

Delta Farmland & Wildlife Trust 2009-10 Annual Report "Conserving farmland and wildlife through co-operative land stewardship."

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Thank you to everyone who has provided photographs to Delta Farmland & Wildlife Trust. If you are interested in contributing your own photos of wildlife and farming, please contact DF&WT at 604-940-3392 or dfwt@dccnet.com.

Our Supporters

The Delta Farmland & Wildlife Trust relies on additional funding to deliver the full extent of our stewardship programs. We would like to recognize the agencies who provided funding to our Stewardship Programs in 2009/10.

Delta Agricultural Society
Vancouver Foundation
Ducks Unlimited Canada
BC Waterfowl Society
Habitat Conservation Trust Foundation
Agriculture, Environment, and Wildlife Fund
Environment Canada
Corporation of Delta

and

Private Donations

Message from the Chair - 2010

The Delta Farmland and Wildlife Trust has provided farmland stewardship programs for seventeen years to farmers in the lower Fraser River delta. With our stewardship partners we have helped to conserve and enhance deltaic, farmland soils and provide a variety of habitats for a diversity of wildlife in the Lower Mainland.

In spite of tough economic times since the 2008 downturn, the Trust was able to obtain funds from our supporters and cost-share our stewardship programs with Delta farmers again in 2009/10. The highly successful Winter Cover Crop program covered a larger area at 3,019.5 acres (1,222 ha) and helped feed swans, geese and ducks over the winter for \$142,030. The Grassland Set-aside program which both rejuvenates soils and provides important old field habitat to a diversity of wildlife species from voles to our mascot bird, the Northern Harrier, was down slightly at 481.3 acres (194.8 ha) of grassland for \$109,603. Farmland drainage was improved by the laser leveling of 207.9 acres (84.1 ha) for a cost of \$25,629 and soil fertility was improved by spreading 824.3 tonnes of lime, costing \$24,728. Protection of fields and waterways by our Farmscape programs increased the area of planted grass field margins and hedgerows by 6.63 acres (at the cost of \$1,989). Farmscape programs benefit wildlife by providing vital shelter, food and nesting habitat.

The Trust would like to thank all our funding supporters that continued to help us finance our farmland stewardship programs and our outreach educational events such as the annual *Day at the Farm*. On behalf of the Board, many thanks to the Delta Agricultural Society, the BC Waterfowl Society, Environment Canada, VanCity, Vancouver Foundation, Corporation of Delta, Ducks Unlimited Canada and many corporate and private donors who continue to support the Trust.

The Trust's constitution states that we undertake projects and research which improve management guidelines for our stewardship programs. In 2010, we coordinated a review of our Winter Cover Crop Program, conducted a study with BCIT students of Short-eared Owls (a listed species) in grassland setasides and embarked on a cooperative study with the Ministry of Environment of invertebrate diversity in set-asides.

Along with the Delta farmers who participate in the Trust's programs and our funding supporters, many people are partners in this model stewardship enterprise. The Trust is guided by the informed leadership of its Directors who represent the two founding sectors of the Trust, farmers and conservationists; thank you to John Hatfield, John Malenstyn, Don Mark, Anne Murray, Hugh Reynolds, Noel Roddick and Edward van Veenendaal. The daily operations of the Trust are taken care of by our highly professional staff; thank you to David Bradbeer our Program Coordinator and Margaret Paterson our Office Coordinator.

The Trust will continue to promote the preservation and enhancement of farmland and wildlife habitat through research, education and our stewardship incentive programs. Thank you to all our partners in stewardship.

Delta Farmland & Wildlife Trust: Our Mission

DF&WT is a non-profit organization that promotes the preservation of farmland and wildlife habitat on the lower Fraser River delta (Municipality of Delta, City of Richmond) through co-operative land stewardship.

Challenges to Farming and Wildlife Conservation

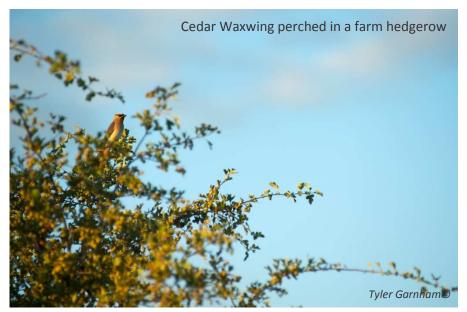
Farmland on the lower Fraser River delta is ideal for food production because the soils are fertile and

the region has a relatively long growing season. The area is also important for a diversity of migratory birds that either use the delta as a stopover before they continue their journey or spend the entire winter. Despite the suitability of the area for farming and wildlife, there are challenges facing both.

The heavy silt/clay soils of local farms are prone to degradation when overworked by



machinery. Tractors and other farm equipment can compact the soil and intensive tillage speeds the breakdown of soil organic matter, a crucial component of soil fertility. Farmers can fallow (rest) land by planting grasses and clovers and leaving the field alone for a period of time, however many farms simply cannot afford to take crop fields out of production.



Wildlife, especially migratory birds, are also challenged to survive in the increasingly developed landscape of the lower Fraser River delta. Almost 80% of the marsh present a century ago has been drained and only 600 hectares of grassland are present in the Municipality of Delta, compared to an estimated 6,000 hectares before 1890. Native shrubs and tree communities have dwindled as well.

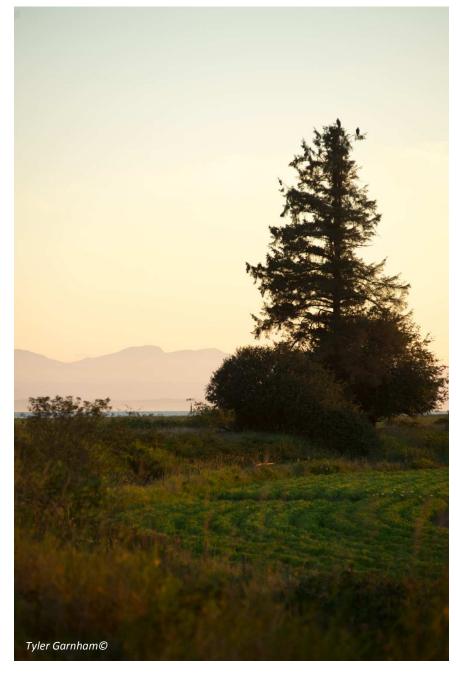
Farmland Stewardship in Action

DF&WT has developed stewardship programs to address the challenges facing agriculture and wildlife conservation. Through the stewardship programs, local farmers are eligible for cost-share payments when they plant crops that are beneficial to wildlife and/or agricultural production. The management guidelines that farmers follow to be eligible for the programs are guided by extensive research.

Each program addresses a specific example of wildlife conservation and/or agricultural production. The **Grassland Set-aside Stewardship Program** pays farmers to fallow land, which improves soil fertility, while providing habitat for a diversity of grassland raptors, wading birds, songbirds, small mammals, and pollinating insects. The **Winter Cover Crop Stewardship Program** helps cover the cost of establishing vegetative cover on fields before winter, which protects the soil from erosion, improves soil

fertility, and provides feeding habitat for herbivorous waterfowl and shorebirds. Through the **Hedgerow** Stewardship Program, linear corridors of native shrubs and trees are planted along farm fields to provide habitat for songbirds, raptors, and pollinating insects. Similar corridors of grasses are planted along field edges through the **Grass Margin Stewardship** Program. Farmers can also apply to cover some of the costs of soil amendments and management through the Field Liming and Laser Leveling Stewardship Programs. Lime maintains soil pH at optimum levels so that plants can grow effectively and laser leveling improves drainage on fields that are prone to flooding.

By providing solutions to farmers that are compatible with their crop rotations, the DF&WT Stewardship Programs are contributing to the availability of wildlife habitat and the long-term viability of local farming operations, which ensures that land will continue to be available for food production and wildlife conservation.



Summary of Stewardship Programs

Delta Farmland & Wildlife Trust has been providing Delta farmers with access to cost-sharing stewardship programs for the past 17 years. These programs are designed to contribute to agricultural soil fertility and wildlife habitat availability, while mitigating conflict between wildlife and farming operations. During the 2009/10 fiscal year DF&WT provided cost-shares totaling \$321,776.29 (Table 1), excluding hedgerow maintenance, staff time and administration costs.

Currently, the Trust offers cost share incentives for Grassland Set-asides, Winter Cover Crops, Laser Leveling, Field Liming and establishing new Hedgerows or Grass Margins. Under these programs landowners enter into formal agreements with DF&WT which lay out management practices on fields or field margins. In return farmers receive a cost share for managing identified fields or margins over the period of the agreement. This period is dictated by the particular field use or habitat enhancement being carried out as well as the farmer's plan for crop rotations.

Stewardship Program	Acres	Rate	Total
Grassland Set-aside			
1-year	80.3	\$300.00	\$24,090.00
1-year with nurse crop	93	\$150.00	\$13,950.00
2-year	89	\$225.00	\$20,025.00
3-year	101	\$225.00	\$22,725.00
3-year mowed	5.5	\$125.00	\$687.50
4-year	112.5	\$250.00	\$28,125.00
Total	481.3		\$109,602.50
Winter Cover Crops			
Planted before Aug 31	1230.5	\$50.00	\$61,525.00
Planted after Aug 31	1789	\$45.00	\$80,505.00
Total	3019.5	745.00	\$142,030.00
Total	3013.3		7142,030.00
Laser Leveling	207.85	-	\$25,628.50
Field Liming (*tonnes of lime)	824.27*	\$30.00	\$24,728.10
Farmscape			
Hedgerows	3.43	\$300.00	\$1,029.00
Grass Margins	3.2	\$300.00	\$960.00
Total	6.63		\$1,989.00
Stewardship Programs Total			\$303,978.10

Grassland Set-aside Stewardship Program

Local farmers in Delta and Richmond are able to fallow land through the Grassland Set-aside Stewardship Program. Individual fields are planted with forage grasses and clovers and can be enrolled in the Set-aside program for up to 4 years. During that time, farmers receive cost-share payments to offset rent, seed, equipment, and labour costs (\$300/acre during the 1st year; \$225/acre in the 2nd and 3rd year, and \$250 in the 4th year). These rates are being re-evaluated for the 2010 program year.



Role in Local Crop Rotation

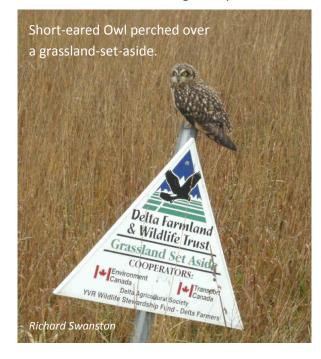
Grassland set-asides are short-term fallows that replenish soil organic matter. Soil organic matter is made up of the residue from dead plants, fungus, and soil organisms. Soil organic matter is crucial to maintaining agricultural production, as it influences soil structure (e.g., aggregate stability), water retention, drainage (by increasing soil macropores), soil microbial

activity, macro invertebrates (e.g., earthworms), nutrient storage and nutrient uptake by crop plants. Additionally, the roots of grasses, and especially clover, can bore channels through compacted soil,

thereby increasing drainage and aeration. Increased yields from grassland set-asides have not been documented but there are anecdotal reports of higher than average potato yields following a set-aside. The program also allows farmers to transition to organically certified production by fallowing their field during the 3-year chemical free period.

Role in Wildlife Conservation

Grassland set-asides mimic the grasslands that were abundant on the lower Fraser River delta (LFRD) prior to 1890 (when land clearing and draining for agriculture began) and are therefore ideal surrogate habitat for wildlife. Populations of small mammals, especially Townsend's vole, establish under the thick canopy of grass and provide prey for predatory birds. These include raptors (Northern Harrier, Short-eared Owl, Barn



Owl, Rough-legged Hawk, Red-tailed Hawk, and American Kestrel) and wading birds (Great Blue Heron and American Bittern).

Grassland set-asides provide habitat for a diversity of arthropods, and in 2010 DF&WT will be partnering with the BC Ministry of Environment to measure arthropod, especially bumblebee, diversity in grassland set-asides. Arthropods can also serve as a food source for shrews and insectivorous birds, including Barn Swallows and Western Meadowlarks.

Set-asides also provide nesting habitat for grassland birds. Savannah Sparrows and Common Yellowthroat nests are found in set-asides and there are even reports of Northern Harrier nests. Short-eared Owls and Western Meadowlarks may nest in set-asides but have not been confirmed. It is thought that breeding populations of Western Meadowlarks have been extirpated from the lower Fraser River delta.

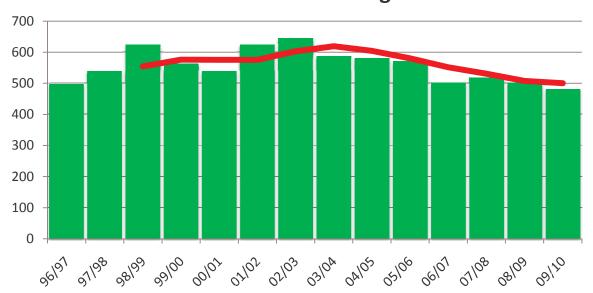


Other Benefits 3side.

The organic matter that accumulates in

grassland set-asides and benefits soil quality also acts as a pool of carbon, temporarily locking it away into plant tissue and the soil. Although this stored carbon is released from a set-aside's soil when it is returned to crop production, the planting of new set-asides ensures that a dynamic, yet relatively consistent, pool of carbon is sequestered from the atmosphere. The annual enrollment of 550 acres of grassland set-asides results in 1,000 to 1,800 tonnes of carbon sequestered into vegetation and soil, equivalent to the emissions of 110-200 people living in the lower mainland.

Grassland Set-aside Acreage 1996-2009



Winter Cover Crop Stewardship Program

Farmers in Delta can plant cereal grasses, clover, or annual forage grasses as cover crop. Cover crops can be under-seed into growing crops (e.g., cereal grains and silage corn) or planted after cash crops (e.g., beans, peas, and potatoes) are harvested. In 2009, farmers received \$50/acre for seeding cover crops before August 31 and \$45/acre for seeding them between September 1 and October 9.

Role in Local Crop Rotation

The foliage of cover crops provides ground cover, preventing rain-induced soil erosion, while the roots increase soil porosity and break up compaction. Cereal cover crops scavenge nutrients that would otherwise leach from the soil during heavy winter rains. The cover crop can be incorporated in spring as

a green manure to increase soil organic matter. Soil organic matter improves soil structure, increases the water holding capacity of soil, and increases the infiltration of water. Clover cover crops can fix nitrogen and offset the need to use synthetic fertilizers. While directly improving soil health, cover crops can also provide many other agricultural benefits. Cover crops can shade weeds and some (such as barley) release allelopathic compounds that inhibit weed growth, reducing



the farmer's dependence on chemical controls.

Role in Wildlife Conservation

Cover crops mainly benefit herbivorous waterfowl, providing them with a protein rich food source during staging and wintering periods. Lesser Snow Geese, American Wigeon, Northern Pintail, Mallard, and Trumpeter Swans are all species that frequently feed on winter cover crops. To a lesser extent, Canada Geese, Cackling Geese, Greater White-fronted Geese.



Tundra Swans, and Green-winged Teal feed on cover crops. Several species of shorebird have been identified using cover crop fields as well. Wilson's Snipe use the dense vegetation of early planted cover crops as shelter and Dunlin and Black-bellied Plover have been observed feeding on invertebrates on

grazed cover crop fields. In one instance, a group of 18 Northern Harriers was observed roosting in an oat cover crop that had grown higher than 50 cm.

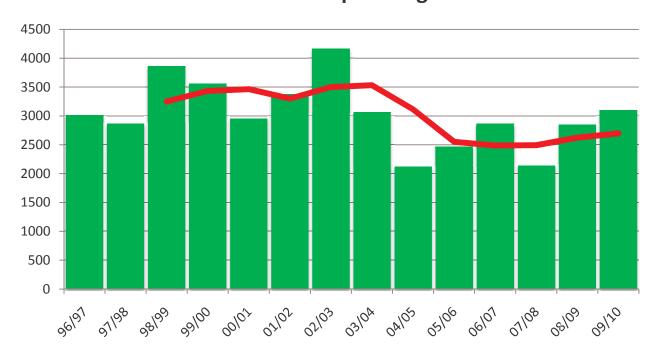
Other Benefits

Grasses grown for hay and pasture (perennial forage) can be grazed by waterfowl,



reducing harvestable yields and occasionally requiring fields to be reseeded. Winter cover crops can act as lures, drawing waterfowl away from hay and pasture and providing them with an alternative source of feed. While cover crops have not resulted in a complete abatement of gazing on hay and pasture, they offset some of the loss that growers would have otherwise experienced.

Winter Cover Crop Acreage 1996-2009



Hedgerow Stewardship Program

Hedgerows in Delta are rows of native trees and shrubs planted along field edges. Farmers are eligible to receive \$300/acre for hedgerows enrolled in the program.

Role in Local Crop Rotation

The ecology of hedgerows is complex and relatively un-quantified in Delta. It is difficult to determine exactly how hedgerows contribute to crop production, but it is known that the presence of flowering shrubs and trees attracts pollinating insects. Pollinating insects are required for fruit set in a number of local agricultural crops, including tomatoes, berry crops (blueberry, strawberry, raspberry, and cranberry) and cucurbits (squash, including zucchini and pumpkins, and cucumbers). It has been argued that hedgerows harbor both beneficial and pest arthropods, but little work has been conducted in Delta

to determine the insect communities present in hedgerows.

Role in Wildlife Conservation

Hedgerows provide feeding habitat for songbirds and raptors. Many hedgerow songbirds feed upon the berries from fruiting shrubs or the insects living in the hedge. Accipiter hawks like Cooper's and Sharp-shinned Hawk will hunt smaller songbirds within the hedge. Raptors, like the Red-tailed Hawk, Rough-legged Hawk, Short-eared Owl, and Northern Harrier will use hedges as perch sites. Surveys conducted of hedgerows in Delta, including those established through DF&WT's stewardship program, indicate



that older, more structurally developed hedgerows provide habitat for a wider variety of bird species.

Grass Margin Stewardship Program

Like hedgerows, grass margins are linear strips of habitat running along the edge of agricultural fields. DF&WT encourages farmers to use the same mixture of forage grass and clover used in grassland setasides when planting margins. Farmers are eligible to receive \$300/acre for grass margins enrolled in the program.

Role in Local Crop Rotation

Grass margins can provide physical breaks between fields, especially fields that require buffer zones for organic certification. When margins are planted along ditch edges, the grass can trap soil that would erode off the field during heavy rains, preventing the ditch from filling with sediments. When grass margins contain clover, they can provide feeding habitat for pollinating insects.

Role in Wildlife Conservation

Similar to grassland set-asides, grass margins can provide habitat for small mammals which are prey for raptors and wading birds. Raptors may also roost in grass margins during winter; Short-eared Owls have been flushed from grass margins during field surveys. Grassland songbirds nest and feed the grass margins.

Laser Leveling Stewardship Program

DF&WT has been offering its Laser Leveling cost-share program to farmers since 1996. Through the program, co-operators are eligible to receive up to 50% of the cost of leveling, up to a maximum cost-share of \$125/acre (\$309/ha) and a maximum of 50 acres (20 ha) leveled.

Role in Local Crop Rotation

Drainage is an essential component of productive agriculture, especially in areas that experience periods of heavy rainfall. On the Fraser delta, heavy rains occur during the winter months and poor field drainage can lead to soil erosion, soil compaction, and salt accumulation. Field topography plays an important role in how water is drained from a

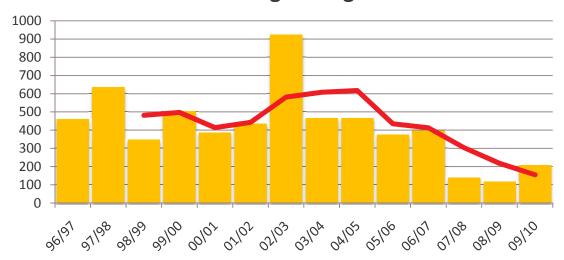
Laser leveling plough being pulled by a tractor; the laser receivers that orient the plough are mounted on poles.



field. Steeply sloped fields can lose significant amounts of topsoil as fine particles are washed away by water runoff. Water pools in low areas and is unable to drain, and the weight of water in these areas is significant enough to cause compaction. Furthermore, these areas take longer to dry in spring, delaying farmers' access to portions of their fields. When the puddles do dry, the osmotic pressure can pull significant amounts of salt from deeper in the soil profile to the surface, thereby impacting crop production.

Delta farmers have access to laser leveling services which can recontour their fields to maximize drainage, and minimize water ponding and soil erosion. Using GPS, stationary laser towers, and sophisticated computer software, a laser leveling plough is pulled by a powerful tractor and can accurately recontour a field. The plough fills in low areas and removes soil from high points, and fields can be contoured to be dead level, sloped, or crowned, depending on the field's characteristics.

Laser Levelling Acreage 1996-2009



Field Liming Stewardship Program

Farmers in Delta have had access to DF&WT's Field Liming cost-share since 2004. Through the program, farmers are eligible to receive \$30/ton of lime applied, to a maximum of 2 tons/acre applied on a maximum of 100 acres.

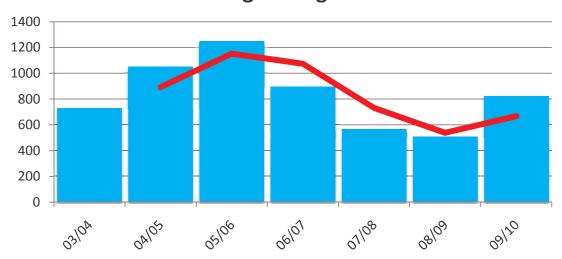
Role in Local Crop Rotation

Soils become acidic when there is a build up of positively charged hydrogen ions (called cations). There are several ways soils become acidic. Heavy rains can leach away positively charged ions like calcium, magnesium, potassium, and sodium. Excess nitrogen fertilizer that is not taken up by crop plants can be oxidized to acids by soil microbes. When soils become too acidic, plants are unable to take up nutrients

efficiently. The application of lime to fields allows farmers to adjust soil pH to approach a level that maximizes yield potential, particularly for vegetable crops. While many factors, such as the kind of crop, soil type, and climate, influence the effect of liming a field, it can be generally stated that the application of lime on all moderately to strongly acid soils will improve and maintain productivity. At a cost of over \$77 per tonne (which includes transportation to the field and spreading), lime is an important investment in the stewardship of agricultural soils.



Field Liming Acreage 2003-2009



STATEMENT OF FINANCIAL POSITION Unaudited, for the year ended March 31, 2010 March 31, 2010

ASSETS

Current	<u>2010 (\$)</u>	2009 (\$)
Cash	20,316	33,595
Term deposits	441,288	438,269
Contributions receivable	28,267	17,875
GST receivable	1,988	1,437
	491,859	491,176
Long term investments- at cost	67,013	66,979
Capital assets	3,410	3,176
	\$ 562,282	\$ 561,331

LIABILITIES

Command	<u>2010 (\$)</u>	2009 (\$)
Current		
Payroll liabilities	2,145	1,408
	2,145	1,408
Grant repayable- long term portion	28,000	28,000
Deferred revenue	291,886	300,000
	322,031	329,408
Net assets	240,251	231,923
	562,282	561,331

STATEMENT OF OPERATIONS AND CHANGES IN NET ASSETS Unaudited, for the year ended March 31, 2010

	2010 (\$)	2009 (\$)
REVENUE		
Funding:		
Delta Agricultural Society	151,735	153,617
Vanc Fdn: YVR Wildlife Stewardship Fund	70,655	131,358
Ducks Unlimited Canada	41,000	30,000
B.C. Waterfowl	37,663	30,000
Vanc Fdn: Boundary Shores	12,069	22,438
Corporation of Delta	15,000	15,000
Delta Farmers' Institute	-	5,000
Gov't of Canada Cdn Wildlife Service	75,000	-
TG&CC Habitat Compensation Fund	13,750	-
Other:	00.007	100.604
Donations	90,087	109,604
Fundraising	- 2.705	77,527
Interest and other income	3,795	6,084
Total revenue	510,754	580,628
		_
EXPENSES		
Projects:		222.274
Remittances to co-operators	312,628	322,071
Program coordinator	52,769	59,612
Travel and mileage	3,032	1,958
Program materials and supplies	34,931	1,473
Farmscape maintenance	6,806	-
Farmscape construction	17,544	-
Total projects expenses	427,710	385,114
General:		
Administration, office, society costs	55,605	83,349
Fundraising	2,035	38,095
Farm awareness campaign	10,454	12,608
Conservation education, communication	6,622	3,267
Total general expenses	74,716	137,319
Total expenses	502,426	522,433
		<u> </u>
Excess of revenue over expenses	8,328	58,195
Net assets, beginning of year	231,923	173,728
	,	
Net assets, end of year	240,251	231,923