by a younger generation of ornithologist, in particular Graeme Elliott, Kim Morrison, Colin O'Donnell and Andrew Read. I thank them for their efforts and their willingness to share this knowledge. Colleagues in Ecology Division helped with the manuscript.

LITERATURE CITED

BATHGATE, A. 1922. Some changes in the fauna and flora of Otago in the last sixty years. NZ J. Sci. Tech. 6(2): 65-99.
BUCKINGHAM, R. 1982. Distribution of Yellowhead (Mohoua ochrocephala) in the Catlins State Forest Park. Forest Service Unpubl. Report, Invercargill, July 1982.
BULL P.C.; 1965. Birdlife. *In* Host, E. (ed.) Nelson Lakes National Park, A handbook for visitors. Nelson Lakes National Park Board.
BULL, P.C.; GAZE, P.D.; ROBERTSON, C.J.R. 1985. The atlas of bird distribution in New Zealand. The Ornithological Society of New Zealand Inc.
CHILD, P. 1981. Birdlife of Mt Aspiring National Park. National Parks Scientific Series No. 4.
COCKAYNE, L. 1909. Report on a botanical survey of Stewart Island. A report presented to both houses of the General Assembly by command of His Excellency.
COCKAYNE, L.; TEICHELMANN, E. 1930. The glacial Scenic Reserves of Westland. Department of Lands and Survey Report.
COWLIN, D. 1974. Classified Summarised Notes. Notornis 21: 373.
DORIZAC, P. 1972. Classified Summarised Notes. Notornis 19: 79.
DUNEDIN NATURALISTS FIELD CLUB, 1949. Classified Summarised Notes. Notornis 2: 52.
FALLA, R.A.; SIBSON, R.B.; TURBOTT, E.G. 1979. The new guide to the birds of New Zealand and outlying islands. Auckland: Collins.
FULTON, R. 1907. The disappearance of New Zealand birds. Trans. NZ Inst. 40: 485-500.
GRANT, P. 1972. Classified Summarised Notes. Notornis 19 (supp): 79.
GUEST, R. 1975. Classified Summarised Notes. Notornis 22: 337.
GUEST, R. 1976. Classified Summarised Notes. Notornis 23: 349.
GUTHRIE-SMITH, H. 1936. Sorrows and joys of a New Zealand naturalist. Dunedin A.H. & A.W. Reed.
HAMILTON, A. 1878. The district of Okarito, Westland. Trans. NZ Inst. 11: 386-391.
HANDLY, J.W. 1896. Notes on some species of New Zealand birds. Trans. NZ Inst. 28: 360-367.
HENRY, R. 1908. Appendices to the Journals of the New Zealand House of Representatives 2: 18.
HOPE, D. 1927. Disappearance of native birds in settled districts of North Canterbury. NZ J. Sci. Tech. 9: 184-189.
JACKSON, J.R. 1974. Classified Summarised Notes. Notornis 21: 373.
KIKKAWA, J. 1966. Population distribution of land birds in temperate rainforest of southern New Zealand. Trans. Roy. Soc. NZ 17: 216-277.
McKENZIE, R. 1961. Classified Summarised Notes. Notornis 9: 252.
MONCRIEFF, P. 1925. Yellowheads and other birds at Lake Rotorua. (sic). Emu 25: 21-27.
MORSE, P. 1981. Wildlife values and wildlife conservation of Buller and North Westland. NZ Wildlife Service, Fauna Survey Unit Report No. 29.
NILSSON, R.J. 1972. Classifed Summarised Notes. Notornis 19 (supp): 79.
O'DONNELL, C.F.J.; DILKS, P.J. 1983. Trends in forest bird populations in Westland, New Zealand, 1860-1983. NZ Wildlife Service, Internal Report.
OLIVER, W.R.B. 1930. New Zealand Birds. Wellington: A.H. & A.W. Reed.
ONLEY, D.J. 1980. Bird counts in lowland forests in the western Paparoas. Notornis 27: 335-362.
O'REAGAN, R. 1966. The effect of stoats on native birds in Westland. Forest and Bird 162: 4.
PASCOE, J. 1957. Mr Explorer Douglas. Wellington. A.H. & A.W. Reed.
PENNIKET, J.G. 1955. Notes on some birds of the western Paparoas, Westland. Notornis 6: 171-175.
PHILPOTT, A. 1919. Notes on the birds of South-western Otago. Trans. NZ Inst. 51: 216-224.
POTTS, T.H. 1869. On the birds of New Zealand. Trans. NZ Inst. 2: 40-78.
READ, A.F. 1984. The abundance and habitat use of Yellowheads (*Mohoua ochrocephala* Gmelin 1789) in the Hawdon Valley, Arthurs Pass National Park. BSc (Hons) thesis, Zoology Department, Otago University, Dunedin.
REID, B. 1970. Birds of the 'Takahe Study Area'. Notornis 17: 56-61.
REISCHEK, A. 1884. Notes on New Zealand ornithology. Trans. NZ Inst. 17: 187-198.
REISCHEK, A. 1887. Recent explorations north of Chalky Sound, west coast of Otago. Trans. NZ Inst. 20: 441.
ROBERTSON, B. 1982. Brown Duck and other birds seen at Dusky Sound. Notornis 29: 78.
SMITH, W.W. 1888. On the birds of Lake Brunner district. Trans. NZ Inst. 21: 214-224.
STIDOLPH, R.H.D. 1971. The birds around us. Masterton: Hedleys Bookshop.
SUTTON, R.R. 1972. Classified Summarised Notes. Notornis 19 (supp): 79.
TURBOTT, E.G. 1967. Buller's birds of New Zealand. Christchurch: Whitcoulls.
TURBOTT, E.G. 1969. *In* Knox, G.A. (ed.) The natural history of Canterbury. Wellington A.H. & A.W. Reed.
WILLIAMS, G.R. 1962. Extinction of the land and freshwater inhabiting birds of New Zealand. Notornis 10: 15-32.
ZUMBACH, D. 1965. Honorary Ranger's Report. On file with Department of Lands and Survey, Nelson.
ZUMBACH, D. 1972. Classified Summarised Notes. Notornis 19 (supp): 79.

P.D. GAZE: *Ecology Division, DSIR, Private Bag, Nelson*