Cela Tega Paper 2011-12

An Economic Look at Lee County and Estero Bay Basin Conservation Lands: Acreage, Jobs, Value

By Richard Weisskoff

A brief personal note: when Dr. Nora invited me to write on the Economic Impacts of Conservation Lands, I was totally baffled at what I found. Yes, I had testified in Lee County before on mines and marshlands. But what I found now is so utterly different from the tourism of the intense southeast coast region and also from the other semi-rural areas that have begun promoting nature tourism, that I had to rethink and re-compute the entire process of valuing nature, for here, in Lee County, a different model is at work.
This paper presents my findings....please email me your comments, rwecon@gate.net

Executive Summary

This paper introduces three innovations.

First, we connect the three classic land use/land cover studies for Lee County (1900, 1953, 1973) with the 1995 SFWMD land use/land cover study. This enables us to identify the "cross-over" point or period in which the area of the "built-up" lands exceeded the area of the "natural lands."

Second, we trace the profile of the housing boom in Lee County in terms of the number of housing permits and housing starts, and also, in its collapse, the appearance of unusually high levels of unemployment. The collapse of the housing boom and the moderate recovery since 2012 has, ironically, thrown the county back on its own natural track, which is tourism with a focus on the natural setting: uncluttered beaches, clean water and air, easy access to natural "wild" areas, parks, and museums, minimal traffic, good services and accommodations, fair prices, and genuine hospitality.

The third and major innovation of this paper is a two-step procedure in which (a) we connect the value of tourist spending with the jobs generated by that spending (using the IMPLAN data system applied to Lee County), and (b) we relate the number of jobs to the acreage held as Conservation Lands in both the entire county and in the Estero Bay Basin and also the purchase price per acre of all the Conservation Lands in Estero Basin (corrected for inflation) with the current tourist spending per acre. We conclude that 2.29 acres of Estero Basin Conservation Lands generates one full-time job by means of the tourist industry and that the average one-time purchase price of all the Conservation Lands in the Estero Basin ($9,221, corrected for inflation) is a but a third of a single year's tourist spending ($27,470) per acre. We conclude that the key to job creation and measured growth of "nature tourism" in Lee County lies in the acquisition and maintenance of Conservation Lands. Compared to their purchase price, the Conservation Lands have indeed been a good investment.

A. History First: The County that Lost Its Way

The early land use-land cover studies for Lee County for 1900 show a negligible area in urban and agriculture uses, and 490,539 acres of natural lands, excluding estuarine bays (Table 1, col. 1, line C*)[1] By 1995, the natural areas (excluding estuarine bays) had fallen to 218,000 acres, or from 76.3% of the total area in 1900 to 33.2% of the total area in 1995. The combined urban and agricultural lands had risen to over 285,000 acres (lines A+B, col. 4).

If we interpolate linearly between the observed points, we can plot these trends. (Please see Graph 1). We note a "cross over" around 1977-80 in which the acreage in "Ag-plus-Urban" surpasses the "Natural acreage Without Estuarine Bays." This ascent of market forces for development must have encountered and provoked a strong and resilient conservationist movement, equally dedicated to keeping the land <u>out</u> of development through government purchase. But the conflict in Lee County is distinguished here by the relatively low presence of Federal lands, and hence a reliance on county funding far greater than the state-wide average[2].

In Graph 2, we see the various mini-booms in single-family and multi-family housing starts (1982-91) and then, by the late 1990's, the unprecedented boom in single-family housing, peaking in 2005, and crashing in 2008. The "unemployment" profile (Graph 3) ends with a level of unemployment of almost 35,000 people in 2009. This number started to decline in 2011.

B. Tourism as the True Economic Engine

Tourist spending is one indicator or measure of the value paid by visitors to enjoy nature. But it is a partial indicator. Missing are entire activities in the natural setting undertaken by local residents and by visitors that are not recorded as "tourists." These

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[1] These numbers appear in several places: Costanza 1975, Odum and Brown, 1975, Brown 1977. See Weisskoff 2005 for the 1995 surveys. See Appendix Table 1, this Report, for the cross-walk reconciliation of the latest with the 1995 study with the three earlier classifications.

[2] In 2011, for example, FNAI reports that the Federal government averaged was 42.6% of the entire state of all conservation lands, but the Federal presence in Lee County was only 5.8%! The local (i.e. County) share in Lee was 27.6%, but on the state-level, the average was 4.9%!

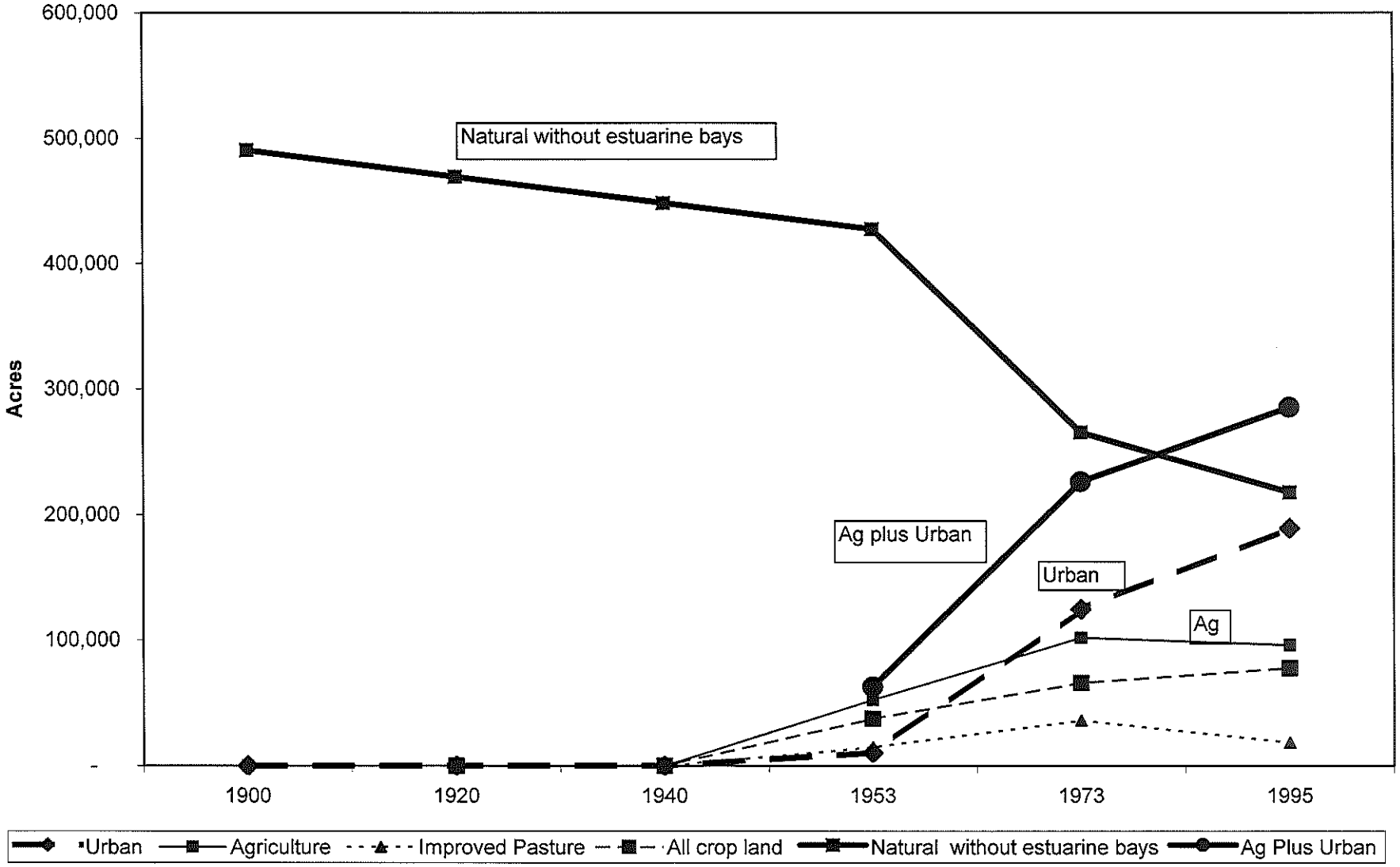
Table 1 Land Use, Lee County 1900, 1953, 1973, 1995

		Lee County (acres)				Percent			
	Subsystem	1900	1953	1973	1995	1900	1953	1973	1995
A	Urban	-	10,446	124,288	189,249	0.0	1.6	19.3	28.9
B	Agriculture	-	52,373	101,868	95,927	0.0	8.1	15.8	14.6
b.1	Improved Pasture		14,835	36,003	18,434		2.3	5.6	2.8
b.2	**All crop land**		**37,538**	**65,865**	**77,493**		**5.8**	**10.2**	**11.8**
A+B	**Urban + Ag**		**62,819**	**226,156**	**285,176**		**9.8**	**35.1**	**43.5**
C	Natural	643,210	580,246	418,054	370,466	100.0	90.2	64.9	56.5
	Estuarine bays	**152,671**	**152,671**	**152,680**	**152,680**		**23.7**	**23.7**	**23.3**
C*	**Natural without estuarine bays**	**490,539**	**427,575**	**265,374**	**217,786**	**76.3**	**66.5**	**41.2**	**33.2**
c.1	Exotics			1,114	5,084		0.0	0.2	0.8
c.2	Temperate forest	302,137	262,865	176,713	83,796		40.9	27.4	12.8
c.3	Rivers and Lakes	16,275	9,747	4,966	5,306		1.5	0.8	0.8
c.4	Freshwater wetlands	121,973	97,542	36,375	75,558		15.2	5.6	11.5
c.5	Saltwater wetlands	50,154	57,421	46,206	48,042		8.9	7.2	7.3
	TOTAL (A+B+C)	643,210	643,065	644,210	655,642	100.0	100.0	100.0	100.0

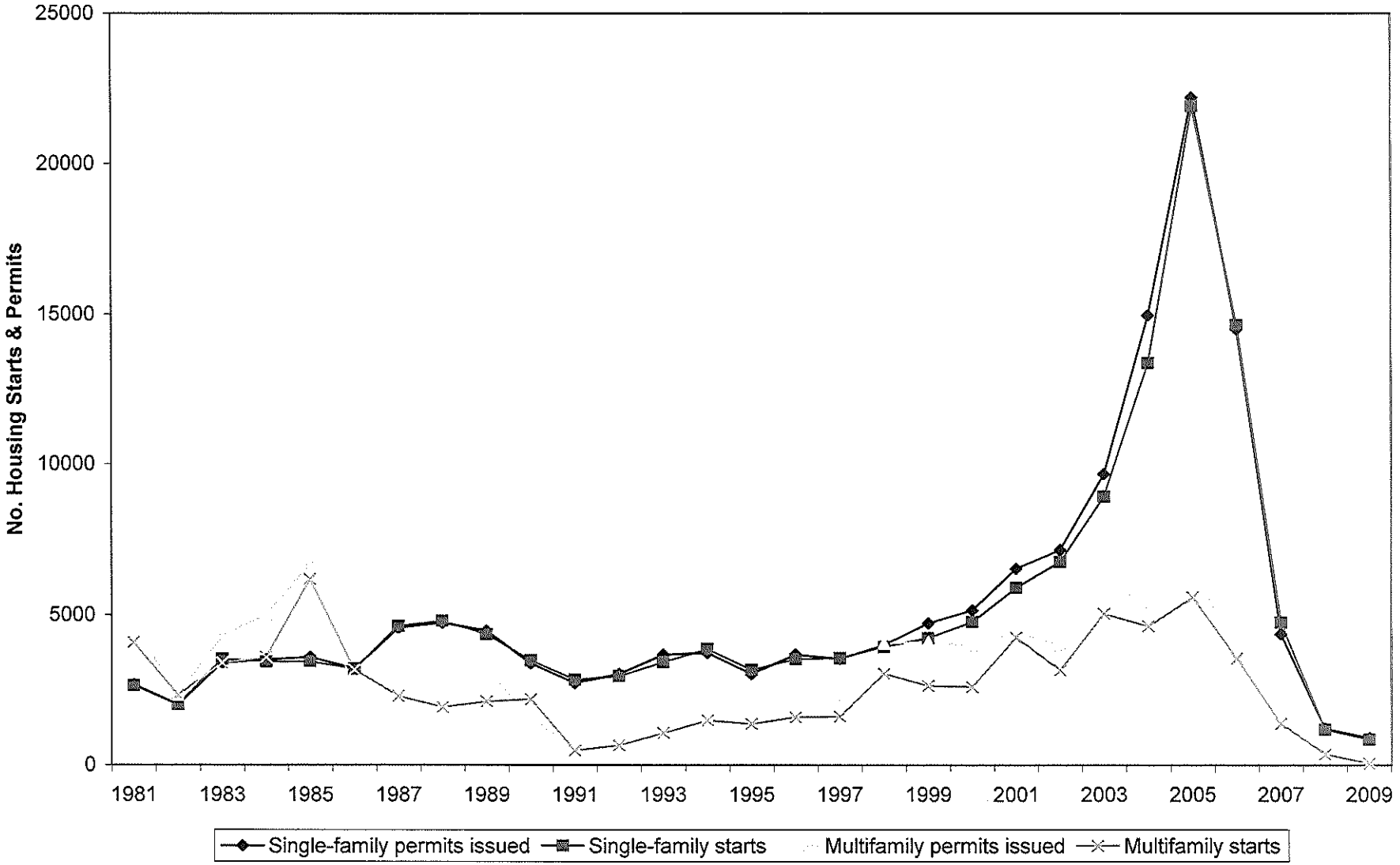
Sources:

1900, 1953, & 1973 acres are from Robert Costanza, "The spatial distribution of land use subsystems,"
1995 is from Weisskoff's processing the original polygons from the Land Use/Lad Cover Study from South Florida Water Management
Data for 1900 and 1973 (but not for 1953) also appear in Odum and Borwn, eds. (1975), pp. 376 and 377 for Lee County; also in M. Brown (1977),
Aggregation: See Appendix Table 1 for details on aggregation and cross-walks between different land use studies.

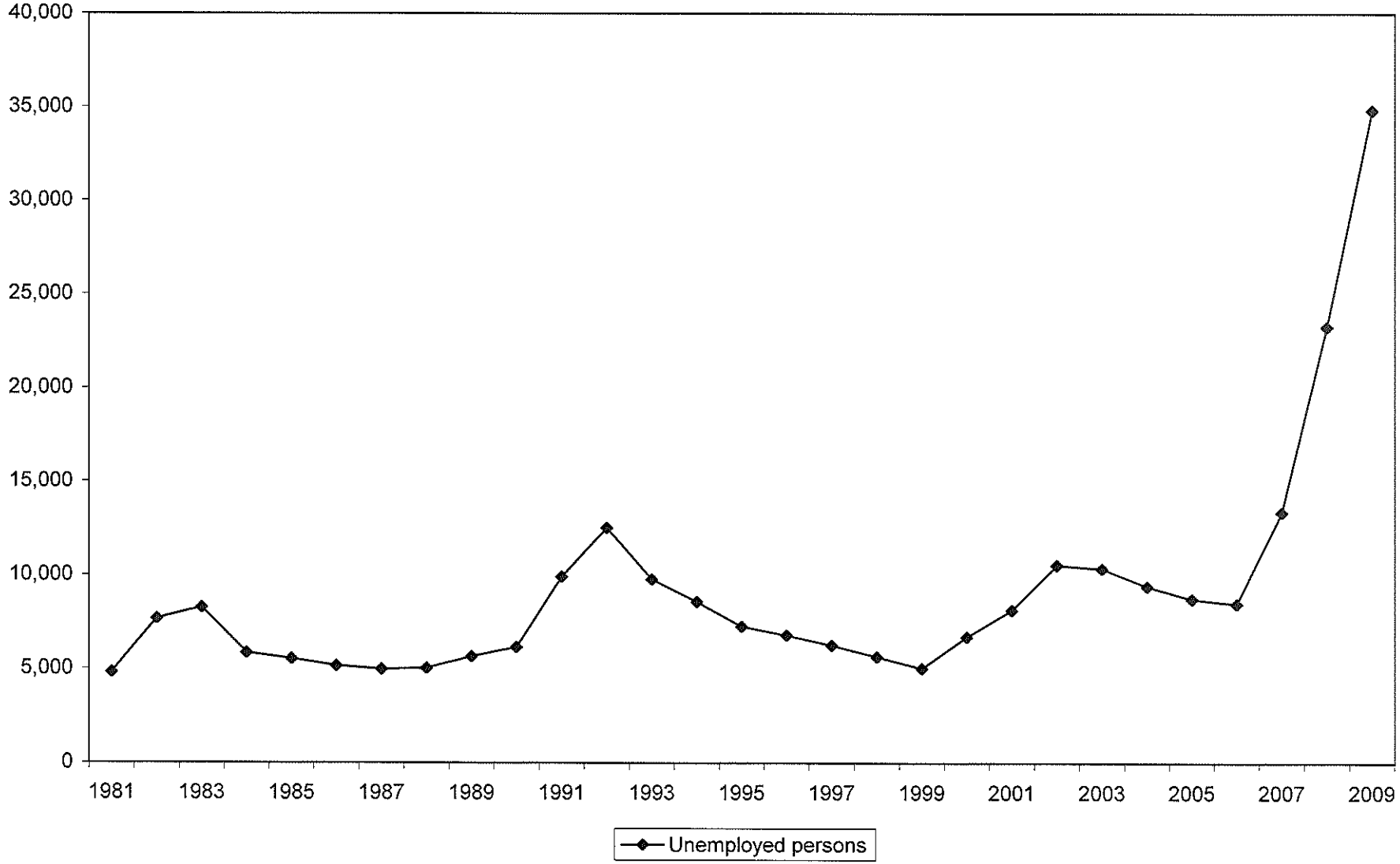
Graph 1 Land Use, Lee County, 1900 to 1995



Graph 2: Bubble Burst, Housing Permits & Starts, 1981-2009, Lee County



Graph 3: Unemployed Persons, Lee County



activities include fishing, boating, hunting and wildlife watching, among others, and there are indeed important in the county economic picture![3]

But if we take the $2.7 billion tourist spending, recorded for calendar year 2011 by the Lee County Visitor and Convention Bureau, distribute it among the 10 categories of spending surveyed by their questionnaires, and enter the spending into the IMPLAN modeling system for Lee County, we can track how much of that spending gets "recycled" or recirculated within the county and how much "leaks" to other counties out as commissions, taxes, imports, royalties, etc. The net results of the "income" and "job" multipliers are shown in Table 2. The full tourist spending record of $2.7 billion generates direct output of $2.2 billion, indirect output of $687 million, induced output of $776 million (see Table 2r, lines 2a-c.) The sum of all impacts is $ 3.7 billion (line 3).

These impacts of tourist spending generate a corresponding number of jobs throughout the county's economy, and again, the sum of the direct, indirect, and induced impacts on jobs (Table 2r, lines 4a-c, and 5) is 43,025 jobs.[4]

The total number of conservation acres in the entire county is given by the Florida Natural Area Inventory (FNAI) as 112,157 acres (line 6, col. 1). Tourist spending per acre, that is, the result of the tourist spending that may be said to "earn" or "generate" a sum of $24,106 per acre (line 7) and 0.38 jobs per acre (line 9), (or, put a different way, every 2.6 acres are responsible for or "associated with" a full-time job caused by tourist spending, line 10.)

All debate regarding the value of acquiring new lands must be put into this context , that is, the contribution of the land to the entire tourist package.

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[3] It is impossible for me to trace all these elements in this brief paper.

[4] "Direct" jobs means those employed, say, in restaurants; "indirect" jobs include the suppliers of the food sold in the restaurants; "induced" jobs includes the jobs created by the spending of the direct and indirect employees above. "Total" jobs include all of them.

Table 2r Tourist Spending in Lee County and Estero Bay Basin					
	[1]	[2]			
	All Lee County	Estero Bay Basin	(% Estero Bay Basin in County:)		
1. Total Tourist Spending	**$2,706,086,451**	$1,193,384,125	(44.1% average of 49.5%	state park visitation	
			38.7%	conservation land	
2. IMPLAN Results, Impact type on Output:	for 100% tourist $	0.441	of County tourist $ due to Estero Bay Basin		
a. Direct Effect	$2,215,602,109	$977,080,530			
b. Indirect Effect	$687,368,451	$303,129,487			
c. Induced Effect	$776,242,597	$342,322,985			
3. Sum Total Impacts on Output $ (direct, indirect, induced)	$3,679,213,157	$1,622,533,002			
4. Total Impacts on Jobs (from IMPLAN)					
a. Direct Effect	30,667	13,524			
b. Indirect Effect	5,538	2,442			
c. Induced Effect	6,821	3,008			
5. Total Jobs (direct, indirect, induced)	43,025	18,974			
	Due to 100% Cons. Acres				
6. Total Conservation Lands (FNAI) acres	**112,257**	43,443	Conserv lands are 38.7%		
7. Tourist spending $ per FNAI acre (line 1/line 6)	**$24,106**	**$27,470**			
8. Tourist spending $ per all tourism-jobs (line 1/line 5)	$62,896	$62,896			
9. Total Jobs per acre (line 5/line 6)	**0.38**	0.44			
10. Acres per job (line 6/line 5)	**2.61**	2.29			
11. Purchase price per acre: (from Table 3)					
12. $ per acre, all Conservation lands, averaged, indexed in constant dollars:		**$ 9,221**			
13. $ per acre, all non-Conservation 20/20 lands		**$ 5,999**			
14. $ per acre, 16 Conservation 20/20 parcels in basin (Append.Table 2)		$ 20,919			

C. Estero Bay (Table 3)

Where does Estero Bay Basin fit into this picture? I have included the county's 16 acquisitions of the Conservation 20/20 Program, the county airport mitigation lands (7,000 acres), the state parks, the CREW lands in Lee County, and the Audubon lands. These total 43,443 acres, or 38.7% of the county's total 112,257 acres of Conservation Lands (Table 3, line g, col. 2)), purchased at an average price of $9,221 per acre (in constant 2010 dollars of each acquisition, col. 9. Hence, a purchase in 1966, for example, for $216,000 is "inflated" to 2010 dollars by the CPI or Consumer Price Index, and is computed to be the equivalent of $1.45 million in 2010 dollars. The 1966 price per acre of $338 is the equivalent of $2,265 per acre in 2010 dollars.)

In terms of visitation, slightly **less** than half of the state park visitation is in the Estero Bay Basin (49.5%, Table 3, bottom line, col. 3) and less or 38.7% of the conservation land acreage is in the Estero Bay Basin. We take an average of these two figures, and say that conservatively, 44.1% of total tourist spending should be assigned to the Estero Bay Basin, and so too 44.1% of the total jobs should be attributed to the Estero Bay Basin acreage.

We conclude, therefore, that tourist spending allocated to the Estero Bay Basin generates a total of **18,974 jobs** (Table 2r, line 5, col. 2) or, on the average, **$27,470**[5] per conservation acre (line 7, col. 2). Every 2.29 acres are, in a sense, responsible for generating a full time job (line 10, col. 2).

In terms of costs, we have noted in Table 3, the average Estero Bay Basin acre cost $9,221 (line d), running as high as $20,919 per acre for the Conservation 20/20 properties (Table 2, bottom line). Even the most expensive of these lands, chartered in Appendix Table 2, for example, the Six-Mile Cypress Slough, -- that urban gem -- must, in retrospect, be seen

[5] Recall that this is probably the low end estimate, as it fails to include the nature benefits to the residents, especially in real estate amenities, fishing, boating, hunting, and wild-life watching.

Table 3r: Estero Bay Conservation Lands

A. Acreage and Costs

	Conservation acres in			Cost Mill	$ per basin acre	Mean Yr.	CPI	Total cost mill constant 2010$	Cost per acre	
	Estero Basin	Lee County	% in basin	Current $	in current yr $	of purchase	2010=1.000	(col. 4 x col. 7)	constant 2010$	Source:
	1	2	3	4	5	6	7	8	9	10
a-1. 16 Conservation 2020 lands in basin	9,633	25,290	38.1	139.3	14,461	see Appendix Table 2		201.51	$ 20,919	See Appendix Table 2 for 16 properties, prices; county totals from FNAI, 2012.
a-2 County Airport Mitigation	7,000	7,000	100.0	21.1	3,014	1994-98; 1996	1.388	29.29	4,184	Ellen Lindblad, flylcpa; Parcel known as "the imperial marsh."
b. State Parks (4 in watershed), original 1985 transaction:	12,534	51,660	24.3							state parks from their websites; totals state c-lands from FNAI.
original 1985 transaction:	11,908			54.462	4,574	1985	2.022	110.12	9,248	from Jim Beever, communication
c-1. Corkscrew Regional Ecosystem Watershed (Flint Penn Strand)	14,173		100	34.6	2,441	1991	1.599	55.32	3,903	$ per acre from CREW total 38,817 ac that cost $94.659 million, includes Lee and Collier together.Per acre cost was then applied to Lee acreage to get total $ spent. Data from Jim Beever.
c-1 CREW- alternative	9,152		100	14.5	1,584	1991	1.599	[23.19]	2,533	Lynda Thompson communication
c-2 CREW Land & Water Trust	50		100	0.18	3,600					Brenda Brooks, communication
c-3 CREW Land & Water Trust	5		100	0.02	4,000	2001	1.231	0.02	4,924	Lee County Property Appraiser web site, purchase of 11/30/2001
c-4 CREW all lands purchased	13,727	13,727								CREW 2011 Annual Report, p. 3.
d. All Federal lands	not known	5,300								
e. All private lands	not known	9,280								
National Audubon Society (1996)	640	655	99.2	0.216	338	1966	6.710	1.45	2,265	Lee County Property Appraiser web site, purchase of 8/1/1966.
National Audubon Society (2001)	10	655		0.06	6,000	2001	1.231	0.07	7,386	Lee County Property Appraiser web site, purchase of 10/8/2001.
f. Corkscrew Regional Mitigation Bank	632	632	100.0	1.8	2,848	1995	1.429	2.57	4,070	
g. Totals:	**43,419**	**112,257**	**38.7**	**249.93**	**5,756**			**400.36**	9,221	
Total without Conservation 2020	**33,146**			**110.63**	**3,338**			**198.85**	5,999	

B Visitation.

			cost mill $	$ per acre	
a. County lands:					
		acres:			
6 Mile Slough (Cypress N)	140,000	3,400	35.8		Visitation from Robert Reppening's office
6 Mile Slough (original slough)			35.6		
		sum:	71.4	21,000	
b. State parks (2009-10)					
Estero Bay Aquatic PreserveSP	3,816				
Koreshan State Historic Site	67,090				
Lover's Key SP	742,643				
Mound Key Archaeological SP	1,675				
		total County	% in basin		
total state park visitation:	**815,224**	**1,648,570**	**49.5**		
c. CREW: no entry points in Lee County					

as **bargain investments**, considering that each year, even in recession years, these lands still contribute to the annual creation of jobs (2.29 acres generate one job-equivalent), and annual tourist spending per acre ($27,470) runs three times the one-time average purchase price per acre ($9,221).

The hard fought public battles to purchase lands which guarantee a viable and lucrative nature-based tourism are clearly the proper "job-strategy" for Lee County.

Appendix Table1 Reconciliation and Cross-Walk for Land Use Categories, 1900-1953-1973 and 1995 Studies

	1900-1953-1973	1995
A.	Urban 1 Cleared Land 2 Lakes and Reserviors 3 Recreation, Open Space 4 Resiential Light 5 Residentail Medium/Dense 6 Commerce & Industry 7 Transportation 8 Power Plants	A Urban
B	Agriculture	B Agriculture
b.1	9 Improved Pasture	b.1 Improved Pasture Grassland Rangeland
b.2	10 Vegetable Crops 11 Tree Crops	b.2 All crop land
C.	Natural	C Natural
	Estuarine bays	Saltwater bays
C*	**Natural without estuarine bays**	**C* Natural w/o bays**
c.1	Melaleuca	c.1 Exotics
c.2	13 Grassy Scrub Systems 14 Pineland Systems 15 Hardwood Systems	c.2 Temperate forest
c.3	16 Rivers and Lakes	c.3 Rivers and Lakes (freshwater)
c.4	17 Cypress Ponds and Strands 18 Wet Prairie 19 Scrub Cypress 20 Freshwater Marsh & Sloughs 21 Sawgrass Marsh	c.4 Freshwater wetlands Tropical forrest Freshwater wetlands
c.5	22 Beach and Dune Systems 23 Salt Flats 24 Scrub Mangroves 25 Salt Water Marsh 26 Mangroves	c.5 Saltwater wetlands Coastal beaches
	TOTAL	**TOTAL**

Appendix Table 2r Estero Bay Watershed, Conservation 2020 Preserves

Brochure No. *	Preserve	acres	Cost (mill$)	$/ac	Year(s) acquired	median year acquired	consumer price index (2010=1.000)	Cost in millions of 2010$ (col.2) x (col. 6)	Comments	Recreation activities	$ income?
		1	2	3	4	5	6	7	8	9	
9	San Carlos- Buncho Beach	718	6.4	8,914	2001	2001	1.231	7.8784	tidal swamp, bird, fish habitat, pier, kay ramp, picnic tables, 100 car pkg.	Bird Watching (BW), Canoe/Kayak (C/K)., Fishg, Hikg.(Boardwk), Nature Study,; picnic, swimming	parking fees
13	Deep Lagoon	272	4.5	16,544	1999/06	2003	1.183	5.3235	Boat only access, woodstork, herons, egrets, tidal swamp	BW, CK, buffer between houses	
14	Estero March	243	3.8	15,638	1999/01	2000	1.266	4.8108	Tidal marsh, flatwood, mammals; primitive hiking; at the edge of development	BW, Hiking (HK), Nature Study (NS)	
15	Matanzas Pass	59	1.4	23,729	2006	2006	1.081	1.5134	Ft. Myers Beach; only maritime oak ; community house; wildlife list, boardwalk, Kayak, canoe ramp; trails	Highly developed	
20	Six Mile Cypress North	1219	35.8	29,368	2011	2011	1	35.8	Hammock, slough, headwaters , no access	This is a connector preserve	
21	Six Mile Cypress Slough	2267	35.6	15,704	1976+	1980	2.647	94.2332	Monday Group from 1976 on; 1.2 mi. boardwalk	BW, NS, picnic, interpret. Center, Guided walks	
22	Flag Pond	67	0.4	5,970	2003	2003	1.183	0.4732	6 plant communities; animals, buffer for development	No access	
23	Mullock Creek	4.3	0.1	23,256	2007	2007	1.05	0.105	7 plant communities; smallest preserve	No access	
24	Koreshan	38	7.2	189,474	2005	2005	1.115		Rare plants, animals; song birds	Buffer along Tamiami trail & Bdway to protect State Park	
25	Hidden Cypress	428	6.5	15,187	2009	2009	1.015	6.5975	Groundwater recharge, birds, wildlife; quarry pit, houses	Can become popuar; currently, no access	
26	Imperial River	39	0.6	15,385	1998	1998	1.336	0.8016	Mangrove swamp, pristine; water access only; at edge of housing development	BW,CK,fishg, NS.	
27	Oak Creek	4	0.4	100,000	2009	2009	1.015	0.406	Outstanding Fl. Waterway to Estero Bay; oak palm hammock, bromeliads, ferns; Bonita Springs in urban residential neighborhood	Category 3 Preserve; NS, BW, HK	
33	Imperial Marsh	809	13.4	16,564	2000	2000	1.266	16.9644	Mosaic of properties, quarry pit lake; roads laid out	No access	
34	Wild Turkey Strand	3137	18	5,738	2001/8	2005	1.115	20.07	east of airport; buffer for development	BW, NS, Picknic Area, HK, Interpretive panels, Boardwalk, Bathrooms.	
35	Gator Hole	175	3	17,143	2000	2000	1.266	3.798	Wildlife Corridor; quarries; connects Flint Pen, Imper Marsch, Corkscrew	No access	
36	CREW (trust mgmt)	23	0.2	8,696	2009	2009	1.015	0.203	Add to CREW (80,000 ac.); Panther, bears, aquifer recharge; flood control	No access	
37	Pine Lake	131	2	15,267	2000	2000	1.266	2.532	Quarry, Cypress swamp, Bonita Springs	BW,Hiking, NS, Trail	
	Total, All Watershed Preserves	9,633 acres	$ 139.30	$14,460				$ 201.51			
	Dollars per acre, all preserves, 2010 $							$ 20,919			
	Total Lee County Preserves (42 preserves, 110 properties)	24,457									

*Identification of numbers for the preserves from:
http://www.conservation2020.org/Documents/publications/Conservation2020.pdf

Preserve details from:
http://www.conservation2020.org/Pages/Preserves.aspx

Estero Bay map boundaries and preserves within Watershed are from Cathy Olseon, "Conservations 20/20 Project and Estero Bay Watershed," ppt., slide 4.
Map dated June 2008; ppt not dated.

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