

DISTRIBUTION AND STATUS OF HARLEQUIN DUCKS
(Histrionicus histrionicus) AND COMMON LOONS (Gavia immer)
ON THE TARGHEE NATIONAL FOREST

IDAHO CONSERVATION DATA CENTER

by

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ABSTRACT

From June to August, 1991, eight streams on the Targhee National Forest were surveyed for Harlequin Duck presence and breeding activity. Surveys were conducted by walking or driving along streams or walking within the streambeds themselves while searching for ducks. Posters requesting reports of Harlequin Ducks were placed at trailheads, campgrounds, and tourist facilities. One brood of Harlequin Ducks was observed on Teton Creek (South Fork) on the Teton Basin Ranger District (RD). Monitoring of Teton, Darby, Big Elk, and Bitch creeks for breeding activity should continue. Additionally, during the above period of time, 22 lakes and reservoirs were surveyed for the presence of Common Loons. Surveys were performed by walking along the shores of water bodies while alternating periods of movement with periods scanning the water with binoculars. Several lakes were surveyed via canoe. Loons were observed during this study on Henry's Lake (Island Park RD), Loon Lake (Ashton RD), and Palisades Reservoir (Palisades RD). Additionally, loons were observed by Idaho Department of Fish and Game (IDFG), United States Forest Service (USFS), and Wyoming Game and Fish (WGFD) employees on Henry's Lake, Island Park Reservoir, Arizona, Arizona (south), Grassy, Indian, Moose, and Two Ocean lakes, and Lake of the Woods (Ashton RD). Although territorial behavior was observed, no successful reproduction by loons was documented on the Targhee National Forest during this study.

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INTRODUCTION

Harlequin Ducks (Histrionicus histrionicus) are small sea ducks inhabiting both the Atlantic and Pacific coasts of North America. The Pacific population of Harlequin Ducks winters on the Pacific coast whereas its breeding range extends through the mountainous regions of northwestern Wyoming to northern Canada and Alaska, and through the Cascade and Coast ranges of the Pacific Northwest south (historically) to the Sierra Nevada of California (Bellrose 1980). The breeding population in the Rocky Mountains is very small and within Idaho, it is estimated to contain less than 100 birds (Cassirer and Groves 1990a, 1991). Due to low population densities, general lack of biological information regarding this species, and this species' affinity for relatively undisturbed mountain streams with high water quality, this seldom observed waterfowl was classified by Region 1 of the United States Forest Service (USFS) as a Sensitive Species in 1987 (Reel et al. 1989). In 1989 the Idaho Department of Fish and Game (IDFG) classified it as a Species of Special Concern. Region 4 of the USFS finalized its designation of the Harlequin Duck as a Sensitive Species in 1990 (Moseley and Groves 1990).

Harlequin Ducks arrive on their breeding grounds in Grand Teton National Park (GTNP) in April or May and begin nesting activity from mid-May to mid-June (Wallen 1987). Drakes usually depart the breeding areas once the hens settle into incubation. Broods are present from mid-July to early September before

departing for their coastal wintering areas. On nesting streams in GTNP, Harlequin Ducks favor low gradient, mountain streams removed from high levels of human disturbance.

The ecology of Harlequin Ducks in northern Idaho has been under investigation since 1987. Initial efforts concentrated on determining distribution, general habitat requirements, and breeding chronology. Subsequent work has focused on habitat use, population dynamics, and breeding biology (Wallen and Groves 1988, 1989; Cassirer 1989; Cassirer and Groves 1989, 1990a, 1991).

Common Loons (Gavia immer) are also classified as state Species of Special Concern and a USFS Sensitive Species (Moseley and Groves 1990). They are known to spend their summers on Idaho lakes and historically were known to breed on at least 12 lakes (Larrison, et al. 1967, Burleigh 1972). However, successful reproduction has not been recently documented in Idaho (Fitch and Trost 1986). Common Loons that nest on the Targhee National Forest are concentrated on a handful of lakes surrounding the southwestern corner of Yellowstone National Park (YNP) in Wyoming. This small population of loons breeds at the highest elevation of any other populations in North America and, consequently, must concentrate breeding activities into the relatively short summer between spring breakup of ice and fall freezing. For a review of Common Loon ecology in North America see McIntyre (1988) and for the area surrounding the Greater Yellowstone Ecosystem see Ritter (1989).

In many regions of North America, Common Loons tend to favor relatively large lakes without undue human disturbance (McIntyre 1988). McIntyre (1983, 1988) outlined three main requirements for territorial loons as: 1) adequate availability of food which may be a product of high prey numbers and high water clarity, 2) nest sites close to deep water that allow for easy entry and exit, provide a view of the territory, and with overhead protection from predators, and 3) sheltered nursery areas for loon chicks away from high wave action, human disturbance, and other loons. Item 1 has subsequently been modified as Parker (1985) has reported loons nesting on fish-less lakes while foraging on other lakes supporting prey. Loons are quite susceptible to disturbance by humans and their breeding success can be substantially reduced by such activities as near-shore fishing, power-boating, and development activities.

With these concerns in mind, the success of the Common Loon population in eastern Idaho relies upon documentation of breeding attempts, timing, and locations so that management policies can be drafted to minimize human impact to this sensitive species.

OBJECTIVES

The objectives of this study were to document the distribution of breeding Harlequin Ducks on the Targhee National Forest as a follow-up to surveys performed during 1990 (Atkinson and Atkinson 1990) and to identify streams supporting successfully reproducing pairs. Additionally, objectives included documentation of Common Loon presence and breeding behavior on lakes and reservoirs on the Targhee National Forest (primarily Idaho).

METHODS

During June, July and August, 1991, I placed posters requesting information on Harlequin Ducks at trailheads, campgrounds, and various other tourist facilities on the Targhee National Forest (Appendix A).

I chose streams on the Targhee National Forest to survey for Harlequin Ducks based upon the information obtained in 1990 surveys (Atkinson and Atkinson 1990). I conducted surveys of streams during June and July by hiking or driving along the streambanks and searching for ducks with binoculars. In the upper reaches of several streams, I was able to walk in the stream channel itself in June. During July and August, low water levels on all streams allowed me to hike completely within the streambed. Harlequin Ducks, especially young, may hide under riparian vegetation. These birds may be missed if the stream is

only surveyed from the bank. Therefore, walking in the stream increases the chances that these individuals will be observed.

I characterized streams surveyed by recording habitat information at 1-km intervals on Harlequin Duck Data Forms (Appendix B). Habitat data consisted of the following variables: stream habitat, substrate, bank composition, overstory age and species, channel type, number of midstream loafing sites present, the presence of undercut banks, and whether vegetative overhang was present. I measured the wetted stream-width and classified the location by ease of human access (Wallen 1987). These data are on file at the Conservation Data Center (formerly Natural Heritage Program) office in Boise, Idaho. I also recorded this habitat information at the site where ducks were observed during the study period.

An effort was made to survey all lentic bodies of water on the Targhee National Forest as well as those bodies laying adjacent to these lands for the presence of Common Loons. During June, July and August, I surveyed lakes and reservoirs through combinations of the following methods: a) by sitting, draped in camouflage netting, on the lakeshore while scanning the water's surface with binoculars and/or spotting scope for loons, b) by walking along lake shores while alternating periods of movement with periods scanning the water's surface with binoculars, c) by driving along lake shores while occasionally stopping to scan or, d) by parallelling the lake shore in a canoe searching for retreating loons and nest sites. Regardless of the method, I

investigated all depressions and mats of vegetation that I sighted that may have been Common Loon nests. Areas where loons were observed were often revisited in the hopes that successful reproduction would be documented.

RESULTS & DISCUSSION

I surveyed a total of eight streams from June to August, 1991 for the presence of Harlequin Ducks (Table 1). Water levels were considerably higher than in 1990 (pers. observ.) which made surveys of some reaches difficult. Forest Service and Idaho Department of Fish and Game employees also surveyed several streams where Harlequin Ducks had been reported in 1990. With the heightened awareness of these unique waterfowl among biologists, birders, and the public in general, and the repeated surveys of previously occupied streams, it was somewhat surprising that only one sighting of this species occurred during the 1991 breeding season.

The single sighting of Harlequin Ducks occurred on 27 July and consisted of a female accompanying two young. I flushed the trio from a run along an undercut bank on the South Fork of Teton Creek approximately 50 m below the intersection of Teton Creek and Devil's Staircase trails. The hen lead the young away with "wuuk-wuuk" calls and the birds quickly negotiated a small rapid disappearing from sight around a bend in the stream. I failed to observe the ducks as I completed my survey of Teton Creek. At the observation site, the stream substrate was cobble,

Table 1. Stream sections and dates surveyed during 1991.

Stream	Dates	Surveyed from	Surveyed to
<u>Palisades RD</u>			
Big Elk Creek	5/22*	T1S,R46E,S3,SW	T1S,R46E,S18,SW
	7/26	T1S,R46E,S3,SW	T1S,R46E,S18,SW
McCoy Creek	7/26	T3S,R46E,S6,SW	T3S,R44E,S19,SE
Pine Creek	7/25	T3N,R44E,S29,SW	T2N,R43E,S12,SW
<u>Teton Basin RD</u>			
Bitch Creek (S.Fk.) T46N,R117W,S17,NW	7/30**	T46N,R117W,S27,SE	
Darby Creek T43N,R118W,S20,SE	6/5***	T43N,R118W,S14,SW	
	6/8	T43N,R118W,S18,NW	
T43N,R118W,S22,NW	6/11***	T43N,R118W,S13,SW	
	7/27	T43N,R118W,S20,SW	
T43N,R118W,S20,SE			
Fox Creek T42N,R118W,S2,NE	6/9	T42N,R118W,S31,SE	
	8/16	T42N,R118W,S31,SE	
T42N,R118W,S2,NE			
Moose Creek T42N,R118W,S35,NE	8/17	T42N,R117W,S19,SE	
	8/17***	T42N,R118W,S28,SE	
T42N,R118W,S29,SE			
Teton Creek (S.Fk.) T43N,R117W,S32,NE	6/9	T44N,R117W,S4,NW	
	6/10	T44N,R117W,S4,NW	
T44N,R117W,S20,SW			
T44N,R117W,S29,NW	6/13***	T44N,R117W,S4,NW	
	7/27	T44N,R117W,S4,NW	
T44N,R117W,S20,SW			

* Performed by Dave Koehler and Ted Chu (IDFG)

** Performed by Debra Patla (USFS) and author.

*** Performed by Debra Patla.

bank composition was tree/shrub mosaic and gravel, the overstory was composed of old-growth Douglas fir (Pseudotsuga menziesii) and Engelmann spruce (Picea engelmanni) with approximately 80% closure. Between overhanging vegetation on the undercut banks, the wetted stream width at this point was only 4 m and contained six loafing sites within 10 m. Approximately 300 m downstream from the observation point the stream meandered through dense willows and active beaver ponds, habitat ideally suited to raising young Harlequin Ducks (Wallen 1987).

The ducklings were small (approximately 10 cm in length) and downy. I noted only slight whitening in their cheeks. This stage of development corresponds to an age of approximately 12-14 days (R. Wallen, pers. comm.). Backdating allowed me to estimate that hatching occurred between July 13 and July 15. This hatching date is similar to that reported for Darby Creek (Teton Basin RD) by Atkinson and Atkinson (1990), for Glacier National Park by Kuchel (1977), Grand Teton National Park by Wallen (1987), and for northern Idaho by Cassirer and Groves (1988, 1989, 1990a). Allowing for a 28-day incubation period (Bengston 1972), I estimated that incubation was initiated at the end of the second week of June. Further backdating with an approximately 13-day egg-laying period suggested that nest initiation began around June 3, a date very similar to the estimated date of nest initiation on Darby Creek (one drainage to the south of Teton Creek) in 1990 (Atkinson and Atkinson 1990).

Harlequin Duck productivity is highly variable from year-to-year and between streams within years (Cassirer and Groves 1991). Therefore, the fact that ducks were only observed on Teton Creek should not necessarily be cause for alarm. In 1990, 10 sightings of Harlequin Ducks were reported on the Targhee National Forest (Atkinson and Atkinson 1990). The streams occupied by birds in 1990 were surveyed during the 1991 field season but the lack of ducks sighted may be accounted for by several reasons including: a) ducks were present but were missed due to high spring runoff, b) surveys were performed after the drakes had departed when hens would be incubating and difficult to observe, and/or c) nesting was unsuccessful on potential breeding streams and these hens departed for their wintering grounds in July or August.

The South Fork of Bitch Creek was surveyed during the brood-rearing portion of July from approximately 800-1000 m above Hidden Corral Basin to approximately 5 km downstream from this landmark. This stream appears to provide excellent high elevation, productive, and low gradient nesting habitat (E. C. Atkinson, D. Patla, pers. observ.).

I collected approximately 0.75 cc of fecal material from the three Harlequin Ducks observed. The material was fresh and was found on stones near the sight from which the birds were flushed as well as on the bank beneath red-osier dogwoods (Cornus stolonifera). I separated this sample under a dissecting scope and noted the presence of stonefly (Plecoptera) parts, beetles (Coleoptera) and various plant material (Table 2).

Table 2. Material identified in approximately 0.75 cc of Harlequin Duck fecal material (South Fork Teton Creek).

Item	Remains	Corresponding Individuals
Plecoptera	One appendage, several appendage parts, & 2 wing pads	1
Coleoptera	Numerous appendage parts	3
Plant material	One stalk	
Moss (Bryophyta)	Various material	
Unidentified		

I surveyed a total of 22 lakes, reservoirs, and marshes for the presence of Common Loons (Table 3). During surveys of each lake, I recorded numbers and species of grebes, cormorants, waterfowl, and shorebirds observed. I observed loons on four of these lakes, whereas WGF and USFS employees observed loons on seven other lakes (all in WY) including Arizona, Arizona (south), Grassy, Indian, Moose, Two Ocean lakes, and Lake of the Woods (Bill Long, Rick Newton, Debra Patla, and Sharon Ritter, pers. comm.)

On two occasions, I observed a single loon in adult plumage loafing and foraging on Big Elk Creek Bay on Palisades Reservoir (Palisades RD). This bay is protected from severe wave action originating in the reservoir, itself, by a berm crossed by Highway 26 and experiences relatively mild levels of boat traffic. Steep, partially vegetated, and inaccessible sides border the bay, thereby providing potential nesting sites and several smaller bays off the main bay could provide nursery areas for young loons. However, the water level of Palisades Reservoir is greatly drawn down by mid-to-late summer (pers. observ.) reducing the chances for successful Common Loon breeding (McIntyre 1983, 1988; Ritter 1989). After observing the loon for three hours on 23 June and one hour on 24 June, I believe that this individual was a solitary nonbreeding adult.

I observed a pair of Common Loons at Loon Lake (Ashton RD) on 3 August. These loons became agitated when I approached the lake shore and as they moved together in open water the male gave

Table 3. Lakes surveyed, dates, and species observed while surveying for Common Loons.

Lake	Date	Species
<u>Ashton RD</u>		
Bear Lake	7/19	Sora (1)
Bergman Res.	7/5	Bufflehead (1 ♀ w/ 8 young; 2 ♀♀)
	8/3	Pied-billed Grebe (1) Mallard (3 adults & 1 ♀ w/6 young) unident. teal (2 ♀♀ w/4 & 5 young) Bufflehead(21 ♀♀ & young) Common Snipe (1 adult w/2 young) Spotted Sandpiper (1)
Cub Lake	7/19	unident. duck (1)
Ernest Lake	7/5	Sora (1)
Horseshoe Lake	7/1	Bufflehead (3 ♀♀)
Indian Lake	7/5	Trumpeter Swan (1 pr) Ring-necked Duck (1 pr)
	8/3	Trumpeter Swan (1 pr) Mallard (4) Blue-winged Teal (1 pr) Ring-necked Duck (1 ♂) Bufflehead (1 young)
Loon Lake	8/3	Common Loon (1 pr) Wood Duck (1 juvenile) unident. duck (1)
Putney Meadows	7/19	Pied-billed Grebe (2) Mallard (1) Ring-necked Duck (12) Lesser Scaup (1 pr) Bufflehead (4 ♀♀)

Table 3 (cont). Lakes surveyed, dates, and species observed while surveying for Common Loons.

Thompson Hole	7/19	Pied-billed Grebe (1) Mallard (1) Ring-necked Duck (1 pr) Bufflehead (1 ♀ w/8 downy young) (1 partially-feathered young)
Steele Lake	7/19	Bufflehead (2 partially-feathered young)
Swan Lake	7/19	American Coot (1) Mallard (1) Ringed-neck Duck (6) Lesser Scaup (3)
<u>Island Park RD</u>		
Harriman State Park Fish Pond	6/29	Cinnamon Teal (2 ♂♂; 1 ♀ w/11 young; 1 ♀ w/8 young) Greater Scaup (2 ♂♂; 2 ♀♀) Lesser Scaup (2 ♂♂; 1 ♀) Bufflehead (1 ♀)
Golden Lake	7/12	Red-necked Grebe [1 pr. w/ nest (1 egg)*] Double-crested Cormorant (3) Trumpeter Swan (1 pr. w/ young) Mallard (3) Gadwall (1 ♀ w/ 5 young) Cinnamon Teal (3) Ring-necked Duck (15) Lesser Scaup (12) Bufflehead (1 ♀ w/ 6 young) Sora (1) Spotted Sandpiper (1 adult w/ 2 young) Wilson's Phalarope (1)

Table 3 (cont). Lakes surveyed, dates, and species observed while surveying for Common Loons.

Silver Lake	6/29	Pied-billed Grebe (1 pr.) Double-crested Cormorant (2) Trumpeter Swan (2 pr.; 1 adult) Canada Geese (14) American Widgeon (2 ♂♂; 3 ♀♀) Lesser Scaup (6) Common Snipe (1 ♂)
Silver Lake	6/30	Red-necked Grebe (2) Double-crested Cormorant (7) Trumpeter Swan (2 pr; 1 adult) Canada Geese (14) Mallard (6; 1 ♀ w/ nest) American Widgeon (5; 1 ♀ w/ nest) Ruddy Duck (2 ♂♂; 1 ♀) Canvasback (1 ♀ w/ 6 young) Ring-necked Duck (7) Lesser Scaup (13) American Coot (11) Common Tern (3) Black Tern (5)
	8/8	Red-necked Grebe (2) Pied-billed Grebe (4 adults w/ 9 young) Am. White Pelican (1) Great-Blue Heron Trumpeter Swan (2 pr. w/ young) Cinnamon Teal (1 ♂) unident. teal (1 ♀ w/ 5 young) American Coot (18)
Elk Creek Res.	6/28	Mallard (5) Gadwall (4) American Widgeon (7) Ring-necked Duck (9) Lesser Scaup (12) American Avocet (18) Ring-billed Gull (12) Forster's Tern (7)

Table 3 (cont). Lakes surveyed, dates, and species observed while surveying for Common Loons.

Henry's Lake		
Gillan Cr. Bay	6/28	Common Loon (1 adult) Red-necked Grebe (6 adults) Am. White Pelican (3) Canada Geese (2 pr.) Mallard (2)
Hope Cr. Bay	6/28	Common Loon (1 immature w/ 1 adult; 1 solitary adult) Red-necked Grebe (7 adults) Black-crowned Night-Heron (3) Trumpeter Swan (1 pr. w/ 3 young) Mallard (6) American Widgeon (7) Ring-necked Duck (3) Lesser Scaup (25) Bufflehead (8) Red-breasted Merganser (2 pr.) Killdeer (2) Franklin's Gull (50) Greater Yellowlegs (3)
	6/29	Common Loon (1 immature w/ 1 adult; 1 solitary adult)
	7/1	Common Loon (1 adult) Red-necked Grebe (4 pr.) Common Goldeneye (1 ♀ w/ 8 young) Red-breasted Merganser (2 pr.)
	7/12	Red-necked Grebe (1 adult; 1 adult w/ 1 young on back) Trumpeter Swan (1 pr. w/ 3 young)
	8/16	Red-necked Grebe (2) Eared Grebe (15) Pied-billed Grebe (1) Cormorant (5) Franklin's Gull (40) California Gull (1) Common Tern (5)
Outlet	7/2	Red-necked Grebe (1 pr., nest, & 1 just fledged young)

Table 3 (cont). Lakes surveyed, dates, and species observed while surveying for Common Loons.

Timber Cr. Bay	6/28	Am. White Pelican (1) Double-crested Cormorant (2) American Widgeon (3) Lesser Scaup (5) Bufflehead (2 ♂♂) Killdeer (1) Franklin's Gull (50)
Island Park Res.		
Dam	6/29	Western Grebe (7 adults) Clark's Grebe (1 adults) Double-crested Cormorant (2) Unidentified teal (2)
West End		
Bay Point	7/12	Western Grebe (5 adults) Horned Grebe (2 adults) Great Blue Heron (1) American Widgeon (1 pr.)
West End Picnic	7/12	Horned Grebe (1 pr. w/ 2 young)
Lone Pine Pt.	7/12	Western Grebe (5 adults, 2 adults each w/ 1 young) Black-crowned Night-Heron (2) Sandhill Crane (2) Lesser Scaup (3)
Scout Pt.	7/12	Western Grebe (2 adults each w/ 1 young) Horned Grebe (1 pr. w/ 1 young)
Swan Lake	6/8	Trumpeter Swan (1 pr.) Mallard (2 pr.) Gadwall (1 pr.) Ring-necked Duck (2 pr.) Lesser Scaup (2 pr.) Bufflehead (3 pr.) Common Merganser (1 pr.) American Coot (3) Black Tern (5)
Sherman Reservoir		Too distant for identification of waterfowl, however, no loons present.

Table 3 (cont). Lakes surveyed, dates, and species observed while surveying for Common Loons.

<u>Palisades RD</u>		
Palisades Res. Bear Cr. Bay	6/23	Western Grebe (7) Am. White Pelican (2) Common Merganser (1 ♀ w/1 downy young)
Big Elk Cr. Bay	6/23	Common Loon (1 adult) Common Merganser (3 ♀♀)
	6/24	Common Loon (1 adult)
Little Elk Cr. Bay	6/23	Common Merganser (1 ♀)
Lower Palisades Lake	7/13	Mallard (5) Barrow's Goldeneye (1 ♀) Common Merganser (1 ♂; 1 ♀) Hooded Merganser (1 ♀)
Upper Palisades L.	7/13	Barrow's Goldeneye (1 ♀) Common Goldeneye (1 f w/ 6 young; 1 ♀ w/ 5 young; 1 ♂) Common Merganser (9 ♀♀, 11 ♂♂)
<u>Teton Basin RD</u>		
McRenold's Res.	6/24	Sandhill Crane (2) Sora (1) Spotted Sandpiper (1)

a tremolo and two yodel calls. The pair then began a circle dance near the north shore. They subsequently split up, one loon loafing on open water while its mate swam to the east end of Loon Lake and began foraging along the marshy margin. From my vantage point, I could see many small trout in the water as the loon performed nine dives averaging 72.2 (SD = 26.2) seconds in duration. In two hours and 15 minutes of observation, I did not note any young loons nor any behavior which would lead me to believe that breeding was successful. Loon Lake is very accessible with camping on both the south and north shores; canoeists, fishermen, and other recreationists use this lake heavily. However, loons have nested on this lake in previous years (Tom Fitch, pers. comm.).

At least four Common Loons were present on Henry's Lake for the first half of the summer. I observed an adult loon foraging along parallel to the shore in Gillan Creek Bay on 28 June. That same day in Hope Creek Bay, I observed three loons (one adult near the west shore and an adult and an immature-plumaged individual further out in the lake). All three birds were making short foraging dives.

On 29 June, I returned to Hope Creek Bay and observed the above trio for approximately three hours before their activities were interrupted by a power boat. Initially, only the adult and immature loon were in sight as they swam north along the west shore of the bay. Both birds were foraging with the adult nearly always diving first followed by the immature-plumaged bird within a few seconds ($x = 5.7$ sec, SD = 3.2, $n = 6$). The dives performed by the adult loon were significantly shorter in duration than those performed by the bird in

immature plumage ($x = 24.1$ sec, $SE = 3.0$, $n = 12$ and $x = 34.4$ sec, $SE = 3.6$, $n = 6$, respectively; $t = -2.215$, $P < .05$). This may have been a function of the younger loon's inefficiency at prey capture, thereby increasing the amount of time it spent pursuing prey.

As the two loons began foraging closer to the mouth of Hope Creek, a second adult loon approached them from the southwest tip of the bay. The two adults subsequently began circling each other while dipping their heads into the water and making short simultaneous dives. This interaction proceeded for approximately three minutes and ended with the single loon chasing the intruding adult toward the main body of Henry's Lake. The single adult followed the retreating two loons at a distance of approximately 200 m as the latter birds swam east and out of the bay. I subsequently lost all loons from view.

From a canoe on 2 July, I observed two adult loons in Hope Creek Bay. One bird was foraging far out in the bay and flew in the direction of the outlet (an area where an IDFG employee had observed an adult loon on 30 June; B. George, pers. comm.). I observed the second bird as it swam from the southwest tip of the bay and began foraging near the inlet. The shore was marshy with many emergent willows and areas of sedges and was relatively undisturbed. This area appeared to be able to provide a suitable nesting site as well as nursery areas for young loons. A search of the shore, however, did not turn up a loon nest.

Loons were present in Hope Creek Bay until 12 July when at dusk I observed a silhouette that appeared to be a loon. Several fly fishermen had observed up to four loons in the bay up until the middle

of July. By this point in the summer, water clarity, as measured with a Secchi disk, had diminished considerably, decreasing from approximately 3.2 m in early July to approximately 0.8 m by mid-month (E. C. Atkinson, unpub. data). This reduction in water clarity was the result of large algal blooms which had occurred in a relatively short period of time. High water clarity is required by Common Loons for successful foraging and, hence, successful reproduction as these birds are visual foragers (McIntyre 1983, 1988). A decrease in clarity may have forced the Common Loons in Hope Creek Bay to find other areas in which to forage and/or spend their time.

CONCLUSIONS

Harlequin Ducks are present in small numbers on the Targhee National Forest and some reproduction does occur. Due to timing of surveys and high water during 1991, I was unable to survey all streams from within the channel when both adults are present and visible (May and June). I, therefore, may have missed sighting ducks on some streams (Big Elk, Bitch, Darby, Fox, and Robinson Creeks, for example) that do contain potential or known breeding habitat. Regardless, the population of successfully breeding Harlequin Ducks on the Targhee National Forest is low.

Common Loons are also present on the Targhee National Forest being concentrated in the area surrounding the southwest corner of YNP. Loons were observed and/or reported on a total of ten lakes, only three of which were within Idaho. Of the latter three lakes (Henry's Lake, Island Park Reservoir, and Palisades Reservoir) only Henry's Lake does not experience extreme drawdown in late summer, and therefore, may provide suitable breeding habitat for Common Loons.

RECOMMENDATIONS

(Harlequin Ducks)

1. Early season surveys (during May and early June) should be performed on Bitch (North and South Forks), Moose and Fox Creeks (Teton Basin RD), Targhee Creek (Island Park RD), Palisades Creek (Palisades RD), and potentially Conant Creek, Fall River (below YNP), Robinson Creek, and the swift portion of Warm River (Ashton RD) to assess whether Harlequin Ducks attempt to breed on these streams.
2. Monitoring of breeding activity, including surveys for adult ducks during May and early June followed by brood surveys during late July and August, should continue on Teton Creek (South Fork), Darby Creek, and Big Elk Creek because Harlequin Ducks are known to settle on these streams.
3. Efforts should be made to reduce the disturbance to the riparian area by livestock on streams including Darby Creek, Big Elk Creek, and Teton Creek during the nesting season.

4. Recreationists using Big Elk Creek, Darby Creek, and South Fork Teton Creek drainages should be encouraged to keep their activities in the riparian area to a minimum. To reduce potential disruption of Harlequin Duck breeding activities, every effort should be made to discourage camping near the streams on Teton, Darby, and Bitch creeks within the Jedediah Smith Wilderness Area.
5. Distribution and placement of Harlequin Duck posters should continue at district offices, trailheads, and other tourist facilities. This is a cost-effective method of increasing public awareness and interest in Harlequin Ducks.
6. Employees of the USFS should be encouraged to survey streams for Harlequin Ducks and fishery and stream inventory crews should be made aware that information regarding this species is actively being sought.

RECOMMENDATIONS

(Common Loons)

1. Surveys of all lakes and reservoirs greater than 4 ha and at elevations below 2000 m on the Targhee National Forest and surrounding areas for nesting loons should be performed during late May and early June. Surveys should be repeated into August to record successful breeding activities and as a method of increasing the probability of observing loons if they are present.
2. The above surveys should be performed by persons with the cooperation of the Targhee National Forest, IDFG, and WGFD in order to make efficient use of field time and to reduce the chance that some lakes are surveyed excessively or not at all.
3. Once loon pairs are observed, plans should be developed which act to reduce the human disturbance to the occupied areas. Educational signs may be the first step in increasing the public's awareness of these sensitive birds. Additionally, the breeding chronology of the observed loons should be documented so that this information may be extrapolated to direct management on lakes with human-influenced water levels.

ACKNOWLEDGEMENTS

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LITERATURE CITED

- Bellrose, F. C. 1980. Ducks, geese, and swans of North America. Stackpole Books, Harrisburg, PA. 540 pp.
- Bengston, S. 1972. Breeding ecology of the harlequin duck, Histrionicus histrionicus, in Iceland. *Ornis. Scand.* 3:1- 19.
- Burleigh, T. D. 1972. Birds of Idaho. The Caxton Printers, Ltd., Caldwell, Idaho.
- Cassirer, E. F. 1989. Distribution and status of harlequin ducks (Histrionicus histrionicus) on the Nez Perce National Forest, Idaho. Cooperative Challenge Cost Share Report to Nez Perce National Forest. IDFG. 13 pp.
- Cassirer, E. F. and C. R. Groves. 1989. Breeding ecology of harlequin ducks (Histrionicus histrionicus) on the Kaniksu National Forest, Idaho. Cooperative Challenge Cost Share Report to Panhandle National Forest. IDFG. 48 pp.
- Cassirer, E. F. and C. R. Groves. 1990a. Distribution, habitat use and status of harlequin ducks (Histrionicus histrionicus) in northern Idaho, 1990. Cooperative Challenge Cost Share Project to Clearwater and Idaho Panhandle National Forests. IDFG. 52 pp.
- Cassirer, E. F. and C. R. Groves. 1990b. A summary of harlequin duck sightings in Idaho, 1989. IDFG. 11 pp.
- Cassirer, E. F. and C. R. Groves. 1991. Harlequin Duck ecology in Idaho: 1987-1990. IDFG & USFS publication. 93 pp.
- Fitch, T. and C. H. Trost. 1986. Nesting status of the Common Loon in Idaho, 1985. Dept. of Biological Sciences, Idaho State University, Pocatello.
- Goudie, R. I. 1989. Historical status of harlequin ducks wintering in eastern North America - a reappraisal. *Wilson Bull.* 101:112-114.
- Kuchel, C. R. 1977. Some aspects of the behavior and ecology of harlequin ducks breeding in Glacier National Park, Montana. M.S. Thesis. Univ. Montana, Missoula, MT. 147 pp.
- Larrison, E. J., J. L. Tucker, and M. T. Jollie. 1967. Guide to Idaho birds. *J. Idaho Academy Science* 5:1-220.
- Larson, J. S. and R. D. Taber. 1980. Criteria of sex and age. pp. 143-202. in S. D. Schemnitz, ed. *Wildlife Management Techniques Manual*, 4th ed. The Wildlife Society. Bethesda, MD.

- Ludwig, J. A. and J. F. Reynolds. 1988. Statistical ecology: a primer on methods and computing. Wiley-Interscience Publication. New York, New York.
- McIntyre, J. W. 1983. Nurseries; a consideration of habitat requirements during the early chick-rearing period in Common Loons. J. Field Ornithol. 54:247-253.
- McIntyre, J. W. 1988. The Common Loon: Spirit of Northern Lakes. University of Minnesota Press, Minneapolis. 228 pp.
- Parker, K. E. 1985. Foraging and reproduction of the Common Loon (Gavia immer) on acidified lakes in the Adirondack Park, New York. MS thesis, SUNY College of Environmental Science and Forestry, Syracuse.
- Ritter, S. A. 1989. Nongame species account; Common Loon (Gavia immer). Nongame Program, Biological Services Section, Wyoming Game and Fish Department, Lander.
- Wallen, R. L. 1987. Habitat utilization by harlequin ducks in Grand Teton National Park. M.S. Thesis. Montana State University, Bozeman, MT. 67 pp.
- Wallen, R. L. 1989. Harlequin duck. pp. 61-62. in T. W. Clark, A. Harvey, C. Groves, and D. Genter, eds. Rare and Sensitive Species of the Greater Yellowstone Ecosystem. Northern Rockies Conservation Cooperative and The Nature Conservancy.

APPENDIX A

Poster requesting reports of Harlequin Duck observations.

ATTENTION WILDLIFE WATCHERS

WE NEED SIGHTINGS OF HARLEQUIN DUCKS

WE NEED YOUR HELP

The Nongame and Endangered Wildlife Program of the Department of Fish and Game is surveying Idaho's mountain streams for harlequin ducks—one of the state's rarest and shyest wildlife species.

We need your help in locating these mountain ducks. Please turn in any sightings you make as soon as possible!

WHO TO CONTACT

Craig Groves
Nongame and Endangered
Wildlife Program
Idaho Dept. of Fish and
Game
Box 25
Boise ID 83707
(208) 334-3402

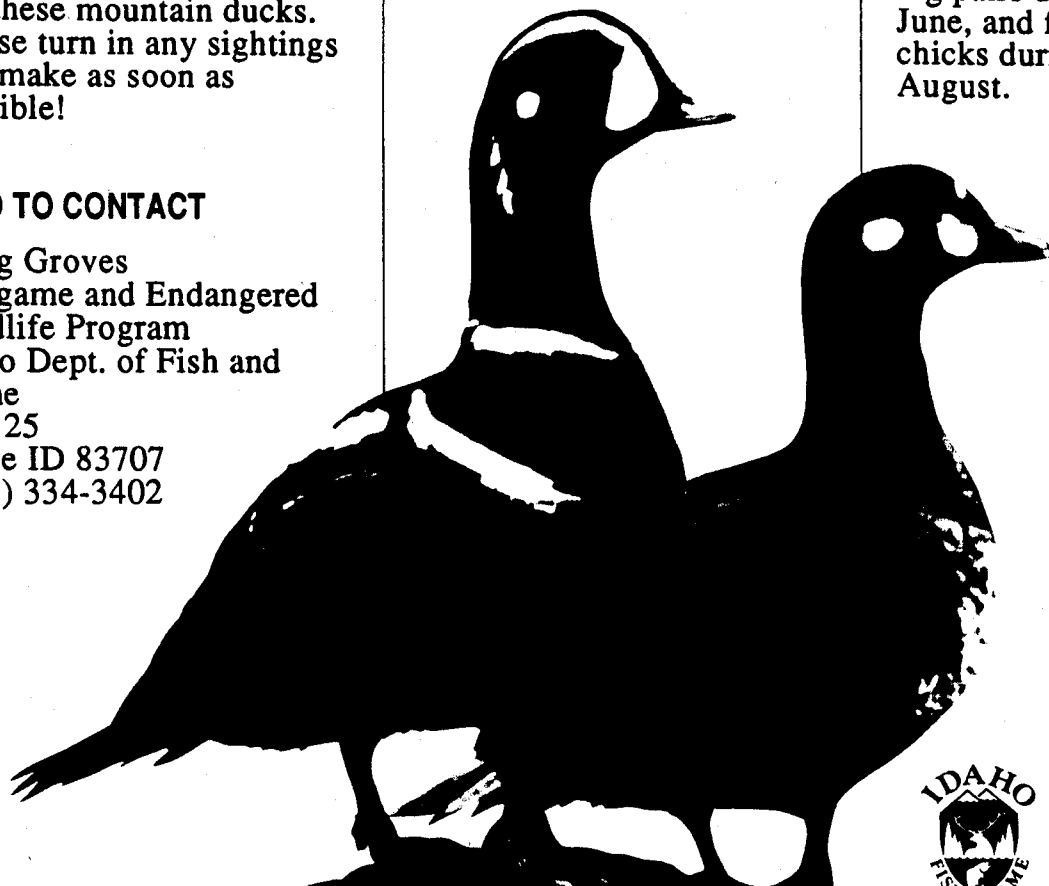
WHERE TO LOOK

Harlequins nest on forested, mountain streams usually 10 yards or greater in width. They prefer streams with good water quality, away from human disturbance, and with dense shrubs along the stream edge.

WHAT TO LOOK FOR

Harlequins are small ducks (16" in length). Males are blueish-gray with rusty sides and various shaped white patches on the head.

Females are light brown with a distinct white spot behind the eye. Look for breeding pairs during May and June, and females with chicks during July and August.



APPENDIX B

Harlequin Duck habitat data form with definitions.

HARLEQUIN DUCK HABITAT DATA FORM

DATE _____ STREAM _____ OBSERVER _____

HARLEQUIN OBSERVATION? Y N TYPE _____ ACTIVITY _____

CIRCLE ONE CIRCLE ONE CIRCLE UP TO TWO

HABITAT SUBSTRATE BANK COMPOSITION

- | | | |
|----------------|------------|----------------------|
| PO POOL | CL CLAY | TR TREES |
| RI RIFFLE | SA SAND | SH SHRUB |
| RU RUN | GR GRAVEL | GF GRASS/FORB |
| PW POCKETWATER | CO COBBLE | MO TREE/SHRUB MOSAIC |
| GL GLIDE | BO BOULDER | BE BEDROCK |
| RA RAPID | BE BEDROCK | SA SAND |
| BA BACKWATER | | SI SILT |
| | | GR GRAVEL |
| | | DE DEBRIS |

OVERSTORY	CHANNEL TYPE	HUMAN ACCESS	COVER (%)
SE SEEDLING	ME MEANDER	AD ADJACENT	N _____
SA SAPLING	BR BRAIDED	NE NEAR	E _____
PO POLE	ST STRAIGHT	AC ACCESSIBLE	S _____
IM IMMATURE	CU CURVED	IN INACCESSIBLE	W _____
MA MATURE			\bar{x} = _____
OG OLD-GROWTH			σ = _____

CIRCLE AS APPROPRIATE

TYPE OF HUMAN ACTIVITY	DEBRIS / 10 M ENTER # OF EACH TYPE	
BO BOATING	BR BRIDGE _____	LOAFING SITES/10M _____
RO ROAD	CB COLLAPSED BR. _____	ISLANDS _____
FI FISHING	RA RAMP _____	STREAM WIDTH (M) _____
HI HIKING	DR DRIFT _____	OVERSTORY SPP. _____
NO NONE		

VEGETATIVE OVERHANG Y N BANK UNDERCUT Y N

UTMN _____ UTME _____

T _____ R _____ S _____ 1/4 _____

COMMENTS _____

Habitat categories and definitions (adapted from Cassirer and Groves 1990a)

STREAM HABITAT

Pool- deep slow water areas.

Riffle- shallow water areas where the water surface is influenced by the stream bottom (whitewater).

Rapid- deep water but water surface still influenced by stream bottom and/or streambank, (whitewater).

Run- deeper than a riffle, no whitewater but velocity greater than 0.3 m/sec., too fast to be a glide or pool.

Pocketwater- a run or riffle with boulders (> 30 cm diameter) which create numerous small pools.

Glide- run areas with velocities < 0.3 m/sec.

Backwater- slow water area out of the main stream channel.

SUBSTRATE

Silt, Sand, Gravel (0.2-7 cm); **Cobble** (8-30 cm); **Boulder** (> 30 cm); **Bedrock**.

BANK COMPOSITION- Composition of both streambanks.

Trees, Shrubs, Grass/forb, Tree/shrub mosaic, Bedrock, Sand, Silt, Gravel, Boulder, Woody debris.

OVERSTORY

Seedling- 1-10 yrs old, < 1.4 m tall; **Sapling-** 10-40 yrs old, > 1.4 m tall, dbh < 13 cm; **Pole-** 40-70 yrs old, dbh 13-23 cm; **Immature-** 70-100 yrs old, dbh 24-36 cm; **Mature-** 100-160 yrs old, dbh 37-51 cm, **Old Growth-** over 160 yrs old or dbh > 51 cm

CHANNEL TYPE

Straight- stream channel linear, structurally controlled by a "V" shaped valley, no movement of channel during peak flow.

Curved- stream channel curves or zig-zags more abruptly than a meander, channel structurally controlled by a "V" shaped valley, no movement during peak flows.

Meander- channel follows sinuous curves, deep pools separated by shallow riffles, appears to shift slightly during peak flows.

Braided- channel located in flat-bottomed valley, midstream bars occur and divide the stream into several intersecting and shifting channels.

HUMAN ACCESS

Adjacent- established area of motorized human activity maintained within 10 m.

Near- established area of motorized human activity maintained within 10-50 m.

Accessible- > 50 m from established area of motorized human activity, accessible by boat or trail.

Inaccessible- > 50 m from established area of motorized human activity, inaccessible by boat or trail.

Habitat categories and definitions (cont)

WOODY DEBRIS

Bridge- log across stream.

Collapsed bridge- log across stream, submerged in the middle of the stream.

Ramp- one end of log in stream, the other end on the bank

Drift- log floating in stream.

LOAFING SITE- Rocks or logs completely surrounded by water suitable for resting sites.

Debris, Loafing sites, and Islands counted within 10 m of harlequin observation or systematic habitat transect.

STREAM WIDTH- Estimated or measured wetted width.

VEGETATIVE OVERHANG- Vegetation over the stream within 30 cm of the water surface.

APPENDIX C. Incidental wildlife observations of interest gained while performing Harlequin Duck and Common Loon surveys.

SPECIES	NUMBER	LOCATION	HABITAT
Horned Grebe (<u>Podiceps auritus</u>):		12 July 1991; Island Park Res., West End (Bay Point) (T12N,R42E,S8,SW):	2 adults.
		12 July 1991; Island Park Res., West End (West End Picnic Area) (T12N,R42E,S8,NE):	2 adults feeding 2 young).
		12 July 1991; Island Park Res., West End (Scout Point) (T12N,R42E,S9,NW):	2 adults feeding 1 young).
Red-necked Grebe (<u>Podiceps grisegena</u>):		2 July 1991; Henry's Lake; Outlet (T14S,R43E,S22,NW):	1 pr., nest w/1 hatched egg, 1 just fledged young.
		12 July 1991; Harriman State Park, Golden Lake (T12N,R42E,S22,NE):	1 pr., nest w/1 egg.
		12 July 1991; Henry's Lake; Hope Creek Bay (T14S,R43E,S19,NE):	1 adult w/1 young on back.
Canvasback (<u>Aythya valisineria</u>):		30 June 1991; Harriman State Park, Silver Lake (T12N,R42E,S35,NW):	1 ♀ with 6 young.
Greater Scaup (<u>Aythya marila</u>):		29 June 1991; Harriman State Park, Fish Pond (T11N,R43E,S6,NE):	2 ♂♂ & 2 ♀♀ (forced copulation between 1 ♂ & 1 ♀) Lesser Scaup (♂♂ & ♀♀ present for comparison).

APPENDIX C (cont.). Incidental wildlife observations of interest gained while performing Harlequin Duck and Common Loon surveys.

SPECIES	NUMBER	LOCATION	HABITAT
Common Goldeneye (<u>Bucephala clangula</u>):		13 July 1991; Upper Palisades Lake (T1N,R45E,S11,NW): 1 ♀ & 6 young, 1 ♂ (eclipse plumage).	
		30 July 1991; Bitch Cr. (South Fork) (T46N,R117W,S17,NW): 1 adult on low gradient portion of stream.	
Barrow's Goldeneye (<u>Bucephala islandica</u>):		13 July 1991; Upper Palisades Lake (T1N,R45E,S11,NW): 1 ♀ & 5 young.	
		13 July 1991; Lower Palisades Lake (T1N,R45E,S9,SW): 1 ♀ or 1 ♂ (eclipse plumage).	
Hooded Merganser (<u>Lophodytes cucullates</u>):		13 July 1991; Lower Palisades Lake (T1N,R45E,S9,SW): 1 ♀.	
Common Merganser (<u>Mergus merganser</u>):		23 June 1991; Palisades Res., Bear Creek Bay (T1S,R45E,S32,NW): 1 ♀ w/1 just fledged downy young on their way to the water.	
		26 June 1991; McCoy Creek (T3S,R45E,S15,SW): 2 ♀♀ w/13 young.	
Cooper's Hawk (<u>Accipiter cooperii</u>):		30 July 1991; Bitch Cr. (South Fork) (T46N,R117W,S27,SE): 1 individual at Hidden Corral Basin.	
Northern Goshawk (<u>Accipiter gentilis</u>):		23 June 1991; Palisades Res., Bear Creek Bay (T1S,R45E,S32,NW): 1 immature in aspen (<u>Populus tremuloides</u>).	

APPENDIX C (cont.). Incidental wildlife observations of interest gained while performing Harlequin Duck and Common Loon surveys.

SPECIES	NUMBER	LOCATION	HABITAT
Flammulated Owl (<u>Otus flammeolus</u>):		14 June 1991; Upper Coffee Pot Campground (T14N,R43E,S34,SW):	1 ♂ singing from dry hillside adjacent to Henry's Fork of the Snake River. Several large Douglas firs (<u>Pseudotsuga menziesii</u>) present in open canopy over snowberry (<u>Symphoricarpos</u>), <u>Vaccinium</u> sp., & pinegrass (<u>Calamagrostis rubescens</u>).
		18 June 1991; Alpine Peregrine Eyrie (T2S,R46E,S27,SE):	2 ♂♂ singing & 1 ♀ mewing.
		22 June 1991; Alpine Peregrine Eyrie (T2S,R46E,S27,SE):	1 ♂ singing & feeding moths to ♀ in cavity.
		23 June 1991; Alpine Peregrine Eyrie (T2S,R46E,S27,SE):	♀ in nest cavity in quaking aspen. Nest tree measurements: DBH = 23 cm, Tree Height = 11 m, Height of Cavity = 5 m, Nest Hole Size = 5 X 5 cm, 80% surrounded by bark, branch-type hole, Orientation = 292°. Cavity approximately 2.5 m below occupied by Red Squirrel (<u>Tamiasciurus</u>). Nearest conifer = Douglas fir w/ DBH = 46 cm, 15 m in height, and 12 m downhill from nest tree. Nest tree stood at the west edge of a meadow vegetated by snowberry, chokecherry (<u>Prunus</u> sp.) surrounded by aspen, Douglas fir, Engelmann spruce (<u>Picea engelmannii</u>), white-barked pine (<u>Pinus albicaulis</u>), and Rocky Mountain maple (<u>Acer glabrum</u>).
		17 June 1991; ridge between Moose and Game Creeks (T3N,R46E,S20,NW):	1 or more ♂♂ singing from aspen/Douglas fir with mixed understory of grasses, serviceberry (<u>Amelanchier alnifolia</u>), & snowberry. Observed by Debra Patla (USFS).

APPENDIX C (cont.). Incidental wildlife observations of interest gained while performing Harlequin Duck and Common Loon surveys.

SPECIES	NUMBER	LOCATION	HABITAT
Flammulated Owl		19 June 1991; ridge between Moose and Game Creeks (T3N,R46E,S20,NW):	1 or more ♂♂ singing from aspen/Douglas fir with mixed understory. Observed by Debra Patla (USFS).
Northern Pygmy-owl (<u>Glaucidium gnoma</u>):		21 July 1991; Alex Draw (T13N,R37E,S14,SW):	1 individual singing at dawn from large Douglas fir in current shelter-wood harvest area.
Great Gray Owl (<u>Strix nebulosa</u>):		21 June 1991; Targhee Cr. Trailhead (T14S,R44E,S31,NW):	♂ perched in Douglas fir, while ♀ brooding on broken-top snag (Douglas fir). Nest tree DBH = 60 cm, Height = 15-20 m. Mature, multi-layered forest near aspen groves and sagebrush (<u>Artemisia tridentata</u>) meadows.
		5 July 1991; Darby Cr. (T43N,R118W,S18,NW):	1 calling at dusk.
		29 July 1991; Targhee Cr. Trailhead (T14S,R44E,S31,NW):	1 young food-begging 300 m from nest tree.
Lewis' Woodpecker (<u>Melanerpes lewis</u>):		24 June 1991; Forest Road 661 (T46N,R118W,S9,SW):	1 adult in lodgepole pine (<u>Pinus contorta</u>).
Williamson's Sapsucker (<u>Sphyrapicus thyroides</u>):		1 July 1991; Horseshoe Lake (T10N,R45E,S26,SW):	1 adult in lodgepole pine.

APPENDIX C (cont.). Incidental wildlife observations of interest gained while performing Harlequin Duck and Common Loon surveys.

SPECIES	NUMBER	LOCATION	HABITAT
White-winged Crossbill (<u>Loxia leucoptera</u>):		17 August 1991; Moose Creek (T42N,R118W,S32,NW):	flock of approximately 6 birds in Douglas fir.
Northern Water Shrew (<u>Sorex palustris</u>)		8 June 1991; Darby Creek (T43N,R118W,S14,SW):	1 individual foraging in eddy of stream below heavy canopy closure of Douglas fir.

APPENDIX D. Incidental reptile and amphibian observations gained while performing Harlequin Duck and Common Loon surveys.

SPECIES	DATE	NUM.	LOCATION	HABITAT
Western Toad <u>Bufo boreas</u>	6/24	1	McRenolds Res. (T7N,R46E,S6,NE)	lodgepole pine
Boreal Chorus Frog <u>Pseudacris triseriata</u>	6/8	1	Is. Pk. RD office (T12N,R43E,S27,SW)	lodgepole pine
	6/8	1	Swan Lake (T11N,R42E,S11,SE)	lodgepole pine
	6/28	3	Hope Cr. Henry's L. (T14S,R43E,S19,NE)	big sagebrush
	6/29	6	Harriman S. Park (T12N,R43E,S31,SW)	big sagebrush
	7/19	6	Cub Lake (T9N,R45E,S7,NE)	lodgepole pine
Spotted Frog <u>Rana pretiosa</u>	7/20	1	Three Mile Res. (T12N, R37E, S8,SE)	<u>Salix</u> sp.
	7/30	2	Hidden Corral Basin (T46N,R117W,S22,SW)	stream meanders through meadows
<u>Rana</u> sp.	6/24	2	McRenolds Res. (T7N,R46E,S6,NE)	lodgepole pine
	6/24	3 tadpoles	McRenolds Res. (T7N,R46E,S6,NE)	lodgepole pine
	7/20	100 tadpoles	Three Mile Res. (T12N,R37E,S8,SE)	<u>Salix</u> sp.
Sagebrush Lizard <u>Sceloporus graciosus</u>	6/22	1	Palisades Cr. (T1N,R44E,S24,SW)	rocky outcrop <u>Purshia tridentata</u>
	7/6	1	Stouts Mtn. (T3N,R43E,S36,SW)	whitebark pine/rocky outcrop

APPENDIX D. Incidental reptile and amphibian observations gained while performing Harlequin Duck and Common Loon surveys.

SPECIES	DATE	NUM.	LOCATION	HABITAT
Common Garter Snake <u>Thamnophis sirtalis</u>	7/20	1	Three Mile Res. (T12N,R37E,S8,SE)	<u>Salix</u> sp.
W. Terr. Garter Snake <u>T. elegans</u>	6/8	1	Darby Creek (T43N,R118W,S14,SW)	Douglas fir
	6/11	5	McCoy Creek (T3S,R45E,S17,SE) (T3S,R45E,S18,SE) (T3S,R45E,S18,SW)	big sagebrush Douglas fir

Submitted by: Craig R. Groves

Approved by:

IDAHO DEPARTMENT OF FISH AND GAME

for Don J. Olson
Tom Reinecker, Chief
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Wayne Melquist 12/27/91
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