1991 HARLEQUIN DUCK SURVEY FOR THE LOWER CLARK FORK DRAINAGE

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INTRODUCTION

The Harlequin Duck (Histrionicus histrionicus) is a medium sized, brightly colored diving duck. These ducks winter in the northern coastal waters of the Pacific and Atlantic Oceans then migrate to turbid inland streams to breed (Ehrlich et al. 1988). Two populations exist. The smaller population winters on the northern coasts of the Atlantic while the much larger population winters in the northern stretches of the Pacific North American coasts. The western population breeds in inland streams from northern Alaska to Central California and east to the east slopes of the Rocky Mountains (Bellrose 1980).

Harlequin ducks migrate to Montana between April and May. Upon arrival, mating courtship begins. After mating in mid-May to late June, the male migrates back to the coast while the female starts nesting. Broods are produced between mid-june and late July, 20-30 days after incubation. Approximately 60-70 days after hatching, the chicks fledge (Ehrlich et al. 1988).

Little work has been conducted on these species probably due to their low population density and need for remote, pristine habitats. The combination of the low numbers and undisturbed habitat needs of the duck encouraged Region 1 of the U.S. Forest Service to list it as a "sensitive species" in 1987. Like many bird species, the recruitment portion of the life cycle is critical for the maintenance of the species, thus the breeding areas in the West are of special concern.

In 1987, the Montana Natural Heritage Program started

surveying mountain streams in western Montana. The purpose of the survey is to document pair activity, brood locations, reproduction rates, and habitat usage. As part of this ongoing research, The Montana Natural Heritage Program contracted me to conducted Harlequin Duck surveys in the lower Clark Fork drainage, Montana. This report sums up my findings and observations of the ducks using the lower Clark Fork River drainage.

METHODS

Dave Genter, director of the Montana Natural Heritage Program, identified and prioritized streams to be surveyed between 17 June and 31 August 1991. Genter (pers.comm.) chose streams on the basis of past recorded sightings, low gradient (between 1-3%), stream width (15-5Ø feet), and water quality.

I conducted surveys during 2 time periods. The first time period was from 19 June to 17 July 1991 in which I looked for pair activity. The second period of stream surveys were weekends from Ø3-18 August 1991 and the week of 19-22 August 1991 in which we were searched for broods. On 29 June 1991 and during the weekends in August, Lora Beslanowitch and my dog aided me in the surveys.

Each stream received the same survey technique. The survey technique consisted of walking upstream, preferably in the stream bank, visually checking for ducks. Whenever possible, we scanned areas with binoculars before walking through them. When we identified a Harlequin Duck, we recorded the sex, number, markers, and the habitat where the bird was first located.

RESULTS

During the first time period, I worked approximately 5Ø hours a week surveying 2Ø streams or portions of (Table 1). I located 1Ø hens and 1 hen with a brood of 6 (table 2). I located birds in only 5 streams. Marten Creek and tributaries produced 6 birds, the Vermillion River and Swamp Creek housed 2 hens each, and Rock Creek contained 1 hen. The only brood located was in the lower portion of Swamp Creek. Beslanowitch and the dog accompanied me during the 3 sightings on Martin Creek. We may have relocated 2 of the above birds during the later survey, however we can only speculate.

In time period 2, we totaled approximately 4Ø hours per weekend surveying 18 streams or portions of (Table 3). We located 1 hen and 1 hen with a brood of 4 (table 2). We searched 3 streams during this time period which were not surveyed in time frame I, however no new ducks were located. On Ø3 August 1991, We located a hen with 4 chicks on the South Fork of Marten Creek. Beslanowitch located a single hen on 1Ø August 1991 a quarter mile up from the mouth of the Vermillion River. The dog was present during both sightings. We never relocated any of the hens or broods during this survey time.

Most birds inhabited similar habitats. It appears that the birds use ripples adjacent to gravel bars and grassy openings on the bank (Appendix 1). However, thick riparian vegetation occurred in every case.

The water levels were higher this year (United States Geological Survey 1991). July showed the greatest increase in

Table 1. List of streams surveyed between 19 June and 17 July 1991.

Stream	Date	Description
Vermillion River	20,21,24 June	From mouth to jct of Freeze out and Control Creek
Willow Cr.	24 June	From Mouth to Rd. 7593 bridge
Swamp Cr.	25 June	From trailhead to Wilderness boundry
Rock Cr.	26 June	From mouth to gate on Rd. 150A
W.Fk Rock	27 June	From mouth to Rd. 150 bridge
S.Fk Marten	28 June	From mouth to waterfalls
McNeely Cr.	28 June	From mouth to approx. 1 mile upstream
Marten Cr.	29 June	From mouth to jct of branches
S.Branch Marten Cr.	01 July	From mouth to approx. 1 mile upstream
N.Branch Marten Cr.	01 July	From mouth to approx. 1 mile upstream
W.Fk. Elk	02 July	From Rd. 2273 bridge to Rd. 430 bridge
E.Fk. Elk	02 July	From Rd. 2273 bridge to jct of Lone Cr. Gulch
Graves Cr.	08 July	From mouth to center of T23N,R29W,sec15
Callahan Cr	09 July	From NE corner of sec 23 to W end of sec 22
S.Fk. Callahan Cr	09 July	From Branch to Rd. 4554 bridge
Big Cr.	10 July	From mouth to Rd. 336 bridge
E.Fk.Basin	11 July	From Rd. 746 bridge to Rd. 92 bridge
Pete Cr.	15 July	From mouth to N corner of T36N,R33W, sec 02
Spread Cr.	16 July	From mouth to Rd. 591 bridge
W.Fk.Yaak	17 July	From Rd. 92 bridge to Yaak Falls

Table 2. Locations of Harlequin Duck females during the 1991 survey of the lower Clark Fork, Montana.

Stream	Date	Legal Description	
Vermillion River	21 June	T24N,R30W,SEC 02, 1/4NE,1/16SE	63.1.334
	21 June	T24N,R30W,SEC 01, 1/4NW,1/16NW	63.1.335
	10 August	T24N,R~~30~~31W,SEC 14, 1/4NE,1/16NE	63.1.336
Swamp Creek	25 June	T25N,R31W,SEC 20, 1/4NE,1/16NE	63.1.*6 337
	25 June	T25N,R31W,SEC 03, 1/4NW,1/16NW	63.1.338
Rock Creek	26 June	T26N,R32W,SEC 15, 1/4NW,1/16NE	63.1.339
McNeely Creek	28 June	T2~~6~~4N,R33W,SEC 11, 1/4NW,1/16NW	63.1.340
Marten Creek	29 June	T25N,R33W,SEC 25, 1/2E,1/4 Center	63.1.341
	29 June	T25N,R33W,SEC 27, 1/4SE,1/16SE	63.1.342
	29 June	T25N,R33W,SEC 32, 1/4NE,1/16NW	63.1.343
S.Branch Marten	01 July	T25N,R33W,SEC 32, 1/4NW,1/16SE +	63.1.344
S.FK. Marten Cr.	03 August	T25N,R33W,SEC 11/12, 1/2N Center *4	63.1.345

* denotes hens with broods, # denotes number of chicks

+ denotes 2 hens located together

Table 3. List of streams surveyed between Ø3 August and 22 August 1991.

Stream	Date	Description
S.Fk Marten	Ø3 August	From mouth to Sorrel Gulch (intermittent)
Marten Cr.	Ø3 August	From mouth to jct of branches
S.Branch Marten Cr.	Ø3 August	From mouth to approx. 1/2 mile upstream
N.Branch Marten Cr.	Ø3 August	From mouth to approx. 1/2 mile upstream
W.Fk. Elk	Ø4 August	From Rd. 2273 bridge to Rd. 43Ø bridge
E.Fk. Elk	Ø4 August	From Rd. 2273 bridge to W edge sec Ø4 (intermittent)
Vermillion River	1Ø August	From mouth to Vermillion Falls
Swamp Cr.	11 August	From Rd. 22Ø bridge to first lake
Trout Cr. (Lolo NF)	17 August	From mouth to SE edge sec 32 and From VanNess Cr. to S edge sec Ø7
Rock Cr.	17 August	From mouth to Rd. 2285 bridge
Lower Swamp Cr.	18 August	From mouth to Rd. 22Ø bridge
Graves Cr.	18 August	From mouth to Graves Falls
Whitepine	18 August	Dried up at sec 17
N.Fk. Callahan Cr	19 August	From Rd. 414 bridge to Idaho border
Marten Cr.	2Ø August	From mouth to jct of branches
Vermillion River	21 August	From Vermillion Falls to Moose Gulch
W.Fk. Elk	22 August	From Rd. 2273 bridge to Rd. 43Ø bridge
E.Fk. Elk	22 August	From Rd. 2273 bridge to W edge sec Ø4 (intermittent)

flows at the Noxon Rapids Dam producing 43% more water per cubic ~~inch~~ feet per second than the 30 year average (Fig 1). Furthermore, only 3 years of the past 30 had greater flow rates in July than this year. The USGS does not have Noxon dam data past July or Plains flow data past June (Fig 2) available at this time. Overall, the Noxon Dam and Plains stations showed increases of 23% and 14% from the 30 year average over the same time period, respectively.

DISCUSSION

Most of the hens located in the early summer were not relocated during the late summer surveys. We relocated only 2 hens. I believe the hen found with a brood on the South Fork of Marten Creek was the same bird located on McNeely Creek earlier in the season. I am uncertain of the origin of the hen on the Vermillion River. The low number of broods and hens relocated suggests that most hens did not breed, were unsuccessful in breeding, and/or failed at rearing their young.

I believe I covered each stream listed in table 1 and table 2 thoroughly and completely. However, the possibility of missing birds exists. Harlequin females with broods are extremely secretive and may be hard to locate. I feel this was not a large problem in my study area. I attribute the low number of broods and hen sightings to factors other than poor detection.

I believe the dog did not affect the study results. The dog accompanied us on 5 of the 13 sightings, 1 of which contained a brood. We kept the dog at our side but she was never physically

restrained. She never attempted to chase or approach the ducks. The presence of the dog did not seem to alter the ducks" responses. Therefore, I believe the presence of a well behaved dog with the surveyor will not alter the results.

I suggest high water flows played a part in the low reproduction of Harlequin Ducks during 1991. July showed the most pronounced increase over the 3Ø year average at Noxon Dam flow station. July corresponds with the early portion of the chicks life cycle (Fig 1 and Fig 2). I believe the high water increased brood mortality by sweeping the young chicks downstream away from the hen or by drowning them. After not producing or failing to produce a brood, the hens migrate back to the coasts (Genter pers.comm.). This information explains the reason for low relocations of hens. I could not locate any information on the correlation between reproduction of Harlequin ducks and water flows, however I suggest a bell-shape relation occurs.

Fig 1. Graph of the 30 year average water flow vs. 1991 data at the Noxon Dam monitoring station, Montana (USGS 1991)

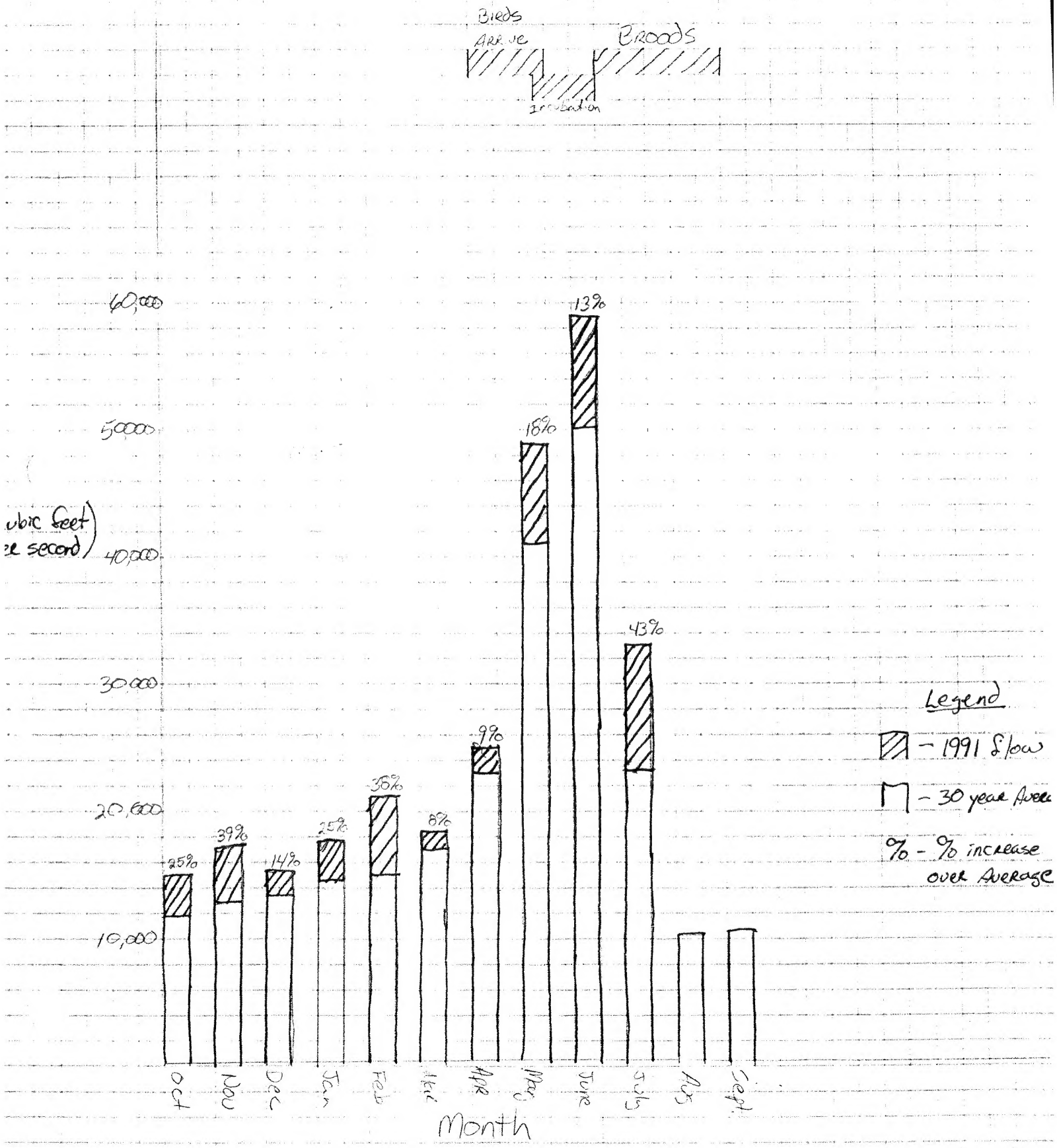
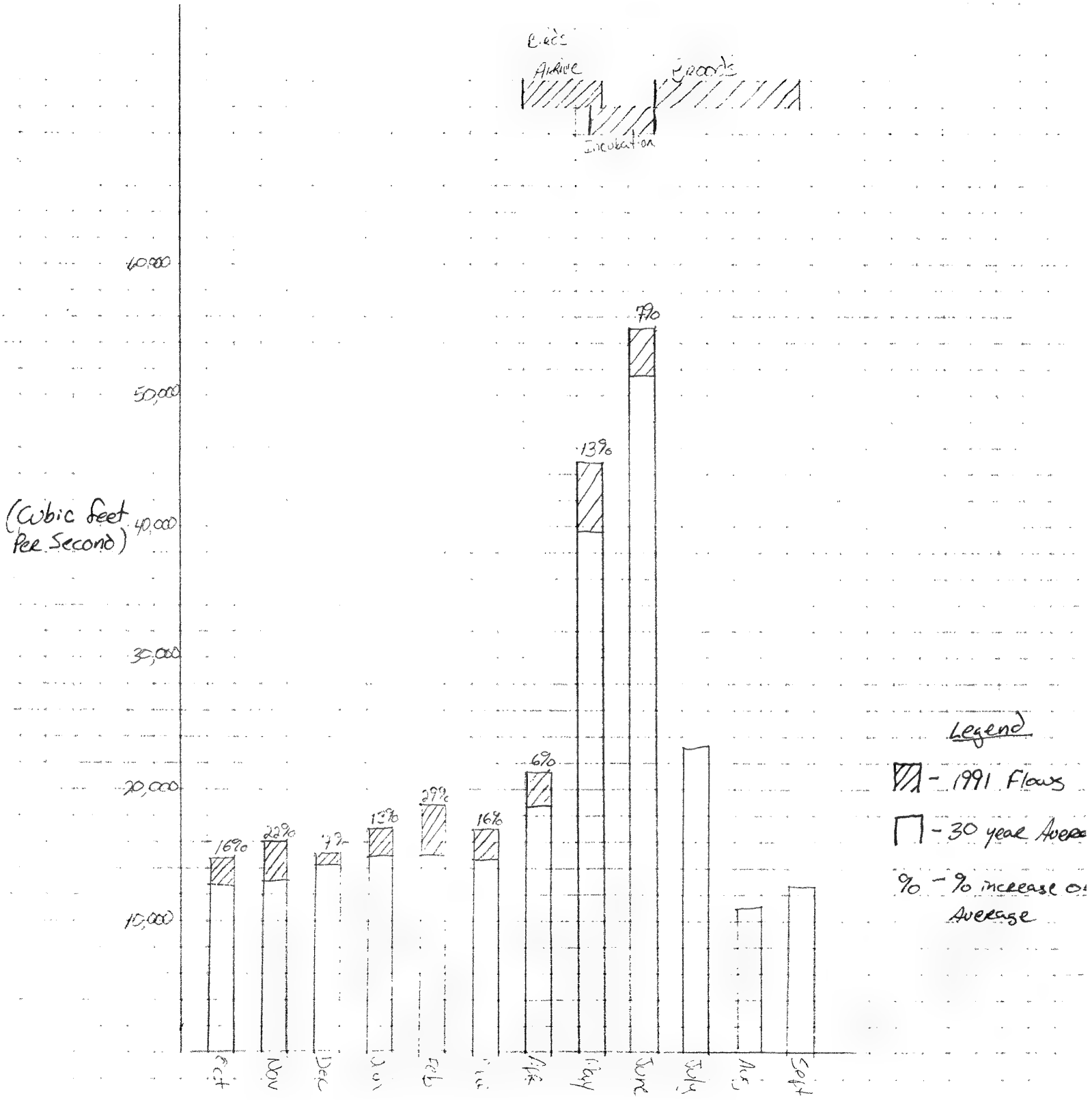


Fig 2. Graph of the 30 year average water flow vs. 1991 data at the monitoring station near Plains, Montana (USGS 1991)



LITERATURE CITED

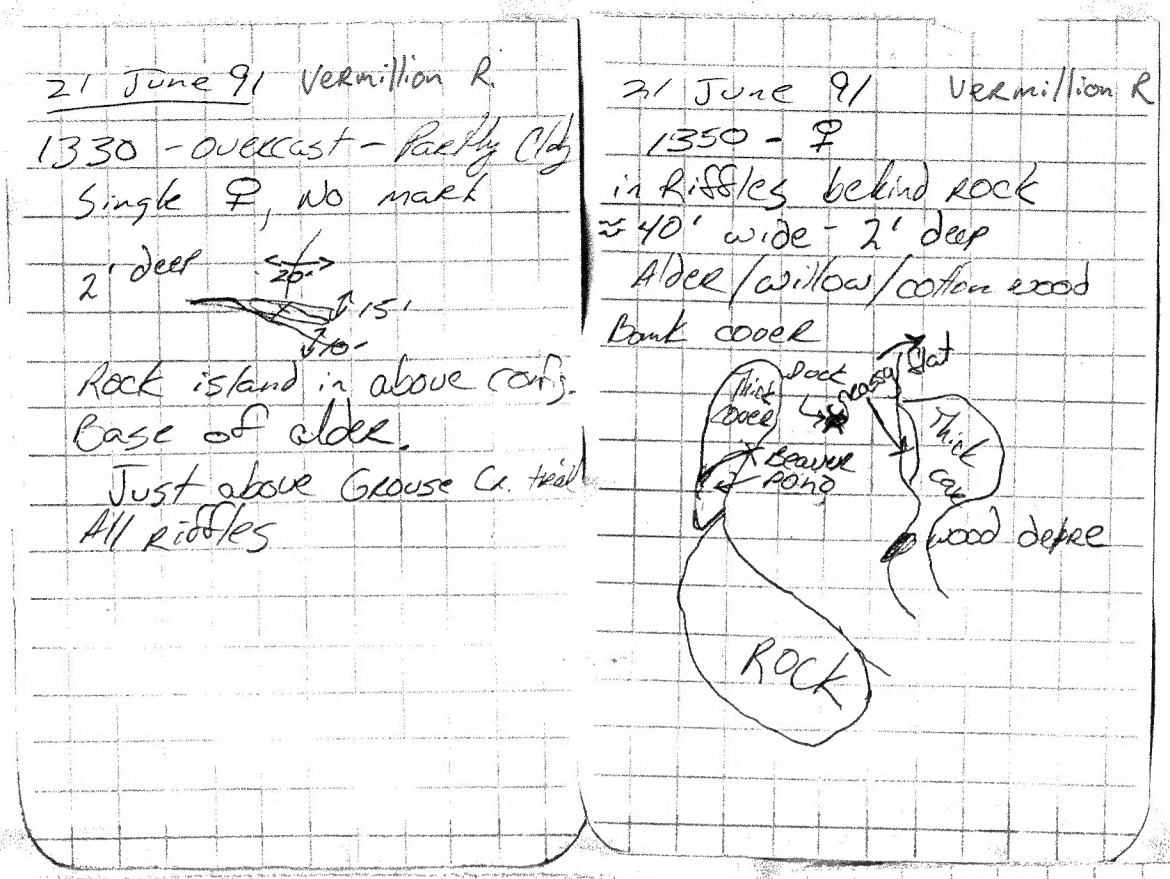
Bellrose, F.C.. 1980. Ducks, geese and swans of North America. Stackpole Books, Harrisburg, PA. 540 pp.

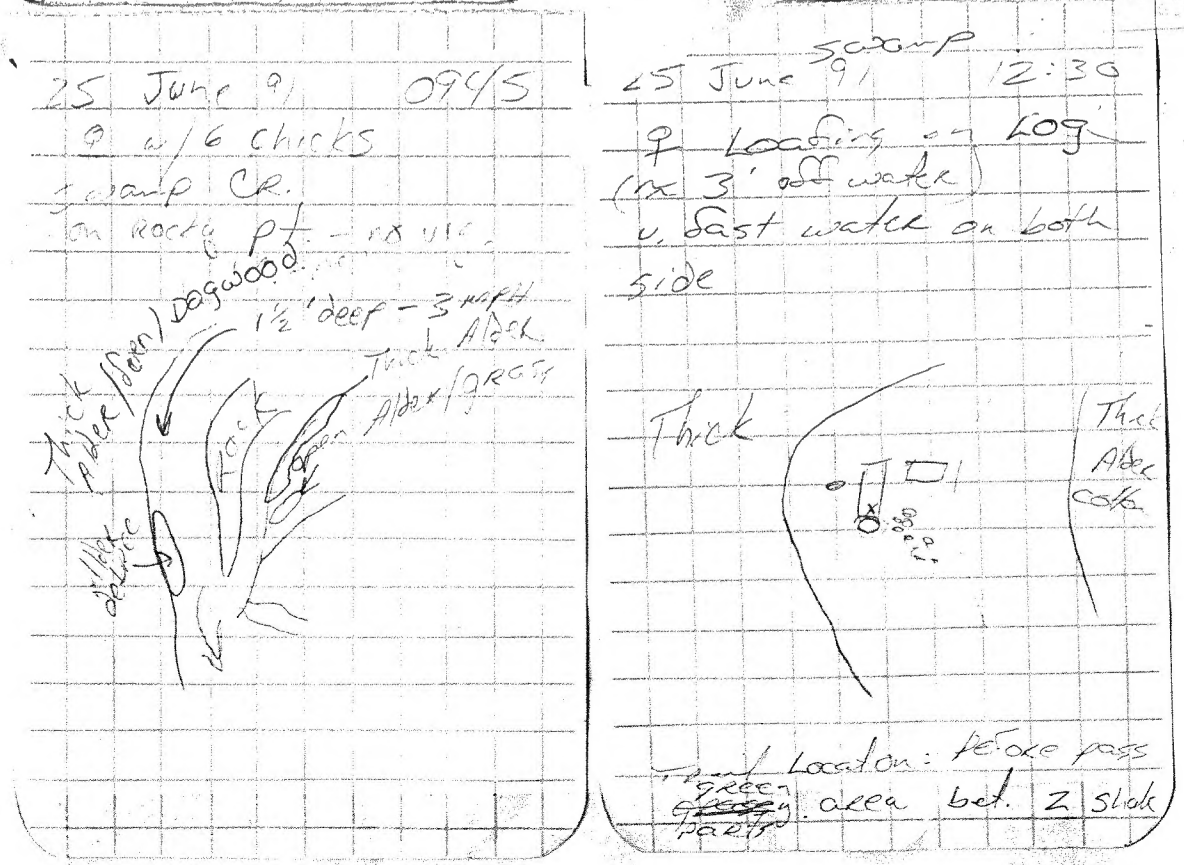
Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1988. The birder's handbook. Simon and Schuster Inc., New York, NY. 784 pp.

Genter, D.. Director, Montana National Heritage Program.

United States Geological Survey. 1991. Water flow data for Noxon Dam and Plains, MT. Monitoring Stations.

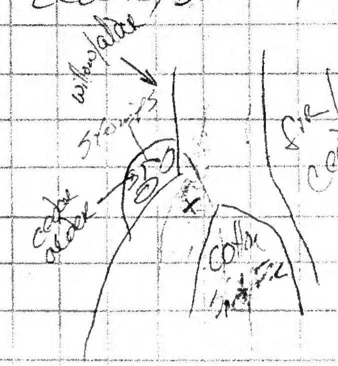
Appendix 1. Sketches of areas which contained Harlequin Ducks.





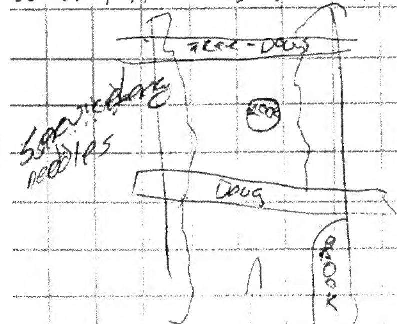
Rock Cr. 12:30
26 June
♀

cedar/S.A. Fir/cottonwood



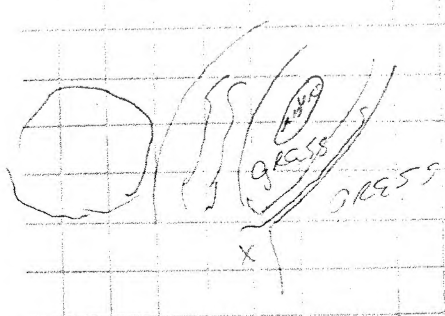
S.F. Marten - McNeely Cr
28 June 1100

Single ♀ sitting under Dogwood. Flew upstream
channel ≈ 7', 1' deep
Flew quickly - could not observe
whether it was marked



Just downstream of Granite Cutbank w/log jam w/small falls above

Marten Cr. 29 June 91
11:10 Sprinkling
Single ♀

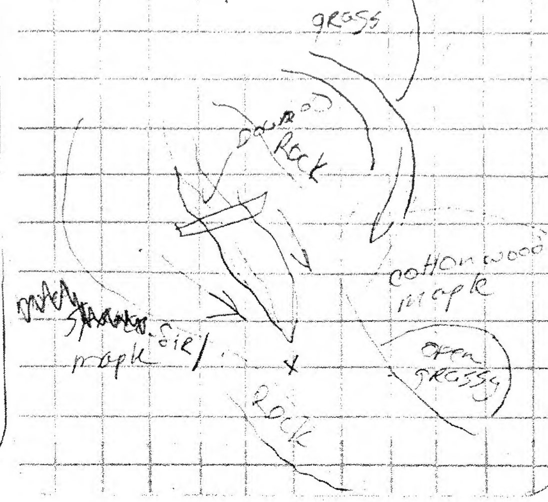


up of campsite

Marten Cr. 29 June
13:15

Single ♀ in riffles - flew down

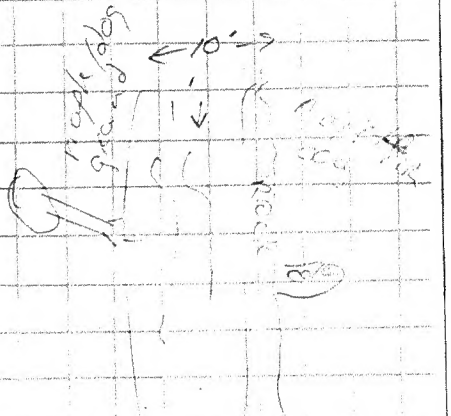
- Just up of opening w/



Marten Cr.

1500 – single ♀

under logs of overhanging cottonwood + dogwood

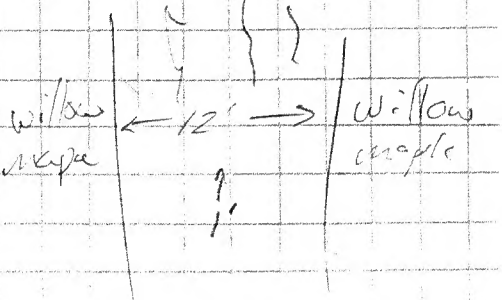


S. bend Marten Cr. 1 July

2 ♀ 1600

Partly cloudy warm

I believe pushed them together! Moving upstream together



Before

at Cutbank on Road

S/at Open area

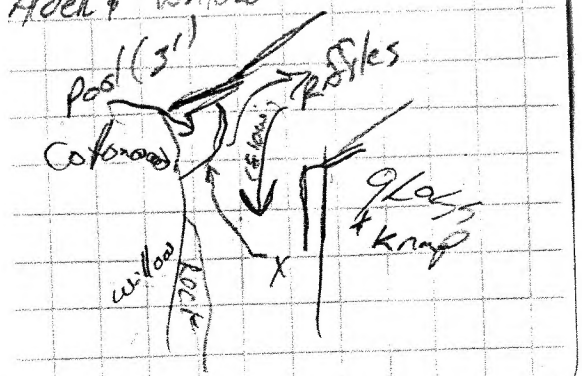
03 Aug 91

S. Fk. Marten

♀, 4 young

By log retaining wall downstream of Keeley Cr.

Cottonwood grove w/ Alder + willow



Vermillion River 10 Aug

SM Feeder Creek

SINGLE ♀ 1:30