

## **NORTHERN PINTAIL BANDING**

**in**

### **SASKATCHEWAN**

#### **2005 Pilot Program**

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#### **Introduction:**

Northern Pintail (*Anas acuta*) breeding populations have declined steadily since the 1970's (U.S. Fish and Wildlife Service, 2005) and are currently at relatively low levels. Long term reductions in recruitment are believed to be the major cause of this population decline (Miller and Duncan, 1999). A pro-longed and severe drought in the 1980's over much of the Canadian prairie pothole region, where the majority of the pintails settle during the breeding season, also had an impact. Following the drought, most dabbling and diving duck populations responded to the improved water conditions during the 1990's with increased production, and continental populations re-bounded close to historical levels. Pintails, however, responded only marginally to these improved conditions, and since the late 1990's pintail numbers have again been in decline. The population size remains well below historical levels (Canadian Wildlife Service Waterfowl Committee, 2005). This species is one of only two or three prairie duck species which remain significantly below the North American Waterfowl Management Plan (NAWMP) objective levels (U.S Fish and Wildlife Service, 2005).

The international waterfowl research and management community has responded to this dilemma in a number of ways. The implementation of a species-specific harvest strategy in the U.S., and the maintenance of hunting regulations restrictions in Canada has been one approach. In Canada, the Prairie Habitat Joint Venture (PHJV) of NAWMP has recognized this species as a focal point of interest, and encouraged partners to recognize concern for this species in the habitat planning process. A Pintail Action Group (PAG), composed of international researchers charged with coordinating the review of this issue and developing action plans, has been formed. The mission of the Pintail Action Group is "to advocate and support planning, coordination and evaluation of Northern Pintail management and research actions among the NAWMP joint ventures, flyways, government agencies and other organizations" (Pintail Action Group, 2005). Other groups, such as Ducks Unlimited Canada and Ducks Unlimited Inc., took the proactive step of developing a species-specific program, the Pintail Initiative, to help reverse the decline. Armed with the objective of increasing continental populations of pintails, the organizations are in search of "workable" agricultural solutions that impact large acreages (Pintail Action Group, 2005).

A significant amount of research has been directed at determining why pintails have declined, and the apparent inability of the species to respond positively to improved wetland habitat conditions. Most recent research indicates that depressed numbers remain a function of habitat availability and utilization, and the complex interaction of increased and changing predator populations. Limited nesting cover in some regions of Prairie Canada, and the propensity for this species to nest in areas of reduced cover (and thereby remain exposed to predators) are believed important factors in limiting annual

recruitment.

An improved assessment of the annual (and seasonal) survival of pintails has been recognized as an important information need. The PAG has identified a need to increase the number of pintails banded annually in Prairie Canada in order to obtain more precise measures of survival. Although pintails have always been banded during the cooperative Canadian Wildlife Service (CWS) - U.S. Fish and Wildlife Service (USFWS) pre-season "Mallard Banding Program", this species has never been the focus of these efforts, and many of the pintails banded were incidental to the primary target of this program (mallards). Banding locations are often in areas which do not normally support large numbers of pintails; mallards and blue-winged teal were the predominant species banded in the prairie pothole region. There are traditional concentration areas for pintails on the Canadian Prairies, and the primary focus of this pilot study was to identify some of these areas, and to capture and band significant numbers of this species. If successful, this effort could provide the basis for an operational pintail banding program.

**Objectives:**

The primary objectives of this pilot field program were:

- a) to identify breeding and moulting areas within Saskatchewan supporting enough pintails to capture and band significant numbers in a cost-effective manner;
- b) to field test several methods of capturing pintails on a variety of wetlands in different regions of Saskatchewan; and
- c) to determine how a pintail-specific banding program might be developed.

**Selection of Study Areas:**

An area of about 45,150 square kilometers in south central Saskatchewan was selected for this project. It included wetlands of a various sizes in both the mid-grass prairie and aspen parkland biomes (Figure 1). A large wetland complex (Kutawagan Lake) historically used by large numbers of post-breeding pintails was selected in the eastern part of the study area. It has been targeted for pintail banding in the past (Anderson and Sterling, 1974), and is located in close proximity to a USFWS pre-season "mallard banding" station adjacent to Last Mountain Lake. This facilitated a comparison of a standard pre-season "mallard" banding program with one dedicated to capturing and banding pintails.

A wetland complex (Chaplin Lake) in the grasslands of southern Saskatchewan was also selected. These wetlands are located in the Missouri Coteau grasslands, an important pintail breeding area in Saskatchewan. When wetland habitat conditions are adequate, this region is arguably one of the most productive pintail breeding areas in North America. Old Wives Lake, south of Chaplin Lake and an important moulting area for pintails, was also initially selected but not used due to an outbreak of avian botulism in early August.

Luck and Rice lakes, both in south central Saskatchewan (the former in the grasslands, and the latter in the aspen parklands) were included late in the study. Luck Lake was selected to test the use of rocket nets and to selectively capture pintails on a large wetland with high species diversity. Both Luck and Rice Lake are relatively close to Saskatoon, and could be effectively operated with limited personnel and resources.

**Methods:**

The techniques employed during this study included the established approaches to capturing and banding ducks normally employed during the pre-season mallard banding

program. However, some techniques were adapted to satisfy the objective of selectively banding pintails, and to avoid spending an inordinate amount of time dealing with nontarget

species (especially blue-winged teal) which can impact duck capture efficiency.

Attempts were made to capture all cohorts, with a special focus on adult females. This “pilot” year was designed to incorporate a variety of techniques and approaches in order to contribute to the development of a cost-effective operational program.

### ***Bait Trapping***

The primary capture technique involved bait trapping with “Benning type” swim-in traps baited with barley. This is the established technique used throughout the pre-season banding program and is useful in capturing large numbers of waterfowl. Adjustments, primarily with trap throat (opening) size, were made to selectively capture pintails and mallards in areas with large numbers of blue-winged teal. One or more traps were located at each site, baited with barley and visited daily.

### ***Rocket Netting***

Rocket netting can be effectively used to capture large numbers of waterfowl at a time, often on natural loafing or baited areas along a shoreline. The requirements differ from bait trapping with respect to the type of shoreline, time of day and number and training of personnel required to successfully execute this procedure. Rocket netting was employed on an experimental basis to determine if it was possible to capture primarily pintails on an area with very high species diversity, including especially large numbers of blue-winged

teal and other dabbling ducks.

### ***Drive trapping***

Drive-trapping has been used successfully to capture pintails on a large moulting area in the eastern part of the study area (Kutawagan Lake). This technique could be used to capture large numbers of post-breeding adults on an important moulting area. However, this technique requires a significant number of personnel who, due to unforeseen factors, were not able to participate in 2005.

### ***Mini-Traps***

Initial plans included a mobile crew equipped with “mini-traps” (a small version of the bait traps described above) assigned the responsibility of banding pintails and providing support services to the bait trapping and rocket netting crews. The objective was to continually monitor a number of sites within the central portion of the study area for pintail availability, locate and bait new sites for the bait and rocket netting crews, and to opportunistically place mini-traps on small wetlands throughout the study area. The intention was to focus on adult females (with broods) on the small wetlands throughout the area, and to prepare other sites for the bait trapping and rocket netting crews. Due to a lack of personnel this effort was effectively reduced to one person, who was able to perform the above functions with the exception of placing and operating mini-traps.

## **Results:**

### ***Number of Pintail Banded***

The pilot pintail banding program enjoyed considerable success. The banding crews were comprised of two teams of two people each; occasionally a third crew member would assist. Another person, responsible for providing logistical support, moved from one crew to the other as dictated by need.

A total of 3779 pintails (1344 adult males, 1117 adult females and 1318 juveniles) were banded during the pilot program (Table 1). About 46 percent of the pintails were captured at Chaplin Lake and 50 percent on Kutawagan Lake. The remaining 4 percent were banded on Rice and Luck lakes.

The number of pintails banded during this study compares favorably with that of the annual pre-season mallard banding program in Saskatchewan. Normally there are six banding crews (five USFWS and one CWS), with the U.S. crews comprised of three to five or more people; the CWS operation is usually considerably smaller (normally only two people). Each crew bands all species captured. In the last couple years, pintails have only represented approximately 5 percent of the total ducks banded by all these crews combined (744 in 2002, 1106 in 2003). The pintail pilot program involving only five people, distributed among five different locations, banded close to 4,000 pintails.

#### ***Species Age and Sex Composition by Trap Method***

Most pintails (97%) were captured using large bait traps, and the remainder (3%) with rocket nets late in the season. The one rocket net shot was very successful, and with additional personnel this technique could have been a major contributor to the over-all success of the project. A comparison of the species, age and sex composition of ducks captured by the two techniques demonstrates that bait trapping attracted all cohorts while adult males predominated in the rocket net shot (Figure 2). It is difficult to draw any conclusions from only one rocket net shot, because the wetland selected for this technique supported large post-breeding and moulting aggregations of waterfowl, primarily adult males. Drive-trapping and the use of mini-traps would also have made a significant contribution to this effort, but lacked the personnel required to efficiently employ these techniques.

#### ***Comparison of Two Adjacent Banding Sites***

One of the CWS pintail banding stations was located on Kutawagan Lake, in the same region and adjacent to a USFWS pre-season mallard banding station on Last Mountain Lake. The CWS pintail station banded 1874 pintails, whereas the USFWS crew captured only 547 (Table 2). This is not a reflection of banding crew effort or expertise; it simply indicates that a banding operation can be successful in targeting pintails (Figure 3). The CWS crew, under the objectives of this study, selected a wetland based on the presence of significant numbers of pintails and concentrated almost exclusively on capturing that species. It also indicates that there are opportunities to band significant numbers of pintail within the traditional pre-season banding program area.

#### **Discussion and Recommendations:**

A comparison of the number of pintails banded during the regular pre-season banding program with an effort which targeted pintails; indicates that a high degree of success can be attained by focusing on that species. Targeting one species can be successful, as demonstrated by comparing the species composition of birds banded at a “pintail dedicated” site, to that of an adjacent “all species” site.

A number of factors contributed to the success of this pilot program.

1. ***Pre-banding assessments*** were important to ensuring the delivery of a cost effective program. Considerable effort was dedicated to identifying potential banding sites within the various regions of the Province. Assessments were conducted in 2004, as well as several weeks in advance of the 2005 banding season. Wetlands which supported significant numbers of pintails and composed

of habitat conducive for capturing ducks were identified. The appropriate capture techniques were also selected for specific wetlands when assessing potential banding locations.

2. **Experienced personnel** are critical to a program of this nature. Indeterminate (permanent) staff are not available throughout the entire banding period, and dedicated, experienced seasonal personnel are required to ensure success. Experienced people are required to meet the needs of a species specific program such as this, because it employs a variety of approaches. Although the 2005 pilot program was very successful, it was negatively impacted by the number of personnel available; and prevented the inclusion of other waterfowl capturing techniques into the program mix (drive-trapping, “mobile” mini-traps, and additional rocket netting). Clearly, this project would have benefited enormously from additional personnel. Two people are an absolute minimum for operating a banding station. The addition of one or two members results in much greater success and efficiency; as previously noted, the USFWS banding crews involve three to six people; CWS crews are typically composed of two.

3. **Banding crew mobility and alternate capture techniques** are of critical importance in a species-targeted banding effort. The distribution of the target species may change throughout the breeding and post-breeding season. The banding program must recognize and adapt to these changes, by moving to new areas and selecting the capture techniques most appropriate for the wetland habitat type being used during that stage of the annual cycle. This mobility was an important component of the 2005 program, and a crew that would normally be assigned to one banding station, operated in five different regions. There is a need to incorporate other capture techniques such as mobile traps and drivetrapping, designed to capture breeding females and flightless young and postbreeding adults, respectively. Rocket netting saw only very limited use but has the potential to catch large numbers of birds with a relatively small investment in time and effort.

4. **The equipment and financial resources** required for success must be readily available. The areas that were selected for this study required special equipment not always available to pre-season duck banding crews. These needs included ATV's, shallow water boats propelled by “Go-Devil” drive systems and an airboat – all required because of the shallow, often isolated wetlands utilized by breeding and post-breeding pintails. The availability of this equipment contributed in a very substantial way to the success of the 2005 program.

5. **Wetland habitat conditions** were excellent in the region selected for pintail banding in 2005, and this was an important factor in contributing to the program success. This is an important consideration in selecting banding locations. Some parts of the grasslands in southern Saskatchewan were very dry in 2005, while water conditions were good to excellent in others. This exemplifies the importance of extensive pre-banding habitat and species availability assessments. It must also be noted that a number of other potentially good pintail banding sites were identified during these assessments, but the personnel and resources were not available to band in these areas.

The 2005 pilot pintail banding program in Saskatchewan was very successful, both in

terms of the number of pintails captured and banded, as well as what was learned in terms of how to structure such a program should it become operational in the future. However, there are a number of ways in which this project can be even more successful than in 2005.

Banding should begin earlier in the season, if the use of mobile “mini-traps” and drive trapping are to be employed. There is also a need to assess the extent (and impact on a potential banding program) of avian botulism. A local out-break of this disease in 2005 precluded banding on a wetland occupied by a large number of pintails. There may be a need to provide banding crews with guidelines on how to detect and react to disease events, simply because the occurrence of disease may not be at a level where it is obvious, and may even occur after a significant number of apparently healthy birds have been banded on a wetland which late in the season supports a disease out-break. Banding programs should consider the identification of specific “high risk” wetlands to be avoided even if disease is not apparent during the pre-banding assessment or early in the banding program.

If increased emphasis on banding pintails on the Canadian breeding grounds becomes a component of the pre-season mallard banding program it should be considered within the context of the planned “banding needs” program review, which the USFWS is undertaking. This process is long over-due for a number of reasons, but particularly with respect to identifying primary target species, the geographical distribution of the banding, and desired banding quotas. If pintail become an important component of this program, some obvious changes in the operation and coordination of the field program will become necessary.

There will be a need for improved networking and cooperation between US and Canadian banding crews with multi-agency coordination. Upon agreement of a new focus on pintails (and perhaps other species) there is much opportunity to make the entire pre-season

banding effort far more efficient and successful in attaining agreed upon objectives. There are a number of ways this may be accomplished.

A re-structuring of the pre-season banding program may be in order, including less reliance on “traditional” banding locations and approaches to capturing waterfowl. Early pre-banding assessment by Canadian agency staff would improve the efficiency of quickly deploying U.S. crews to priority areas upon arrival. Crews should become more mobile and willing to move to new areas better occupied by target species, rather than staying and continuing to capture “re-traps” and often non-target species or age/sex cohorts such as large number of blue-winged teal or adult male mallards, far in excess of stated program objectives. A “roving” international crew(s) assigned the responsibility of locating new banding sites, running mini-traps, and maintaining rocket net sites could add to the target species total in a very substantial way. Exchange and use of staff beyond traditional “U.S. or Canadian only” crews, such as occurred between the USFWS and CWS banding crews in the Last Mountain and Kutawagan lakes area in 2005 should become the norm rather than the exception if there are operational advantages. A new approach similar to this could mean cost savings in terms of fewer required “banding stations”, possibly a shorter banding period, more efficient deployment of agency staff, and higher and more appropriate numbers of target species and cohorts banded.

**Financial Resources:**

**2004 Budget:**

Resources for the 2005 pilot program were obtained from Waterfowl Management Division operational budgets. The funds were allocated to hire additional personnel beyond what would normally be required for the standard CWS banding crew, i.e. two additional seasonal staff. In addition, the regular CWS banding crew expanded its focus to include pintails as well as mallards and moved to the region of pintail banding. Table 3 presents the funding allocation for that pilot program.

**2005 Budget:**

A proposed budget is presented which assumes that the CWS banding crew (two seasonal staff) will retain its new focus on pintails, and that additional personnel and resources will be allocated to the development of enough (four) additional seasonal staff to be dedicated exclusively to banding pintails. This will allow for two “mobile” banding stations as well as a “roving” crew with the responsibility of managing mini-traps, locating new banding sites for the two mobile crews, and setting up and maintaining rocket net sites. This budget is also predicated on the need to hire at least two experienced staff. If these are not available, then an exchange of staff with USFWS banding stations might be in order. Table 4 presents four proposed budget options.

**Acknowledgements:**

F. D. Caswell provided the financial resources and rationale for proceeding with this pilot program in 2005. However, the program was actually initiated in 2004, at which time he provide the necessary resources to review the current CWS preseason banding program and to begin the identification and field assessment of potential pintail banding sites to be considered for the 2005 program. We gratefully acknowledge the assistance of the USFWS in supporting this new initiative. Phil Thorpe, USFWS, Golden, Colorado, actively participated in our efforts in the Last Mountain Lake area, including supplying staff from his banding site to assist with the pintail banding on adjacent Kutawagan Lake. We also thank John Solberg, USFWS, Bismarck, North Dakota, who provided logistical assistance in terms of aircraft surveys to locate potential pintail banding sites. Chris Downey, seasoned CWS employee, led the banding effort at Kutawagan Lake, as well as assisting in other regions, and Chad Wilkinson, seasonal employee, supported the banding at all locations. Jan Clark, CWS seasonal employee, very ably assisted with banding at most locations. Jack Smith assisted in the staff hiring process, management of the financial resources and development of project budgets. Thanks are also due to Saskatchewan Environment and PFRA for granting the necessary permits to operate within the Provincial pastures of Mount Hope/Prairie Rose and Shamrock. We thank Waterfowl Management Division staff from Manitoba for the loan of necessary equipment.

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**FIGURES**

**Kutawagan Barber Lake**  
**Chaplin Lake**  
**Rice Lake**  
**Luck Lake**

Saskatoon  
 Prince Albert  
 Regina  
 Swift Current  
 Moose Jaw  
 Boreal Transition  
 Aspen Parkland  
 Mixed Grassland

Figure 1. Northern Pintail pre-season banding locations (2005).

Figure 2: Comparison of species, age and sex composition of Northern Pintails captured by bait trapping and rocket netting.

0%  
 10%  
 20%  
 30%  
 40%  
 50%  
 60%  
 70%  
 80%  
**BAIT ROCKET**  
 AHY-M  
 AHY-F  
 HY-M  
 HY-F

Figure 3: A comparison between a CWS Pintail banding site and an adjacent USFWS pre-season "Mallard" site.

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**USFWS)**  
 Northern Pintail  
 Mallard  
 Total D  
**Kutawagan Lake (**

**Last Mountain Lake (CWS)**

ucks

**TABLES**

**Table 1: Number, age and sex of Northern Pintails banded during the 2005 pilot program in Saskatchewan.**

<b>SPECIES</b>	<b>AHY-M</b>	<b>AHY-F</b>	<b>HY-M</b>	<b>HY-F</b>	<b>L-M</b>	<b>L-F</b>	<b>TOTAL</b>
<b>NOPI</b>	1344	1117	621	691	3	3	3779
<b>MALL</b>	1306	251	200	135	12	15	1919
<b>BWTE</b>	412	58	362	339	1	0	1172
<b>GWTE</b>	28	3	3	2	0	0	36
<b>GADW</b>	5	7	1	1	5	7	26
<b>AMWI</b>	13	3	1	1	1	0	19
<b>REDH</b>	221	165	23	34	35	54	532
<b>CANV</b>	12	8	7	6	1	0	34
<b>BUFF</b>	1	0	0	0	0	0	1
<b>COGO</b>	1	0	0	0	0	0	1
<b>LESC</b>	3	0	1	2	0	0	6
<b>NSHO</b>	0	0	1	0	0	1	2
<b>RNDU</b>	1	0	0	0	0	0	1
<b>Total Ducks</b>							<b>7528</b>

**Table 2: A Comparison of the Number of Northern Pintail, Mallard, and Total Ducks Banded at a Regular Season Mallard banding station to an adjacent banding site focusing on Northern Pintails.**

**Northern Pintail Mallard TOTAL DUCKS**

<b>Kutawagan Lake</b>	1874	756	4249
<b>Last Mountain Lake</b>	547	1376	4360

**Table 3: Budget for 2005 Northern Pintail pilot program in Saskatchewan, (actual expenditures).**

1. Salary dollars for 3 experienced/casuals and 1 summer student 27,500.00
  2. Travel expenses for the above 8,300.00
  3. Travel expenses for 2 supervisors 3,600.00
  4. Bait 1,500.00
  5. Fuel 900.00
  7. Misc. expenses including maps, waders trailer maintenance, lumber, floats, wire 2,200.00
- Total 44,000.00**

**Table 4: Proposed budgets for the 2006 operational Northern Pintail banding program in Saskatchewan. (Four Scenarios)**

**A. 2 casual/experienced personnel and 4 summer students-assuming 1 stationary crew with farm house accommodations**

1. Salary for 2 casuals for 40 days (assuming lieu time for OT) 15,000.00
2. Salary for 4 summer students for 30 days at \$15.00/hr 11,700.00
3. Overtime for students (9 days straight time) 4,212.00
4. Accommodations assuming rental of farm house 500.00
5. Accommodations for 2 "mobile" crew in hotel at \$70/day for 30 days (2 double rooms) 4,200.00
6. Per diem @6x30x70 12,600.00
7. Bait-900 bushels @\$3.50/bushel 3,150.00
8. Quad gasx3 300.00
9. Vehicle gasx3 1,350.00
10. Vehicle rental and gas (if applicable) 3,000.00
11. Misc. equip-pliers, hog rings etc.x3 2,200.00
12. Travel expenses for supervisor for 10 days at \$120/day 1,200.00

13. Boat Maintenance (Air Boat plus 2 Go-Devils) 1,500.00

**Total 60,912.00**

**B. 2 casual/experienced personal and 4 summer students-assuming 1 stationary crew with CWS trailer accommodations**

1. Salary for 2 casuals for 40 days (assuming lieu time for OT) 15,000.00
2. Salary for 4 summer students for 30 days 11,700.00
3. Overtime for students (9 days straight time) 4,212.00
4. Accommodations in CWS trailer @\$20/day + \$50 park entry fee 650.00
5. Accommodations for 2 "mobile" crew in hotel at \$70/day for 30 days (2 double rooms) 4,200.00
6. Per diem @6x30x70 12,600.00
7. Bait-900 bushels @\$3.50/bushel 3,150.00
8. Quad gasx3 300.00
9. Vehicle gasx3 1,350.00
10. Vehicle rental and gas (if applicable) 3,000.00
11. Misc. equip-pliers, hog rings etc.x3 2,200.00
12. Travel expenses for supervisor for 10 days at \$120/day 1,200.00
13. Trailer maintenance 500.00
14. Boat Maintenance (Air Boat plus 2 Go-Devils) 1,500.00

**Total 61,562.00**

**C. 3 casual/experienced personal and 3 summer students-assuming 1 stationary crew with farm house accommodations**

1. Salary for 3 casuals for 40 days (assuming lieu time for OT) 22,500.00
2. Salary for 3 summer students for 30 days 8,775.00
3. Overtime for students (9 days straight time) 3,159.00
4. Accommodations assuming rental of farm house 500.00
5. Accommodations for 2 "mobile" crew in hotel at \$70/day for 30 days (2 double rooms) 4,200.00
6. Per diem @6x30x70 12,600.00
7. Bait-900 bushels @\$3.50/bushel 3,150.00
8. Quad gasx3 300.00
9. Vehicle gasx3 1,350.00
10. Vehicle rental and gas (if applicable) 3,000.00
11. Misc. equip-pliers, hog rings etc.x3 2,200.00
12. Travel expenses for supervisor for 10 days at \$120/day 1,200.00
13. Boat Maintenance (Air Boat plus 2 Go-Devils) 1,500.00

**Total 64,434.00**

**D. 3 casual/experienced personal and 3 summer students-assuming 1 stationary crew with CWS trailer accommodations**

1. Salary for 3 casuals for 40 days (assuming lieu time for OT) 22,500.00
2. Salary for 3 summer students for 30 days 8,775.00
3. Overtime for students (9 days straight time) 3,159.00
4. Accommodations in CWS trailer @\$20/day + \$50 park entry fee 650.00
5. Accommodations for 2 "mobile" crew in hotel at \$70/day for 30 days (2 double rooms) 4,200.00
6. Per diem @6x30x70 12,600.00
7. Bait-900 bushels @\$3.50/bushel 3,150.00
8. Quad gasx3 300.00
9. Vehicle gasx3 1,350.00
10. Vehicle rental and gas (if applicable) 3,000.00
11. Misc. equip-pliers, hog rings etc.x3 2,200.00
12. Travel expenses for supervisor for 10 days at \$120/day 1,200.00
13. Trailer maintenance 500.00
14. Boat Maintenance (Air Boat plus 2 Go-Devils) 1,500.00

**Total 65,084.00**