Survival, Fates, and Success of Transplanted Beavers, *Castor canadensis*, in Wyoming

MARK C. MCKINSTRY and STANLEY H. ANDERSON

Wyoming Cooperative Fish and Wildlife Research Unit[1], Box 3166, Laramie, Wyoming 82071 USA

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Beaver (*Castor canadensis*) through their dam building activities, store water, trap sediment, subirrigate vegetation, and subsequently improve habitat for fish, wildlife, and livestock. Many landowners realize the benefits that Beaver can bring to a riparian area and are interested in using them to improve this habitat. From 1994 to 1999 we trapped and relocated 234 Beaver to 14 areas throughout Wyoming to improve riparian habitat and create natural wetlands. We attached radio transmitters to 114 Beaver and subsequently determined movements and mortality of released Beaver, and the overall success of our releases. Mortality and emigration (including transmitter failure) accounted for the loss of 30% and 51%, respectively, of telemetered Beaver within 6 months of release. Kaplan-Meier survival estimates were 0.49 (SE = 0.068) for 180 days and 0.433 (SE = 0.084) for 360 days, and did not differ significantly between age classes. On average, 17 Beaver were transplanted to each release site, and at 11 locations, in an attempt to augment single Beaver that had become established and increase transplant success, we transplanted Beaver in two or more years. Success of an individual Beaver's relocation was unrelated to any of the variables we tested, although 2–3.5 year-old Beaver had higher average success (measured in days of occupancy at the release site) than older animals. Animals < 2 years old had 100% mortality and emigration losses within 6 months of release. High predation and mortality rates of our released Beaver may be due to habitat (our streams were shallow with no ponds and provided little protection) and extensive predator communities. We established Beaver at 13/14 of our release sites and they eventually reproduced. Our results show that Beaver can be relocated successfully but losses from mortality and emigration need to be considered and planned for.

Key Words: Beaver, *Castor canadensis*, transplanting, reintroduction, translocation, predation, Wyoming

Beaver (*Castor canadensis*) alter riparian-stream ecosystems through their woodcutting and dam-building activities. Beaver dams create a lentic habitat in an otherwise lotic system. These ponds retain sediment and organic matter in the channel, create and maintain wetlands, modify nutrient cycling and decomposition dynamics, modify the structure and dynamics of the riparian zone, alter hydrologic regimes (Butler 1991), and influence the character of water and materials transported downstream (Naiman et al. 1988). The resultant habitats are rich mosaics of diversity that are beneficial hydrologically (Hanson and Cambell 1963; Rabe 1970; Johnson et al. 1992), biologically (Jenkins and Busher 1979; reviewed by Hill 1982; Olson and Hubert 1994; Brown et al. 1996; McKinstry and Anderson 1999; McKinstry et al., 2001), and socially (Naiman et al. 1988). It is estimated that Beaver have been extirpated from over 25% of the streams in Wyoming, and in many streams where they are still present their numbers have been reduced to where they are ecologically absent (McKinstry et al. 2001). The elimination of Beaver from portions of its historic range has been cited as a major influence on the structure and patterns of vegetation in these systems (Neff 1957; Barnes and Dibble 1986; Naiman et al. 1986; Nummi 1989; Kay 1994; Nolet et al. 1994).

Throughout the intermountain west, interest has been expressed in improving riparian areas for wildlife, livestock, and humans (Apple et al. 1985; McKinstry and Anderson 1999; McKinstry et al. 2001). Beaver, through their dam building activities, can increase water storage, reduce sedimentation, and improve vegetation communities (Naiman et al. 1988), all of which are valuable to many landowners. Livestock are also attracted to Beaver-influenced areas for water, shade, and vegetation that remains green after upland forage has dried out. Forage production near these wetlands is often two to three times higher than comparable upland ranges (Apple et al. 1985; Chaney et al. 1991: 31). Many states have undertaken Beaver transplant programs to improve riparian areas (Smith 1980; Hill 1987; Butler 1991; Collins 1993; Vore 1993; McKinstry and Anderson 1997; McKinstry 2001) and managers with the Wyoming Game and Fish Department (WG&FD) decided to investigate the feasibility of a Beaver relocation program in areas where beaver have not recolonized due to isolation from dispersing populations and poor habitat conditions.

In 1994 we initiated research to (1) document the

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effects of Beaver on riparian areas in Wyoming (reported in McKinstry et al. 2000; 2001), (2) assess Beaver management concerns from both private and public landmanagers (reported in McKinstry and Anderson [1999]), and (3) evaluate a Beaver reintroduction project for the purpose of wetland creation and riparian improvement. Our objectives in this paper are to examine survival, mortality, emigration, and success of Beaver translocated in Wyoming for the purpose of riparian restoration.

Study Area

Beaver were trapped at 33 various locations in Wyoming (described in McKinstry and Anderson 1998) and translocated to 14 different 1st–3rd order streams (< 0.283 m/sec) throughout Wyoming (Figure 1, Table 1). All drainages were walked a minimum of 3 km in both directions from the proposed release site to document any past or current Beaver activity. At 13 of the release sites, old Beaver sign (20–100 yrs) was present but we found no fresh activity. At the remaining site, Breteche Creek, prior Beaver activity was not found. All release sites had sufficient vegetation to support Beaver. Four streams were ephemeral and dry in early August each year that we checked them (1993–1999), the remainder were perennial and carried water year-round (Table 1).

Methods

Beaver were trapped using snares and Hancock traps (McKinstry and Anderson 1998) from areas where they were causing damage to landowners (primarily irrigation conflicts) (30 sites) or where they were so plentiful that selective removal would not significantly impact the habitat (3 sites). All Beaver were trapped from colonies that were dam and lodge builders (creek Beaver) as opposed to bank-denning non-dam builders (river Beaver). We felt that these animals would be more likely to create the desired habitat.

We began trapping after ice-off in the spring (usually early to mid May) and concluded trapping by the second week in October, depending on snow and ice conditions. All traps were set between 1600 h and 1900 h each day and were checked by 1000 h the following morning to minimize the time that animals spent in traps. On average we set 17 traps/night/trapper; more than that and it was difficult to get them checked by 1000 h and find them in the

FIGURE 1. Beaver relocation sites in Wyoming. Letters correspond to release site locations described in Tables 1 and 2.

TABLE 1. Latitude and longitude, dominant vegetation, and stream classifications (using Rosgen's [1994] classification) for Beaver release locations in Wyoming. Letters for release sites correspond with locations in Figure 1.

Stream Name (nearest town)	Latitude, Longitude	Dominant Vegetation	Stream Classification
(A) Bear Gulch (Story)	44°31′46″N, 106°53′11″W	Aspen and cottonwood	DA5
(B) Breteche Creek (Cody)	44°24′36″N, 109°23′28″W	Aspen and cottonwood	A4
(C) Bush Creek[a] (Shell)	44°27′41″N, 107°37′30″W	Cottonwood	A4
(D) Currant Creek (Rock Springs)	41°12′55″N, 109°22′20″W	Willow	G5
(E) Deep Creek[a] (Sundance)	44°47′29″N, 104°20′41″W	Gambel's oak and aspen	C5
(F) Ennos Creek (Thermopolis)	43°54′50″N, 108°54′14″W	Willow	B4
(G) Lake Creek[a] (Saratoga)	41°28′16″N, 106°38′20″W	Narrowleaf cottonwood (*Populus angustifolia*) and willow (*Salix* sp)	B4
(H) Little Red Creek (Casper)	42°42′55″N, 106°23′48″W	Cottonwood	F4
(I) Prairie Dog Creek (Big Horn)	44°35′36″N, 106°54′30″W	Aspen and cottonwood	A5
(J) S. Pine Creek[a] (Sundance)	44°44′29″N, 104°20′30″W	Scrub oak and common chokecherry (*Prunus virginiana*)	F6
(K) Red Creek (Rock Springs)	41°04′01″N, 109°02′30″W	Engelmann spruce (*Picea engelmannii*) and cottonwood	F5
(L) Spring Creek (Centennial)	41°12′59″N, 106°07′44″W	Willow	F5
(M) Trabing Creek (Big Horn)	44°36′01″N, 106°58′59″W	Aspen and western hawthorn (*Crataegus succulenta*)	A4

[a]streams were ephemeral and dry by early August each year we checked (1993–1999)

thick willows where we were trapping. Beaver were sexed through cloacal examinations (Larson and Taber 1980:163), weighed to determine age class (kit, yearling, sub adult, and adult), and ear tagged in both ears with small monel ear tags for identification. Beaver were held up to five days post-capture in a 2.2 by 3.1 m cage that allowed them free access to water; this was necessary since we only caught a few (< 3) animals each day and we wanted to move them as a group to the release site which was always > 160 km away.

Forty-six Beaver (range 11–31 kg) were implanted with Advanced Telemetry Systems (ATS, Isanti, MN) model 17 internal telemetry transmitters using techniques described by Davis et al. (1984). Implanted Beaver were monitored for a minimum of 24 hours post surgery prior to release (Davis et al. 1984). Beginning in 1998, 67 Beaver (range 10–25 kg) were outfitted either with tail collars (8 Beaver) or transmitters mounted on the tail using modified ear-tag transmitters (59 Beaver) (Rothmeyer et al. 2002) in an attempt to reduce logistical problems associated with surgeries conducted in the field (e.g., cost, time, sterility concerns). All radio transmitters were equipped with 24-hour mortality sensors. Animals were released after 1500 hours in an attempt to decrease predation during daylight hours.

Beaver were monitored for movements and mortality for 2 days after release and approximately every 2 to 4 weeks thereafter. Mortality dates were calculated as the mid-date between the date found and the date of last-live location. At all release sites, streams were walked (minimum of 5 km) and flown (minimum of 10 km) in both directions 3 months after release to determine if Beaver were established. In four instances non-transmittered Beaver became established, and walking the streams allowed us to look for evidence of tree cuttings or dam construction and thus determine if non-telemetered Beaver were active. Since we were interested in using Beaver to improve habitat within 3 km of the release sites (usually headwater areas), we defined emigration as Beaver that moved further than 3 km from the release site. Beaver moving > 5 km from the release sites were not monitored unless they built dams and lodges and remained stationary.

Cause of mortality was determined through physical examination of hair and scat samples found at the kill site (Moore et al. 1974), bite marks and subcutaneous bleeding (indicates animal was alive when bitten) on Beaver carcasses, track marks (O'Gara 1978), and, beginning in 1998, DNA analysis of hair and scat samples. Dr. Elizabeth Williams, Pathologist at the Wyoming State Veterinary Lab, performed lab work and necropsies. Tom Moore and Deedra Hawk, Forensic Supervisor and Research Associate, respectively, Wyoming Game and Fish Department, examined hair and scat samples.

We used a $\underline{z}$ test (Jandel Scientific 1994) to test proportional differences in captures of males versus females. For estimates of survival we used Kaplan-Meier product limit estimators (as reviewed by White and Garrott 1990) for both 360 and 180 day survival rates. We used the Kaplan-Meier approach since our data was staggered entry and we had con-

TABLE 2. Fates of introduced Beaver by release location. Letters in () correspond to release sites in Figure 1 and descriptions in Table 1.

	Predation							# Released		
	Coyote	Black Bear	Grizzly Bear	Mountain Lion	Human	Unknown[a]	Unknown Mortality[b]	With Transmitters ♀:♂:unknown[c]	Without Transmitters ♀:♂:unknown[c]	Total ♀:♂:unknown[c]
(A) Bear Gulch[d]	0	0	0	0	1	0	0	0:1:0	1:2:0	1:3:0
(B) Breteche Creek	5	0	4	0	0	1	0	6:6:0	2:3:2	8:9:2
(C) Bush Creek	1	0	0	0	0	0	0	2:3:0	5:5:0	7:8:0
(D) Currant Creek	3	0	0	0	0	0	2	5:7:0	3:4:0	8:11:0
(E) Deep Creek	0	0	0	0	0	0	0	1:2:0	4:3:0	5:5:0
(F) Ennos Creek	0	0	0	0	1	1	1	8:8:0	2:7:3	10:15:3
(G) Lake Creek	1	0	0	0	0	0	1	5:7:0	9:4:1	14:11:1
(H) Little Red Creek	1	1	0	0	0	3	5	6:11:0	4:7:4	10:18:4
(I) Prairie Dog Creek	0	0	0	0	0	0	0	1:1:0	0:1:0	1:2:0
(J) S. Pine Creek	0	0	0	0	0	0	0	2:1:0	0:4:0	2:5:0
(K) Red Creek	0	3	0	0	0	1	1	8:6:0	4:4:1	12:10:1
(L) Spring Creek	0	0	0	1	0	1	0	2:2:0	0:8:0	2:10:0
(M) Trabing Creek	0	0	0	0	0	0	0	2:2:0	2:9:0	4:11:0
(N) Trout Creek	0	0	0	0	0	2	0	3:6:0	3:9:0	6:15:0
Total	11	4	4	1	2	9	10	51:63:0	39:70:11	90:133:11

[a]Cause of predation was undetermined
[b]Beaver died from undetermined causes
[c]Usually kits that could not be sexed
[d]Releases at this site failed due to conflicts with irrigation structures and some Beavers were retrapped

siderable loss of individuals due to emigration or transmitter failure. To model success of transplants we used both logistic and multiple regression (White and Garrott 1990). For our logistic regression models we coded each Beaver as either a 0 for failure (emigration or mortality) or a 1 for success (lived > 6 months, constructed a dam and lodge, and had the opportunity to reproduce). For multiple regression models we used the length of success (remained within 3 km of release site) in days as our dependent variable. We used weight, sex, age class, season of release (spring: May 9–June 15) or fall August 15–October 10), year of release (1994–1999), and number of cohorts released concurrently with each Beaver as our covariates. For age class we plotted weights and found natural distinctions in the three younger classes (kits, yearlings [1.0–1.5-year olds], and subadults [2.0–3.5-year olds]) and grouped all animals > 13.6 kg (4-year olds) as adults. Minitab (Minitab 2000), SigmaStat (Jandel Scientific 1994), and SAS (SAS Institute 1991) were used for all analyses.

Results

Snares and Hancock traps were used to capture 277 Beaver at 33 locations throughout Wyoming and we eventually transplanted 234 to the 14 release sites. The 43 remaining Beaver either died during trapping (n = 15), transporting (n = 13), or were lactating females (n = 15), which we released after capture. Trapping mortality was 10% for Hancock traps and 5.3% for snares, and was not significantly different ($z = -0.07$, $P = 0.94$, $df = 11$). Mortality from traps was due to becoming entangled in snares (n = 11) and being killed by predators while restrained in snares and Hancock traps (n = 4). Trapping success during our five years of trapping was 11.1 trap nights/Beaver or 9.0% (the probability of an individual trap's capture). Average weight of animals captured was 16.2 kg (range 2.4–31 kg, SD = 6.11) and there was no difference in proportion of males (0.42) or females (0.58) captured ($z = 1.23$, $P = 0.22$, $df = 122$). We transmittered 63 (55.3%) females and 51 (44.7%) males.

Of 114 Beaver trapped, equipped with a transmitter, and relocated, 34 (30%) died within 180 days ($\bar{x} = 43$ days, SD = 37.4) of release (Table 2). Another 7 Beavers (36% total mortality) died prior to the failure of their transmitters (181-503 days). Coyotes (*Canis latrans*) were responsible for at least 27% of all mortalities, followed by Black Bears (*Ursus americanus*) (10%), Grizzly Bears (*Ursus horribilis*) (10%), Mountain Lions (*Felis concolor*) (2%), and humans (5%). Another 22% (of all mortalities) died of unidentified predators and the remaining 24% died from undetermined causes. Within 180 days of release, 58 (51%) Beavers either emigrated > 10 km from the release sites and were not found again, or developed faulty transmitters, which made them impossible to relocate.

The Kaplan-Meier survival estimates for all Beavers were 0.49 for 180 days and 0.433 for 360 days and did not differ between age classes (Table 3). Beavers that died lived for an average of 86 days (range 1–503 days, SD = 114.8) until death, however eight died within seven days of release. All Beavers (that we found), except one, died within 0.5 km of the release site (the exception was found 0.75 km upstream of the release site).

Twenty-three (19%) Beavers lived > 180 days and eventually built dams and lodges in the drainages where they were released. Additionally, a minimum of 10 (actual number could not be determined since we did not retrap Beavers after release) of the other 120 Beavers released without transmitters were also found with dams and lodges within 3 km of the release sites (some of these may have been Beaver with faulty transmitters, although we feel this was unlikely). We released an average of 17 Beaver at each of our sites in an attempt to get animals to establish. Beaver successfully established at 13 of the 14 release sites and, as of September 2001, the 13 sites were still occupied. At the unsuccessful site Beavers had conflicts with irrigation structures (e.g., damming irrigation ditches) and they were removed.

We were unable to identify any variables in our analyses that significantly influenced the probability of success for beaver relocations. P values were > 0.2 and R-squared values were < 0.10 for all variables and models tested. The 2–3.5 year old age class had greater average occupancy at a site (Figure 2), although this relationship was not significant (P = 0.225, df 3). All kits and yealings (n = 12) either died (n = 5) or emigrated (n = 7) from the release site prior to 108 days and none were observed constructing dams and lodges.

Discussion

Limited range of transmitters and transmitter failure may have influenced the number of animals we found after release (Rothmeyer et al. 2002), subsequently increasing the number of Beavers assumed to have emigrated. Advertised range of the internal transmitters was 0.5 km but we found that the range was usually limited to 200 m, and animals within dens were not located until we were within 50 m of the transmitter. Range of the tail-mount transmitters was better but never approached the 1-km advertised range. Walking up and downstream of the release site within 20 m of the creek bed was necessary to determine movements and mortality.

Animals emigrating or not found after release may have had higher survival rates but we believe this is improbable. More likely, these Beaver were killed and cached in holes and dens, or dragged out of range of receivers. Animals moving out of the vicinity of the release area may also have experienced higher predation rates due to increased exposure time and less time spent hiding in dense vegetation or constructing dens. Beavers, sympatric with Black Bears on islands in Lake Superior traveled shorter distances from water than those found on islands where bears were not present, posssibly a direct attempt to avoid predation (Smith et al. 1994). Survival estimates for unexploited (i.e. untrapped) adult beaver are generally 0.80 (Boyce 1974; Bergerud and Miller 1977; Bishir et al. 1983) but these animals have ponds and lodges for escape. High mortality (5/10) and loss (4/10) (never relocated) rates were reported for beaver translocated in the James Bay area of Quebec, Canada (Courcelles and Nault 1983). Translocated animals undoubtedly have a higher susceptibility to predation for many reasons including unfamiliarity with the surrounding habitat, reduced fitness due to trapping stress, and possible exposure to more numerous and greater varieties of predators (Griffith et al. 1989; Stanley-Price 1989). Beaver have many natural predators and do not avoid predation through fighting, preferring instead to use water as an escape medium (as reviewed in Smith et al. 1994). Without ponds and dens to use for escape, Beaver are vulnerable to predation.

TABLE 3. Kaplan-Meier 180 and 360 day survival estimates, sample sizes, 95% CIs, and SEs for Beavers translocated in Wyoming. Survival estimates were not computed for Beaver < 2 years old since 100% either died or emigrated prior to 180 days.

Age Class	N Total	n Surviving	n Dying	n Unknown	Survival Estimate	95% CI	SE
180 days							
All ages	114	23	34	58	0.493	0.358–0.628	0.068
2.5–3.5 years old	52	13	20	19	0.436	0.271–0.602	0.085
4+ years old	51	10	8	33	0.658	0.449–0.868	0.107
360 days							
All ages	114	13	36	66	0.433	0.268–0.598	0.084
2.5–3.5 years old	52	7	22	23	0.353	0.167–0.538	0.095
4+ years old	51	6	8	37	0.658	0.449–0.868	0.107

[a]animals either emigrated > 5 km or transmitters failed

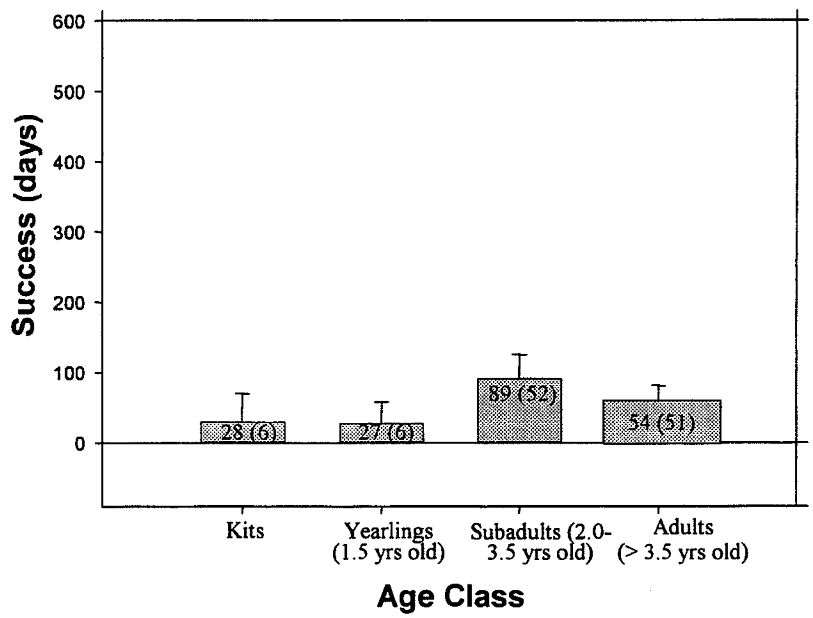

FIGURE 2. Average survival, in days (n), for four age classes of relocated beavers. Error bars depict 95% CI's.

Naturally dispersing Beaver have been seen in upland areas > 1 km from water sources and have been observed crossing mountain passes (Smith 1980) far from water where they would be extremely vulnerable to predation. Movements across upland areas are undoubtedly successful but we question the frequency of this success in areas like Wyoming where multiple predators occur sympatrically.

Translocated Beaver in North Dakota, Wisconsin, and Maine moved an average of 14.6, 7.4 and 11.2 stream km, respectively, although the longest movement was 238 km (Hibbard 1958; Knudsen and Hale 1965; Hill 1982) and naturally dispersing Beaver in Idaho and Quebec moved an average 8.5 and 18 km (Leege 1968; Courcelles and Nault 1983). While movements greater than 3 km are common for Beaver, exposure rates certainly increase during long movements through non-ponded habitat. Our animals may have been attempting to return to trapping locations, which were greater than 160 km away. Since our goal was to establish Beavers in uncolonized areas, predation risk was unavoidable and high predation and emigration losses should be considered when planning releases.

Wildlife managers in Europe have made several attempts to transplant Beaver (*C. fiber*) with varied success (Zurowski and Kasperczyk 1988; Hartman 1994; Nolet and Baveco 1996). Initially, mortality and emigration rates were high (14-36% and 23%, respectively) and were greatest in juvenile and yearling animals. Mortality rates declined with the establishment of dens and dams and populations became well established over time. However, transplanting in Europe usually occurs in major river systems where flooding of the dens is the primary disruptive event and predator populations are not as large (Nolet and Baveco 1996). In Wyoming, predator communities are well developed and are thought to be increasing (McKinstry and Anderson in review). Additionally, Beaver introduced in large rivers (> 2.83 m/sec) have greater aquatic escape cover than Beaver released in the small (< 0.283 m/sec) streams where we were working.

The value of riparian areas for wildlife has been emphasized by many authors (as reviewed by Naiman et al. 1988), but predator-prey relationships in riparian areas and how they relate to habitat quality and availability are not well understood (Smith et al. 1994). During drought periods animals may concentrate in riparian areas along with their respective predators. These predators, while normally dependent upon another prey species, may find Beaver easy prey. Many wildlife species use riparian areas more frequently during fall due to increased forage and water in the riparian areas. Predators may also concentrate in these areas to take advantage of higher prey densities, greater water availability, and lowered temperatures. Our releases were primarily (71%) done during the fall (15 August–10 October) to take advantage of the Beaver's natural tendency to begin construction of dams and lodges in the fall (Vore 1993). We did spring releases to establish Beaver in ephemeral streams that were normally dry by mid August and to supplement one or two Beaver that had become established the year before. Relocations in the spring may have lower predation risks, although we did not see this relationship in our analyses.

Several biologists suggested that we create small ponds at release sites to provide temporary refuge for released Beaver. In the two instances (Bear Gulch and Spring Creek; see Table 2 for specific numbers released) where we released Beaver into remnant ponds they emigrated from those areas within 10 days and constructed their own dams and lodges elsewhere in the drainage, although the remnant ponds may have provided them with initial protection from predators and helped to acclimate them to the area. Furthermore, creating small ponds is cost prohibitive and unlikely to be used in future transplants, therefore we did not consider this as a legitimate tool in our transplants.

Our goal was to establish Beaver at release sites, therefore we continued to release Beaver until dams and lodges were constructed. On average we released 17 Beaver/site before they constructed a dam and lodge and successfully reproduced. In 11 instances a single Beaver created a pond with a lodge and we transplanted additional animals in the hope that they would pair-up. We expected that many Beaver would emigrate from our release sites in efforts to return home, search for mates, or look for more suitable habitat. High predation and emigration rates for introduced Beaver should be expected (Griffith et al. 1989) and planned for in any Beaver translocation project.

We found no significant predictors of success or survival in our analyses. The 2–2.5 year-old Beavers had greater average success (Figure 2) and other researchers (Vore 1993; P. Jensen, Pennsylvania State University, personal communication) have suggested that this age class may be more suitable for recolonizing new areas since they are predisposed to emigrating, establishing new territories, constructing dams and lodges, and attracting mates. Our results are inconclusive but we recommend translocating Beavers > 2 years old since mortality and emigration of our younger animals totaled 100% within six months.

Our results also call attention to programs where only one or two Beaver are relocated to either unoccupied habitat, usually under the pretext of improving habitat, or to areas with existing Beaver populations. These activities are common in the western US and are usually carried out by district biologists or conservation officers to remove nuisance Beaver without using lethal techniques. We suggest that unless managers are committed to successfully introducing Beaver through planned introductions, monitoring, and follow-up releases their time and money may be better spent on other duties.

In summary, we found that Beaver could be used to create natural wetlands and improve riparian habitat in 13/14 streams where we relocated them. Mortality (30%) and emigration (51%) totaled 81% within the first 6 months of release and we needed to relocate an average of 17 Beaver/site to get a pair to establish and reproduce. Additional releases were also needed to augment single animals that had become established. Wildlife response to our created habitats was immediate (McKinstry et al. 2001) and landmanagers found that the habitats were valuable to both wildlife and livestock. We caution that releases should only be used in drainages where conflicts with irrigation or road crossing structures are minimal and preferably where the drainage is controlled by a few landowners to simplify evaluation and management.

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