

Lees Ferry Trout Fishery Status and Trends Update

January 2006



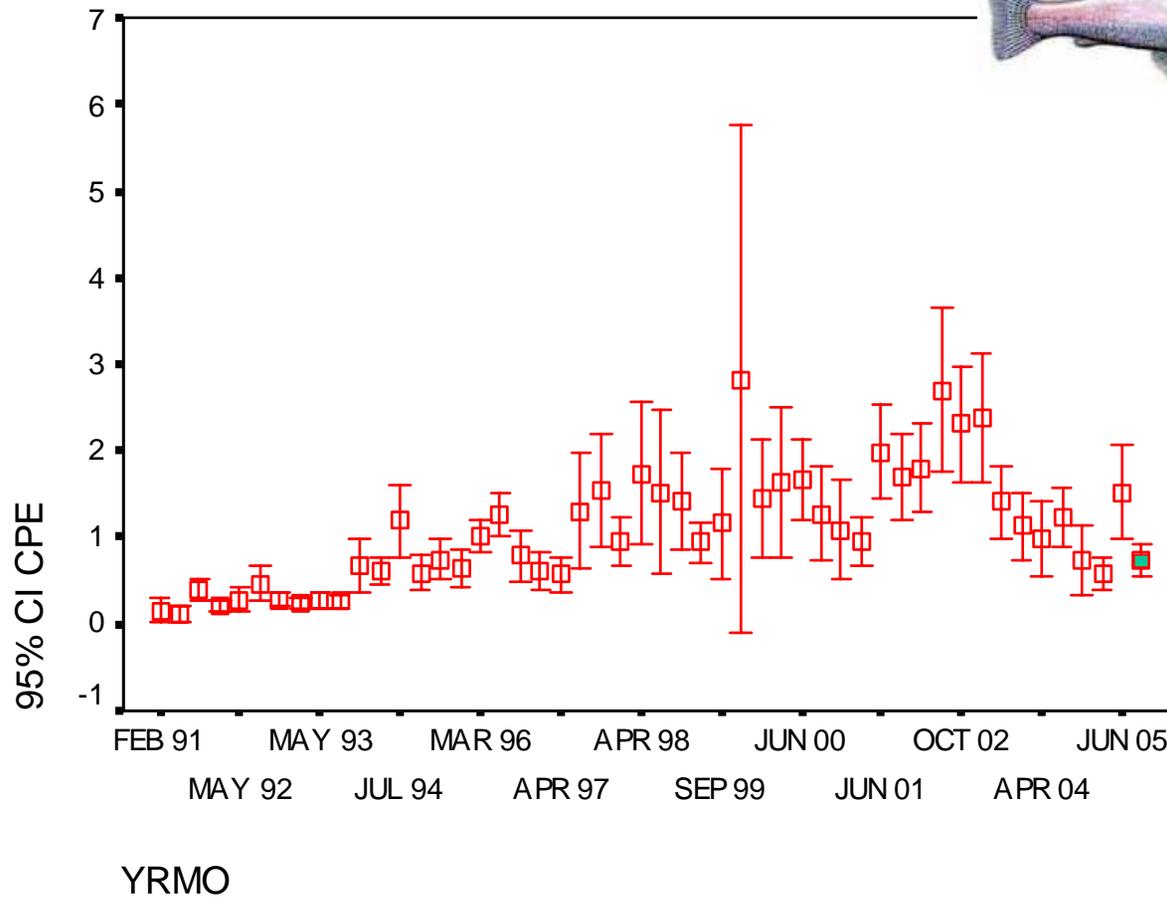
January 25, 2006
Technical Work Group
Bill Persons, Scott Rogers
Arizona Game and Fish Department

Update:

- Electrofishing catch rates 1991-2005
- Size distributions
- Condition Factor 1991-2005
- Discussion of possible flow, foodbase and water quality effects

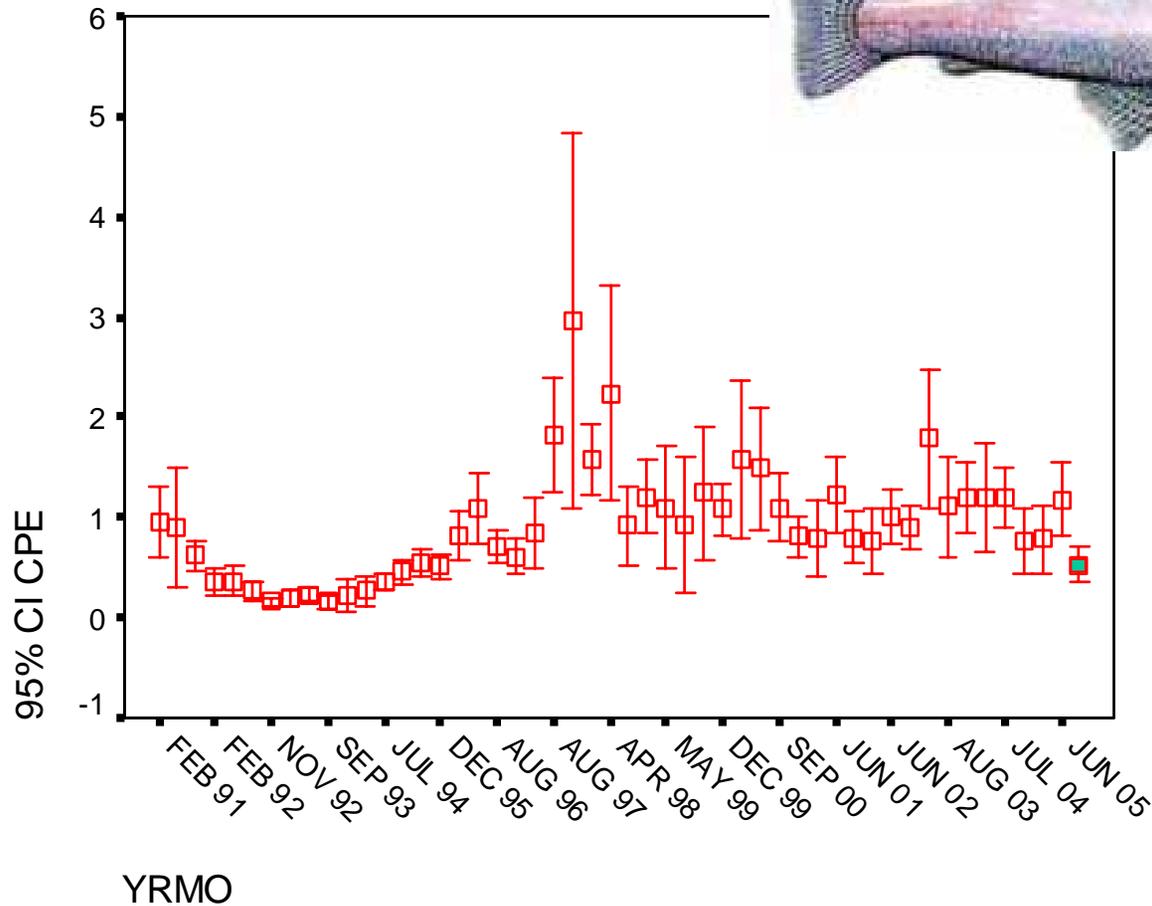
Electrofishing catch/minute 1991-Nov 2005

SIZE: 2 152 - 304 mm TL

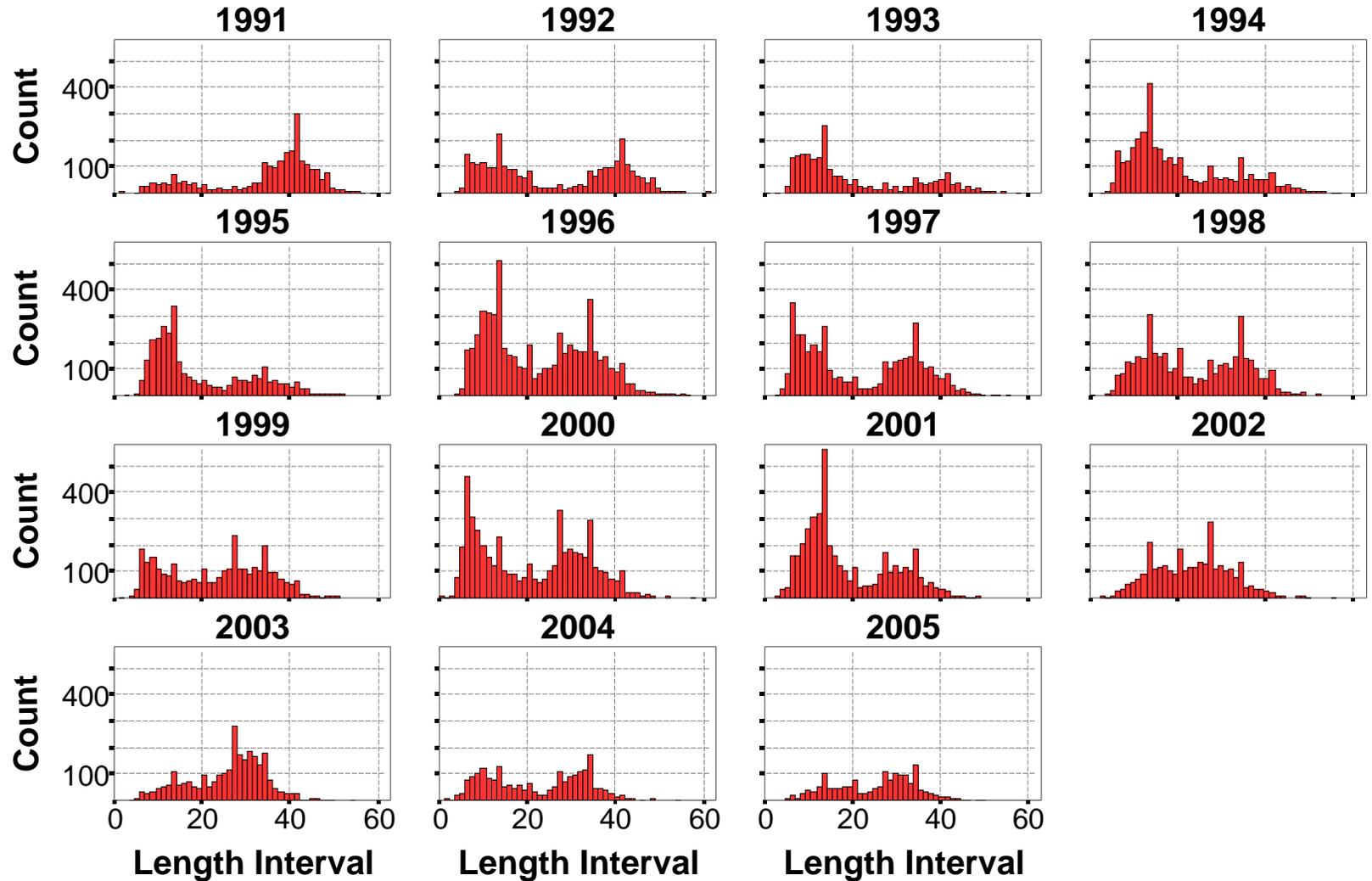


Electrofishing catch/minute 1991-Nov 2005

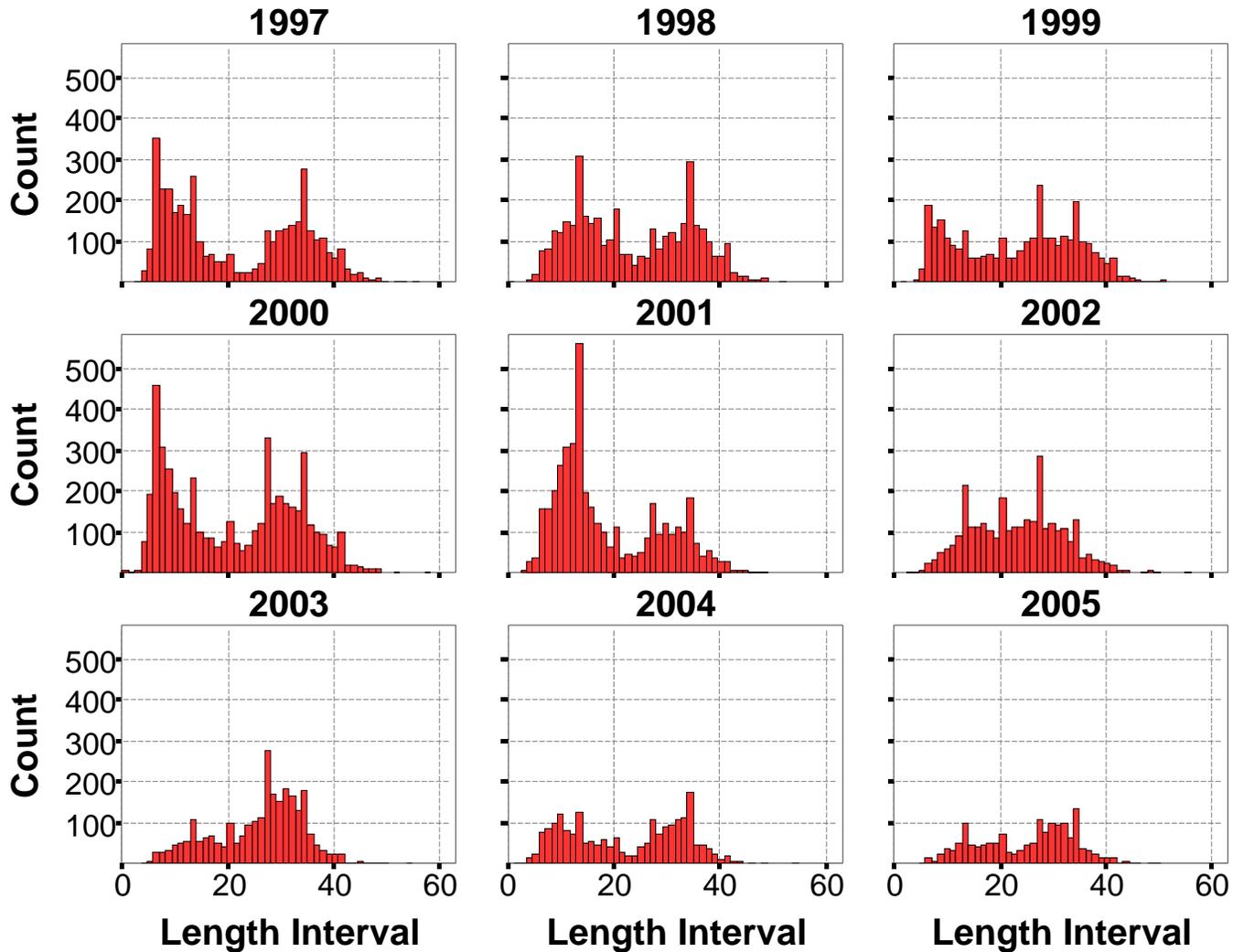
SIZE: 3 305-405 mm TL



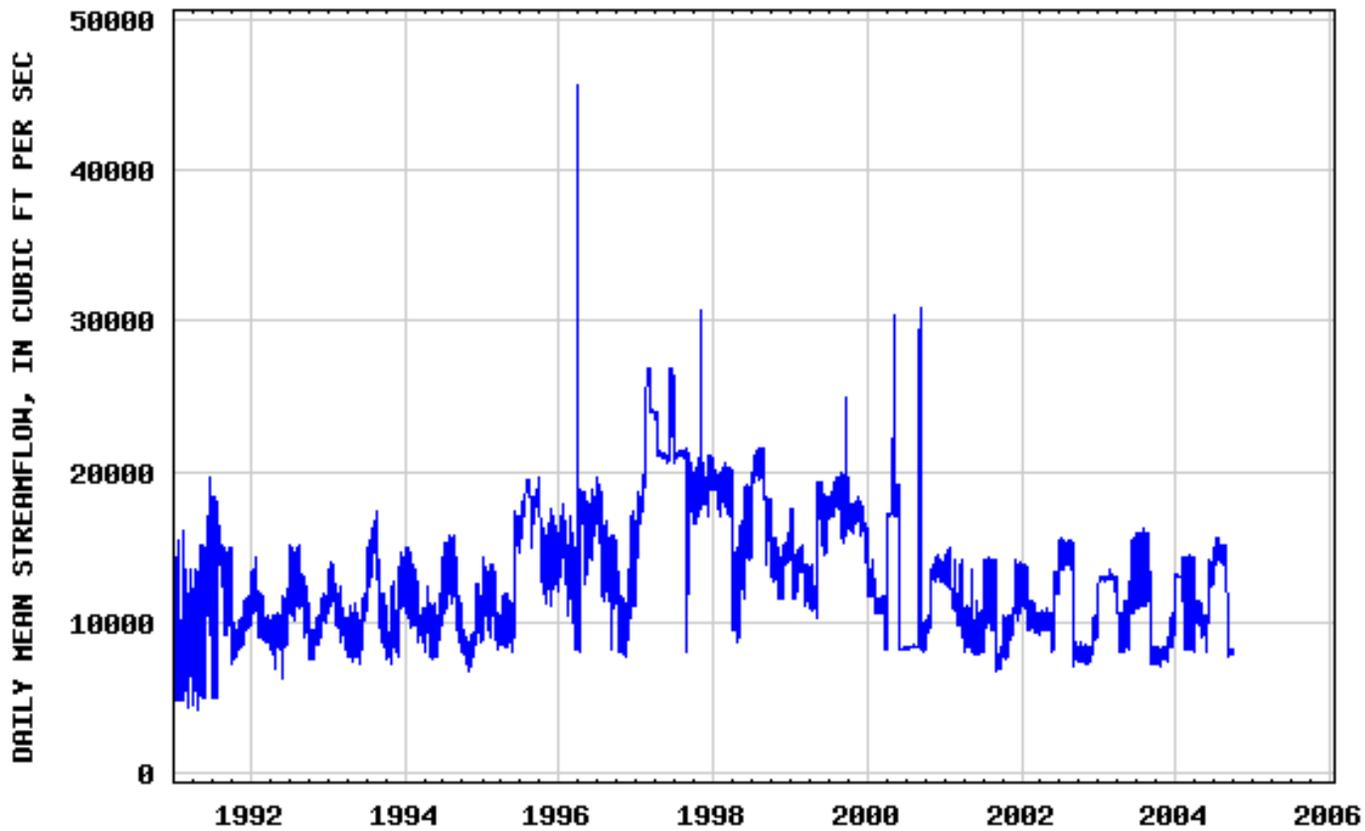
Size Distributions 1991-2005



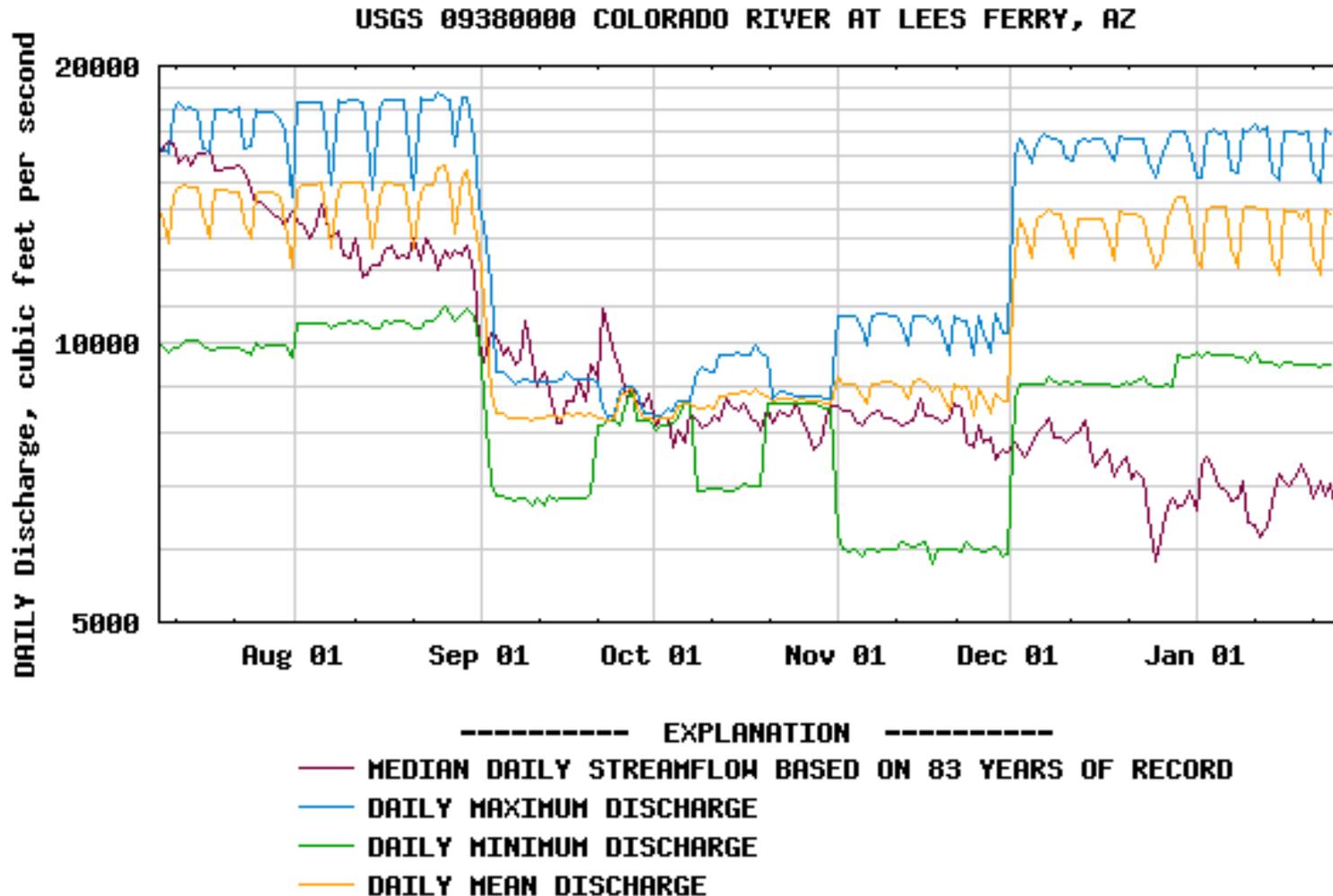
Size distributions 1997-2005



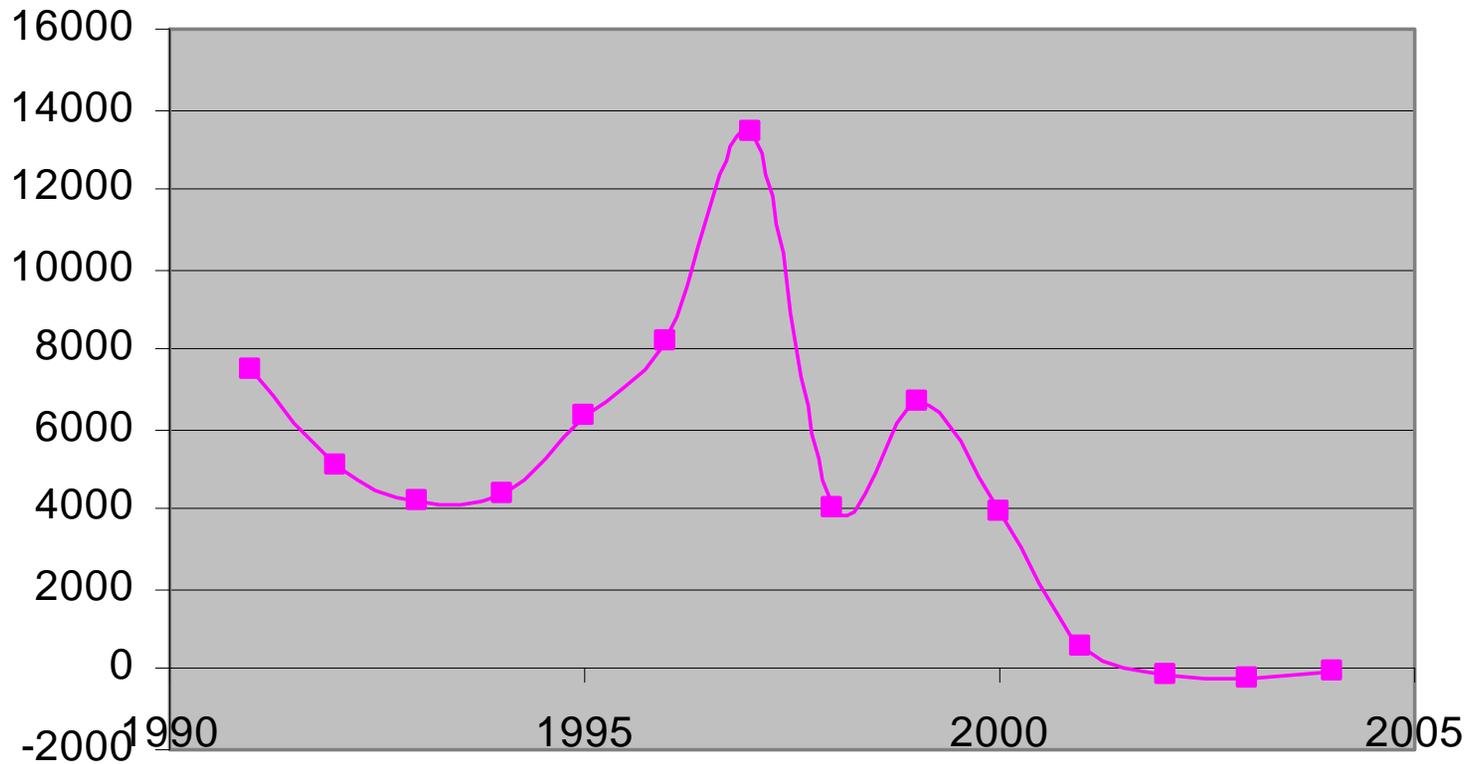
USGS 09380000 COLORADO RIVER AT LEES FERRY, AZ



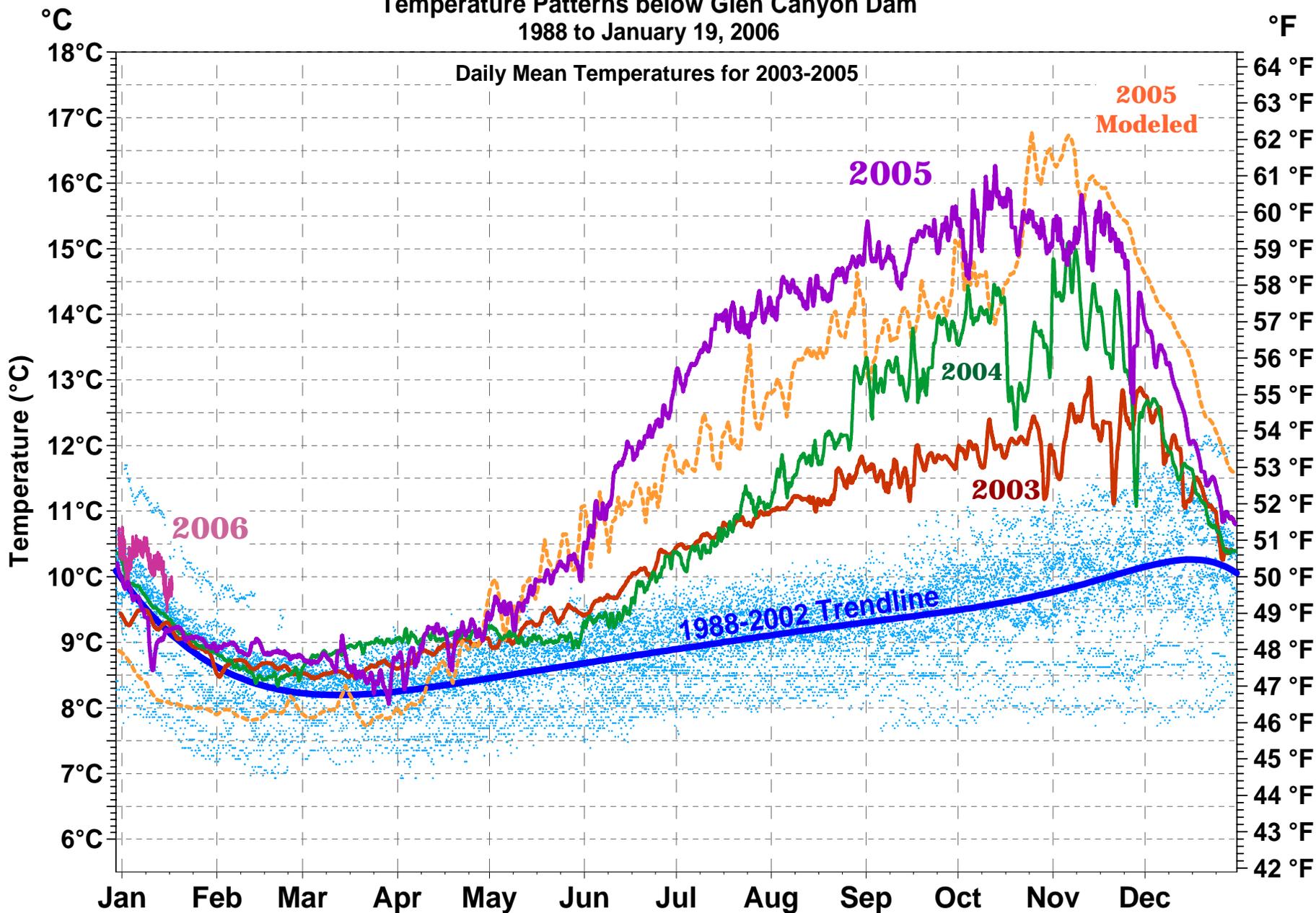
Possible flow effects:



Difference between SEPT maximum and AUG minimum discharge



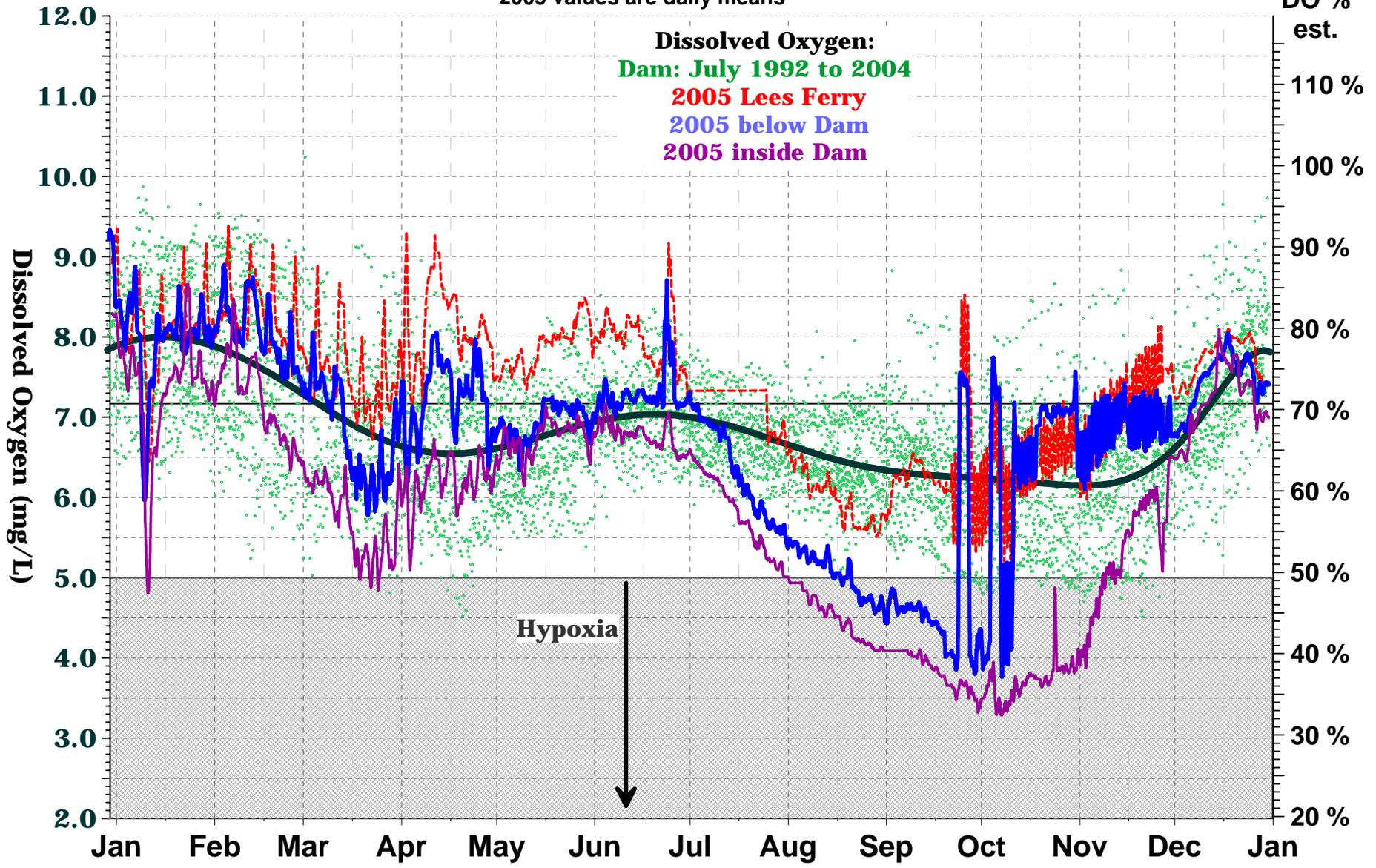
Temperature Patterns below Glen Canyon Dam 1988 to January 19, 2006



Annual Dissolved Oxygen Patterns below Glen Canyon Dam

July 1992 to December, 2005 Glen Canyon Dam Tailrace

2005 values are daily means



Possible Temperature - Oxygen Effects

- Increased temperature = increased metabolic demand, more food needed to maintain fish
- Low oxygen = fish get lethargic, stop feeding, may die or move downstream. Affects larger fish more than small fish because of higher metabolic demands of larger fish.

Possible foodbase changes

- New Zealand Mudsnaill?
- Changes in species composition and community structure of invertebrates
(*Gammarus* chironomids)
- Changes in community structure of aquatic plants
(*Cladophora* → *Oscillatoria* & *Bryophytes*)

New Zealand MudSnail



Discovered in 2000 but in the river at least as early as 1995 . This species has been labeled a trophic dead end in other systems.



New Zealand Mudsnail



Summary:

- Catch rates and condition of larger size classes of fish decreased significantly in November 2005.
- Anglers report very slow fishing.
- Anglers report little or no spawning activity.
 - No sexually mature fish were observed in November 2005, a time when fish are typically beginning to spawn.



- Lee's Ferry density and condition have declined
 - Why?
 - Increased temperature and metabolic demands by trout
 - Change in food base
 - Introduction of New Zealand mud snails
- We have seen evidence of decreasing recruitment over the past two years and during our November sampling we saw evidence that we may have another poor spawn. Is it time to think about stocking again??? Will this help if we are seeing the effects of a changing food base and the resulting food limited response by rainbow trout??

Mean KnL and sample sizes

KNL					
YRMO		Mean	N		Std. Deviation
	March-00	76.9159	1070		13.09946
	June-00	82.3385	1012		12.75612
	September-00	76.0251	919		13.30661
	December-00	73.9698	700		13.25387
	April-06	75.4272	796		11.2258
	June-06	79.7062	1107		12.71025
	October-06	76.5032	860		11.4862
	June-06	80.1323	1015		10.71183
	October-06	80.2139	952		11.57674
	April-06	82.8185	322		10.41365
	August-06	79.1251	193		14.80276
	November-06	73.7174	47		9.35819
	April-06	80.5129	456		9.95162
	July-06	79.9892	663		12.54767
	November-06	79.0824	520		14.51627
	April-06	80.9924	242		11.6106
	June-06	81.1652	666		11.73449
	November-06	76.7528	528		14.07045
Total		80.3195	38003		13.1936